Rs. 30.00
ISSN-0566-2257

UNIVERSITY NEWS

A Weekly Journal of Higher Education

Association of Indian Universities
Vol. 62 • No. 16 • April 15-21, 2024

Special Issue

on

HIGHER EDUCATION@2047

on the occasion of

98TH AIU ANNUAL GENERAL MEET

&

NATIONAL CONFERENCE OF VICE CHANCELLORS

hosted by

THE ICFAI FOUNDATION FOR HIGHER EDUCATION (DEEMED-TO-BE UNIVERSITY) HYDERABAD

on

April 15-17, 2024

ATMIYA UNIVERSITY



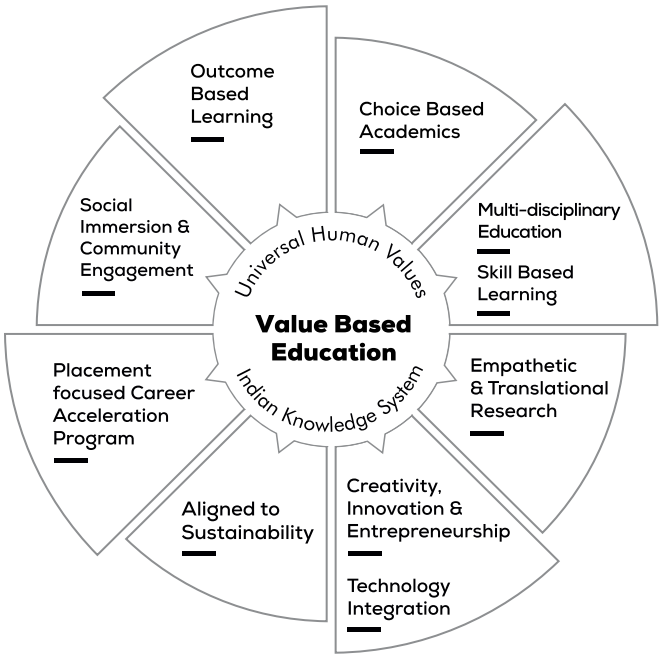
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EDITORIAL

Celebrating many achievements in the IT industry, space technology, movies, sports, games, and an increasing number of unicorns, and billionaires, India has evolved from a nation of so-called 'snake charmers', a third-world Nation in 1947 to one of the world's most powerful forces in the 21st century. Developments in the span of the last few years were remarkably escalating, leading India to become an emerging power. Even at this stage of being an emerging power, India's influence over world events has significantly increased making it a leader of balancing power. Its booming economy; place in global politics; international relations with both the East and the West; resurgent military might; renewable energy potential, prudent international trade, efficient research, innovation, entrepreneurship, and startup initiatives, etc., have carved a niche for the country among all nations. All these indicators and many more give us confidence that India will steer clear of the Middle-Income Trap and enter 2047 as *Viksit Bharat.* India is now in the fast-track-development mode to becoming a developed Country!

The Economist John Vaisey defines National Development as, "the overall influence of all human forces and the increase to the inventory of physical, human capital, knowledge, and skill." National Development ought to adopt a holistic approach involving the reconstruction and development of numerous aspects of a nation as well as the development of individuals. It should encompass all facets viz. societal, economic, increasing religious, cultural, political, scientific, and material spheres of an individual's life as well as the life of a nation. The capacity of a nation to enhance its citizens' standard of living is an important indicator of the nation's level of development. In all these parameters, India is trying to come up to the mark.

According to Klaus Topfer (2002), development rests on three pillars---society, economy, and environment. The environmental pillar provides the physical resources and ecosystem services on which humankind depends. The well-being of these three areas is essential to creating a sustainable world. For this, the world needs people with the values, competencies, skills, knowledge, and mindset necessary to contribute towards the well-being of these three pillars. Such qualities can be nurtured in people only through the right education.

Higher education is recognized as a capital investment all over the world, especially after the emergence of a new world economic order. Higher Education is of paramount importance as it assumes the primary responsibility for preparing future citizens as well as future leaders with advanced knowledge and skills who will shoulder nation-building and contribute to socio-economic development through attaining gainful employment. Therefore, what we teach in higher education is of cardinal importance. Skill training should be part and parcel of higher education to prepare students for gainful employment. The government is already taking several initiatives to create a workforce for the future, and I strongly feel that there is a lot of scope for the Higher Education Institutions to realise the dream of the Hon'ble Prime Minister to create "*Atmanirbhar Bharat*" by making the best use of various schemes and concepts like '*Make in India' Startup India,* etc., so that we can enter the centenary year 2047 with pride.

India has significant advantages in the 21st-century knowledge race. It has a large higher education sector — the third largest in the world with around 40.15 million students and 15.12 million teachers. The Country has the unique advantage of a demographic dividend. It is reportedly home to more than 600 million people aged between 18 and 35, with 65% under the age of 35. India's demographic dividend is expected to persist at least until the year 2055–56 and will peak around 2041 when the share of the working-age population — 20–59 years — is expected to hit 59%. English is extensively used in higher education and research. There are several high-quality institutions, departments, and centers that can form the basis of the quality of research in the country. However, India will need to create a dozen or more universities that can compete internationally to fully participate in the new world economy, for which the National Education Policy–2020 has also advocated.

India has a unique 20–25-year window of opportunity called the "demographic dividend' as compared to Western countries where there is a burden of an aging population. This "demographic dividend" means that as compared to other large developing and developed countries, India has a higher proportion of working-age population than its entire population. It is home to more than 600 million people aged between 18 and 35 with 65% under the age of 35. This demographic dividend will persist for another 30 to 40 years and will be at its peak around the 2040s. Wisdom is to take advantage of this opportunity. However, only gainful employment without character building will not lead to sustainable development.

A few decades ago, education had man-making as the main aim with earning a livelihood as one among several peripheral aims. Today, the main aim of education is generating human capital with man-making among other peripheral aims. With this scenario, though we can rejoice in the feats of development, there is no denying the fact that we will falter in achieving the real aim of education, i.e. man-making. It is therefore very important for us to keep this aim of education intact throughout the process of development. Otherwise, we shall not be developed or Viksit in the real sense of the term. The education that develops the mindset of *Sarve Bhavantu Sukhinah, Sarve Santu Niramaya*; May all be Happy, all be Free from Disease as an everlasting desire, should be promoted in order to have a seamless journey in the *Amrit Kaal* to enter eagerly awaited *Shatabdi Varsh*.

The Association of Indian Universities(AIU) as a representative body of universities and as an Advisory Body to the Government of India, plays an important role in giving direction to the higher education system of the country. It makes all efforts to reach out to academics, researchers, and policymakers by providing a platform to debate, deliberate, and evolve logical opinions and consensus among the academia on important issues of Indian higher education. Therefore, in the best interest of a common goal of higher education, a discussion on Higher Education @2047 was initiated by AIU through five Zonal and one National Conference of Vice Chancellors.

In order to discuss the topic, threadbare and to seek concrete suggestions, Special Issues of the University News were brought on the topic in all the Zonal Conferences. This Special Issue is being brought out to coincide with the National Conference of Vice Chancellors on the Topic. The Response was indeed overwhelming with more than 150 articles, which shows the concern of the academics, particularly, Vice Chancellors National Development. The articles I should say have stirred the whole higher education system. The comments, suggestions, and viewpoints mentioned in the articles were mind-boggling which makes one feel the significance of this exercise and the importance of the platforms like AIU and the University News to discuss such things. I must confess that I could not include all the articles in the Issue because of the space constraint though most of them deserved to find a place in it. The articles included in the Issue consist of a varied spectrum of topics reflecting a wide range of views on different aspects of the theme. The contributions would be of great implication for improving the higher education system of the country. I am indeed very thankful to all the contributors.

This Special Issue contains articles on Higher Education@Viksit Bharat contributed by eminent academics and experts in the field. These articles will supplement the outcome of the Vice Chancellors' Meet to create a roadmap for the higher education institutions to work towards *Viksit Bharat*. This is a small but significant effort to contribute to the Government of India's initiatives towards creating *Viksit Bharat*.

The goal of this effort is to help the Indian higher education system reach out to one and all who aspire to seek higher education and pay back to the country by producing highly educated, skilled, mature intellectuals with strong moral character required for a strong developed Nation.

After all, we the knowledge workers have the responsibility to steer higher education in the right direction!

Sistla Rama Devi Pani

Setting Tone for 98th AIU Annual General Meet and National Conference of Vice Chancellors–2023-24 on Higher Education@2047

Pankaj Mittal* and Sistla Rama Devi Pani**

The Association of Indian Universities (AIU) is organizing its 98th Annual General Meeting (AGM) and National Conference of Vice Chancellors on the theme '***Higher Education @2047'*** from April, 15-17, 2024.

About AIU Annual General Meet

Annual General Meetings (AGM) are one of the mega events of the Association of Indian Universities (AIU) which provides a unique forum for its member Vice Chancellors and leaders of the higher education system, national and international to exchange ideas and evolve consensus on various policies and initiatives for the betterment of Indian higher education system.

The Annual Meet is an occasion for AIU to showcase its past year's achievements, present its Financial Statements, and delineate the scheme of activities for the forthcoming years. It is also a platform to inform the Members about the Recommendations of Zonal Vice Chancellors Meets and other Meetings conducted throughout the year and to agree on a collective course of action, policies, and initiatives.

Apart from a grand *Inaugural Ceremony* and splendid *Valedictory Function*, events marking the occasion are *AIU Governing Council Meet, AIU General Body Members Meet, Business Session, an Interface Session with Indian Higher Education Functionaries,* and an *Interface Session with International Dignitaries*.

The ***Inaugural Session*** is graced by important dignitaries of the Country and distinguished guests. Captivating Speeches, Addresses, and the Release of the Special Volume of the University News by the Chief Guest and other important publications are happenings of the Inaugural Session.

The ***Interface Session with Indian Higher Education Functionaries*** is graced by the Senior Officials of concerned Ministries, particularly the Ministry of Education (MoE) and Ministry of Youth Affairs and Sports, Head of the apex bodies, Councils, and other agencies of Higher Education. In the Meet a stocktaking of the prevailing condition of overall Higher Education in the Country is done and vital issues are discussed to arrive at tangible solutions. The forum is used to project the voice of the Vice Chancellors before the Government and other important agencies.

In the ***Interface Session with International Dignitaries'*** issues related to cross-border education are discussed and possible collaboration and Memoranda of Understanding (MoU) are worked out. In the National Seminar deliberations are made on the chosen theme.

About the Association of Indian Universities

The Association of Indian Universities (AIU), is one of the premier apex higher education institutions of the Country established in 1925. It is a research-based policy advice institution to the Government of India in the field of Higher Education, Sports, and Culture. Since its inception, it has been playing a vital role in shaping Indian higher education. Most importantly, AIU is vested with the power of according equivalence to Degrees/Qualifications offered by the universities across the world with those offered in India. Being an apex institution, it constitutes an integral part of all major decision-making committees and commissions in the country. As a representative body of Indian universities, it facilitates cooperation and coordination among Indian universities and liaises between the universities and the Government (Central as well as the State Governments) and also National and International bodies of higher education in other countries in matters of common interest.

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AIU is a think tank body with the responsibility of undertaking academic activities such as: conducting Research Studies in higher education; acting as the bureau of information on higher education; liaising with international bodies and universities for the internationalization of Indian higher education among many others. AIU conducts inter-university sports and cultural events at national and international levels. As a National Sports Promotion Organization (NSPO) it promotes sports among Member-Universities and maintains the standards in sports

The Vision of AIU is to emerge as a dynamic service and advisory apex organization in India by undertaking such initiatives and programmes which could strengthen and popularize Indian higher education as a leading-edge system in the world and promote greater national and international collaboration in Higher Education, Research and Extension, Sports, Youth, and Cultural Activities.

Its mission is to promote and represent the higher education system and Indian Universities through strong liaison with the National/International organizations of higher education, and sister associations the world over and establish liaison between/among universities through active support, cooperation, and coordination among the member universities and all its stakeholders for quality education, research and other academics and extension activities.

Dr. Sarvepalli Radhakrishnan, Dr Zakir Hussain, Dr. Syama Prasad Mukherjee, Dr K L Shrimali A.L Mudaliar, Dr Akbar Hydari, Prof A C Woolner, Pandit Amarnath Jha, Sir Maurice Gwyer, Dr K L Shrimali, Prof Shiv Mangal Singh 'Suman', Prof M S Gore, Prof M S Adiseshiah, Prof M S Valiathan are among some of the stalwarts who served AIU as its presidents.

Whereas all the Indian universities benefit from its contribution, at present it has a membership of about 1000 universities including 17 overseas universities from other countries viz. Bhutan, UAE, Kazakhstan, Mauritius, Malaysia Nepal, as Associate Members.

Context of the Meet

One of the key activities of the AIU is to convene the Vice Chancellors' Meets at the Zonal and National levels to discuss various issues related to higher education. India is a country with a large geographical area, for ease of reaching out, AIU has grouped the member HEIs into 5 zones—East, West, North, South, and Central. Each zone is constituted of HEIs located in 5-6 States grouped in that Zone. Thus, 5 Zonal Meets and one National Vice Chancellors' Meet are organized annually. These Meets are important platforms not only to discuss the significant issues of higher education but also to play a catalytic role in finding solutions for different problems of higher education through collective wisdom. Further, AIU carries forward the voice of the participating leaders of higher education to appropriate agencies and authorities for their dispensation. Every year in the Annual Vice Chancellors' Meet, a specific theme that is of topical significance for the higher education community is taken up for discussion. As a run-up, subthemes related to the main theme are discussed in the Zonal Vice Chancellors' Meets.

The period after *Amrit Mahotsav* i.e. 75 Years of Indian Independence has been demarcated as *Amrit Kaal* by the Government of India. The main aim behind this demarcation is to accelerate the pace of development and enable the country to take a quantum leap to make India a developed country, *Vikasit Bharat* before it celebrates the 100th year of Independence. The main indicator of becoming a developed country is to have a strong social fabric with better lives for the citizens and a technology-driven and knowledge-based economy. To achieve this aim there is a necessity to discuss developments to be made in various sectors. Higher education being the most important influencing sector, requires special academic engagements to review and reimagine the processes, impacts, and results of these developmental activities in the context of *Viksit Bharat*@2047'. In this context, AIU has chosen the main theme as "Higher Education@2047 for all its Zonal and National Vice Chancellors' Meets for the 2023-24 Session. Under this overarching theme, five Zonal Vice Chancellors' Conferences have already been conducted in this session. The Concept Note of the forthcoming National Vice Chancellors' Conference is presented here.

National Conference of Vice Chancellors on *Vikasit Bharat@2047*

Projecting the landscape of higher education in the year 2047 shall involve a lot of speculation, as the future will depend upon the complex interplay of social, technological, economic, and cultural factors. Based on current trends and potential developments,

it is the right time to discuss on theme "Higher Education@2047" to provide a glimpse into the potential directions higher education could take by the year 2047, when India celebrates 100 years of independence. The *Amrit Kaal* from 2022 to 2047 holds a lot of potential, in terms of shaping our higher education to meet the challenges of the 21st century. Therefore, Five Subthemes have been prudently identified for the five Technical Sessions of the National Conference:

i. Integrating Bhartiya Knowledge System (BKS) with Higher Education
ii. Nurturing Research & Innovation Ecosystem
iii. Digital Transformation in Higher Education
iv. Globalization & Internationalization of Higher Education
v. Future of Work & Skill Development

Based on deliberations, a commitment statement will be framed for the Indian universities and HEIs to undertake various activities to move towards creating *Vikasit Bharat* by 2047. In addition to academic deliberations, capacity development initiatives will be taken by forming a group of Vice Chancellors who will work on various dimensions of Higher Education. Details of various sessions of the Conference are presented here.

Technical Session – 1: ***Integrating Bhartiya Knowledge System (BKS) with Higher Education***

Integrating the rich and diverse Bhartiya Knowledge System (BKS) with higher education is a pivotal step towards fostering a holistic and inclusive learning environment. BKS, with its ancient roots and contemporary relevance, offers a wealth of wisdom encompassing fields such as Ayurveda, Yoga, Mathematics, and Philosophy. By incorporating BKS into higher education curricula, we can empower students to appreciate the interconnectedness of traditional knowledge and modern disciplines. This integration not only preserves our cultural heritage but also equips the youth with a broader perspective, promoting innovative thinking and problem-solving. Moreover, it paves the way for interdisciplinary research and collaborations that can address pressing global challenges while celebrating the timeless wisdom embedded in India's ancient traditions. In doing so, we ensure that higher education remains dynamic, inclusive, and forward-looking while preserving the profound insights of our ancestors. Deliberations will take place in significant areas such as Using the Bhartiya Knowledge System-based Approach for Teaching-learning and Holistic Development, Embedding the Bhartiya Knowledge System for Futuristic Education, Bhartiya Knowledge System in Sustainable Development, etc.

Technical Session 2: ***Nurturing Research & Innovation Ecosystem***

Nurturing a healthy research and innovation ecosystem is very important for the advancement of societies, and economies, and for the progress of human knowledge which nurtures creativity, drives technological advancements, and addresses various complex challenges. By integrating elements like policy and funding support for research & and innovation and its infrastructure, development of the student's talent, promoting collaboration between academic & and industry, encouraging entrepreneurship and startups, etc. where governments, academia, industries, and communities may collectively nurture a dynamic research and innovation ecosystem which drives towards economic growth, societal development, and technological breakthroughs. Deliberations will be held in areas like Collaborative Research Networks, Fostering Interdisciplinary Research, Entrepreneurship & Innovation, Innovative -funding Models for Research, etc. amongst others.

Technical Session -3: ***Digital Transformation in Higher Education***

Digital Transformation in Higher Education is mainly the process of integrating digital technologies, tools, and strategies into various aspects of educational institutions to enhance teaching, learning, administration, and overall student experiences. It involves leveraging technology to modernize and streamline processes, improve access to educational resources, and prepare students for the digital age. It also includes exploring the role of technology in Higher Education, including online learning, virtual classrooms, and the integration of digital tools for better educational experiences. Discussions will be there on several important issues related to the topic including the Future of Credentialing, AI & Analytics in Higher Education, Faculty Development & Digital Pedagogies, etc.

Technical Session 4: ***Globalization & Internationalization of Higher Education***

The concept of globalization and internationalization of Higher Education are

interconnected and they denote the increasing integration of education systems, institutions, and students on the global level. Such processes have gained importance due to advancements in technology, communication, and transportation to enable greater mobility and exchange of knowledge across borders. As internationalization seeks to enhance the quality of education by exposing students to diverse cultures, languages, and viewpoints which mainly includes diversity in the curriculum, mobility of students, global partnership, faculty exchange programmes, and many more such initiatives. Similarly, globalization involves the transformation of the education system into a global commodity with institutions operating across national territories and adapting to global economic, cultural, and technological advancements. Deliberations will be on topics like International Collaborations & Partnerships, Global Higher Education Policies & Regulations, Harmonizing Standards, Student Mobility & Diversity, Ways to Enhance International Experiences, etc. among others.

Technical Session 5: *Future of Work & Skill Development*

The future of work and skill development is undergoing significant changes due to many technological advancements, evolving work environments, and shifts in global economies which mainly include Automation and AI, Digital Literacy and Tech Skills, Remote and Flexible Work, Soft Skills, and Emotional Intelligence, Lifelong Learning, Data Literacy, Globalization and Cross-Cultural Competence, Entrepreneurial Mindset, Environmental and Social Responsibility, etc. The future of work will be categorized by technological advancements, evolving work structures, and the need for adaptable and diverse skill sets. Those who are willing to embrace change, prioritize continuous learning, and develop a combination of technical and soft skills will be well-prepared for the challenges and opportunities of the future job market. Discussions will be held on significant topics amongst others like Sustainable Careers, Navigating Dynamic Workplaces, Human-centered Skills in a Tech-driven World: Soft Skills & Emotional Intelligence, Resilience & Adaptability, the Impact of the Gig Economy on Higher Education, Future technologies for Employment and Entrepreneurship, etc.

Format and Approach of Technical Sessions

The Sessions will be of 1 Hour and 30 Minutes each. In each Session, there will be experts from Government, HEIs, And International Bodies. Presentations will be followed by interaction and Q and A.

Participation and Organization

Vice Chancellors of Indian Universities, Experts from the Government of India, Apex Bodies of Higher Education, and Academia will be Speakers and Session Chairs. Experts from international organizations will also be invited to contribute. Discussions will be conducted in English. Sessions will be mostly in physical mode. Blended mode may be used when inevitable.

The Association of Indian Universities (AIU) anticipates a fruitful and meaningful interaction towards the resolution and realization of a common agenda for academic excellence through transformative higher education. This Vice Chancellor's Meet is but a stepping stone in the direction of building the *Vikasit Bharat,* ***The New Developed India*** by 2047**.**

Conclusion

India is one of the fastest growing economies of the world and marching on the path to become a developed nation before 2047, the centenary of Indian independence. It is also committed to ensuring that its continued growth path is equipped to deal with the challenges through interventions from various sectors like industry, academia, civil society, etc. Higher Education therefore has a very important role to play.

It is therefore need of the hour for higher education institutions to take the baton and lead the institutions to work towards the development of Higher Education vis a vis the Nation. It is in this context that this AIU Annual National Vice Chancellors' Meet is very significant. Based on the recommendations of this theme in the Annual Meet, 'The University Action Plan will be prepared which will be a handy guide not only for Higher Education Institutions of the Country but also for the universities of other countries. A Policy Document will also be prepared and presented to the Government of India. We anticipate a fruitful and meaningful interaction toward the resolution and realization of a common agenda for academic excellence through transformative advanced higher education. This Vice Chancellor's Meet is but a stepping stone in the direction of building a new higher education system to build the New India of 2047 the *Viksit Bharat*. ❑

ICFAI Foundation for Higher Education, Hyderabad: A Profile

ICFAI Foundation for Higher Education, Hyderabad is hosting the 98th Annual General Meet and National Conference of Vice Chancellors'-2023-24 of the Association of Indian Universities (AIU) New Delhi on April 15-17, 2024.

Genesis of ICFAI

The Origin

ICFAI was established in 1984 as a not-for-profit society with the broad objective of empowering citizens through world-class quality education. The Institute announced its arrival into the Indian higher education arena by launching a high end, innovative professional program in financial analysis in 1985. The Program was first-of-its-kind in India, aimed at equipping students and working professionals with cutting-edge knowledge in contemporary areas of finance. Since its establishment, ICFAI Group has made a significant mark in the Indian educational field with a pan-Indian network and presence.

The ICFAI Group has been pioneering professional education for over 30 years. It has carved a niche for itself in delivering quality education through its innovative and in-depth knowledge programmes to the students enabling them to compete with the best in the global arena. It is present across India with 11 Universities, 9 Business Schools, 8 Law Schools and 7 Tech Schools. In all the programmes offered across these units, the emphasis is on academic rigor and differentiated curriculum that bridges the industry-academia gap.

A separate entity, The ICFAI Foundation for Higher Education was carved out in 2005. The ICFAI Foundation for Higher Education became a deemed-to-be University, with ICFAI Business School (IBS) Hyderabad, as its lone constituent in 2008. The B-School started with a doctoral and postgraduate program and later added an undergraduate program in Business management. The University added two more constituents - Faculty of Science and Technology and Faculty of Law during the year 2010-11.

The Founder

Late Shri N.J. Yasaswy, the founder of the ICFAI Group of Educational Institutions was a pioneer and trailblazer in promoting higher education in the Private Sector. He conceptualized, developed and built competitive and top graded Business schools in India apart from creating 11 Universities in the developing states of India (including in the North East) single-handedly. He wanted to nurture and groom young students who had the will to learn but were unable to gain entry into the premier educational institutes for a variety of reasons. He built temples of learning offering value-based education, industry-focused curriculum and employable skills. His entire life was devoted to building excellence in higher education by taking the very best practices and ideas from every comer of the globe. He aimed to deliver unmatched value to the student community by promoting institutions that espoused great values, ethics, morals and scruples. He was a man of prodigious talent and way ahead of his peers. His vision will continue to guide the ICFAI Foundation for Higher Education (IFHE) for generations to come.

ICFAI Foundation for Higher Education is self-financed and the surplus generated year after year is ploughed back to create state-of-the-art infrastructure, encourage research and meet the multifarious needs of students, researchers, faculty and non-teaching staff.

After 21 years, it has evolved as the largest private University offering a bouquet of programmes ranging from undergraduate, post-graduate and doctoral programmes . The exceptional growth over these years has been catalyzed by the intrinsic value of the product, willingness to innovate and 24x7 customer service.

ICFAI Business School was set up all over the country in 1995. ICFAI went on to increase the product portfolio by introducing several programmes in finance and management across all customer segments.

ICFAI is now positioned to emerge as a Pan-Indian University. It plans to be a multi-disciplinary and multi-locational University, the first of its kind in India.

The core philosophy of ICFAI is captured in its motto *"Meritum Ethicus"* which means merit and ethics.

This motto expands to include these four philosophical approaches:

Merit-based Institution: All student admissions and faculty recruitment are strictly merit based. Every applicant goes through the same process like an admission test, presentations and interviews. There is no management quota or NRI quota. The idea is to build a merit-based institution.

Ethical Institution: ICFAI has a strong ethical code for all its constituents. There is a code of conduct for the institution's marketing staff and also a code of conduct for alumni. Inclusive institution: ICFAI is deliberately being built as an inclusive institution to provide equity and access in higher education to as many deserving students as possible.

Hence ICFAI is committed to increasing the scale and scope of activity consistent with quality. It is always willing to walk that extra mile to become an inclusive institution. Socially responsible institution: ICFAI is committed as a socially responsible institution complying with all the regulatory needs. It also serves society by creating social values of the significant order.

Not-for-Profit Organization: ICFAI is a not-for- profit organization with a strong academic purpose to deliver high-quality higher education. Professionally- managed Institution: ICFAI is a professionally managed institution with a very strong corporate culture. Among its managers and faculty, there are over 75 IIM graduates, bankers and business executives with very rich corporate experience. This team has brought in accountability to a great extent.

Entrepreneurial Organization: As a growing organization ICFAI is committed to sustaining a very strong entrepreneurial streak. There is a very good risk-reward framework in place to motivate the employees to achieve better and better results operating within entrepreneurial drive.

ICFAI is a private institution (not funded by the government) dedicated for a public purpose namely delivering quality education.

ICFAI and its Stakeholders

For any major educational institution, there are four important stakeholders: faculty, students, employers and alumni. In the long run, a university is known primarily for its faculty and students. Hence ICFAI makes continuous efforts to focus on maximizing the levels of satisfaction of these stakeholders through periodic satisfaction surveys conducted by external agencies. Higher education is a knowledge-driven industry, needing high quality faculty interested in research, teaching and consulting.

The students look for industry-relevant programmes , a good course curriculum, a library, computing facilities and overall personality development. ICFAI programmes are market-driven and are garnished with industry-relevant projects. All its centers have well equipped libraries and computing facilities. Courses in soft skills are mandatory to all the students. ICFAI likes to be perceived as a quality education provider. That will bring in great students. Employers are looking for knowledgeable and skilled professionals with the right attitude. Analytical, problem solving and soft skills are appreciated. ICFAI extensively uses case-based learning to simulate the young graduates to get a feel of the actual scenarios. It benchmarks its courses and curriculum with the best in the world. The goal is to become a supplier of right talents with the right attitudes. Alumni have the greatest stake among all others. Alumni take pride in their *Alma Mater* if its reputation is growing. ICFAI alumni meet regularly in all major cities. They take pride in calling themselves as brand ambassadors.

About ICFAI Foundation for Higher Education

The ICFAI Foundation for Higher Education (IFHE) is a Deemed-to-be-University, established in 2008. IFHE is one of the reputed Universities in India and is ranked among the Top 25 Best Universities.

- The University campus is lush green, spread across 92 acres.
- The University is highly environment conscious and has rich biodiversity with 70% area covered with trees, flowering plants, shrubs, grass and water bodies.
- Campus built-up area is more than 17,50,000 sq. feet with state-of-the-art facilities: air-conditioning lecture theatres/classrooms, labs, libraries, auditoriums, sports complex, medical center, ATM centers, canteens, mess, residential arrangement for students and faculty, including separate hostels for boys and girls accommodating more than 3,500 students.

- There are 17 lecture theatres, 81 classrooms and 40 labs including 8 computer labs with 1322 computers.
- In addition, there are 15 discussion rooms, 6 conference halls, 4 seminar halls, 2 auditoriums and 237 faculty rooms & cubicles.
- Internet bandwidth of 4 Gbps is available across the campus.

Rankings & Accreditations

- ICFAI Business School (IBS), Hyderabad is accredited by the prestigious Association to Advance Collegiate Schools of Business (AACSB). AACSB accreditation is globally synonymous with the highest standards of achievement for business schools. Less than 5% of business schools worldwide have met the rigorous standards for this significant achievement.
- NIRF 40th Rank on Overall basis among Management Institutes all over India (2023)
- Accredited by NAAC with A++ Grade (3.59/4)

Programmes

ICFAI Business School (IBS) (Faculty of Management)

- BBA l BBA 4 yrs with Honors l BBA 4 yrs Honors with Research
- B.Com l B.Com 4 yrs with Honors l B.Com 4 yrs Honors with Research
- MBA l PhD (Full-time & for Working Executives) l Executive MBA l Certificate Courses

ICFAITech (Faculty of Science & Technology)

- B.Tech:

i. CSE

ii. CSE–AI & ML

iii. AI & DS

iv. ECE

v. ME

- B.Sc 3 yrs, B.Sc. 4 yrs with Honors & B.Sc. 4 yrs Honors with Research in (Mathematics, Physics, Comp. Science& Data Analytics)
- BCA
- M.Tech

i. CSE (AI & ML)

ii. Robotics & Automation

iii. DE & CS

- M.Sc (Physics | Chemistry)
- Ph.D in Basic Sciences & Engineering

ICFAI Law School (Faculty of Law)

- BBA-LLB (Hons.)
- BA-LLB (Hons.)
- BAJ-LLB (Hons.)
- LLM
- LLM Professional Program (1 year)
- Ph.D in Law (Full-time & Part-time)
- Certificate Courses

ICFAI School of Architecture

B. Arch

ICFAI School of Social Sciences (Faculty of Social Sciences)

- BA 3 yrs, BA 4 yrs with Honors & BA 4 yrs Honors with Research in (Psychology)
- B.Sc 3 yrs, B.Sc. 4 yrs with Honors & B.Sc. 4 yrs Honors with Research in (Economics)
- MA Economics l Ph.D Economics

Statutory Approvals:

- AICTE granted approval for offering MBA, B.Tech Programmes .
- COA granted approval for offering B.Arch Program.
- BCI granted approval for offering BBA-LLB (Hons) and BA-LLB (Hons) Programmes .

ICFAI Foundation for Higher Education, (Off-Campus Center at Bangalore)

The ICFAI Foundation for Higher Education, Hyderabad, has been permitted by the Ministry of Education, Govt. of India to start an off-campus center at Bangalore, Karnataka.

- The ICFAI Business School (IBS), Bangalore, a constituent of the ICFAI Foundation for Higher Education, Hyderabad will be offering the Integrated BBA-MBA & B.Com-MBA, B.Sc (Data Analytics).

- ICFAI Law School, Bengaluru offers BBA-LLB (Hons) and BAJ-LLB (Hons) Programmes .
- The off-campus center at Bangalore will be launching programmes in different areas at the undergraduate, postgraduate and doctoral levels in future.

ICFAI Business School

ICFAI Business School (Faculty of Management), Hyderabad is a constituent of the ICFAI Foundation for Higher Education (IFHE), declared as a Deemed-to-be University under Section 3 of the UGC Act, 1956. Since its establishment in 1995, IBS has grown impressively and achieved widespread recognition from business and industry, academic circles and professional bodies.

ICFAI Business School (IBS) offers high-quality programmes in different areas of management. IBS is reputed for case-based learning, innovative program design and delivery, quality courseware, personalized instruction, strong industry interface, research, consultancy, publications and MDPs. IBS, Hyderabad has a growing alumni base of over 20,062 who are currently pursuing fast-track careers with 650 plus companies in India and abroad. IBS has vibrant Student clubs for co-curricular & extra-curricular activities focusing on the overall development of the student.

Academic Networking and Collaborations

IBS, Hyderabad strives to ensure that its students receive an international quality learning experience. In this endeavour, IBS, Hyderabad has received accreditations and collaborations from leading national and international institutions and professional bodies.

IBS, Hyderabad is among the top Business Schools to be graded:

- CRISIL National Level Rating - A***
- CRISIL State Level Rating - A***
- ICRA National Level Rating - EB2+ IN
- ICRA State Level Rating - EB1 TSAP

IBS, Hyderabad is a member of:

- The Association to Advance Collegiate Schools of Business (AACSB), USA
- Accreditation Council for Business Schools and Programmes (ACBSP), USA
- The European Foundation for Management
- Development (EFMD), Belgium
- Association of Management Development
- Institutions in South Asia (AMDISA), India

The Approach

IBS has a unique and innovative approach to business education, that focuses on providing the right knowledge, imparting the right skills for enduring success in management careers, and shaping the right attitudes.

Knowledge

As practice precedes theory in business, equal emphasis is placed on concepts and applications. This blending of ideas and actions is achieved through various pedagogic techniques like lectures, case studies, business games, the summer internship program, etc.

Skills

What matters most in business is what one can actually do. Doing well implies mastering and applying the skills - professional, personal and human - required for effective decision-making and execution. IBS trains the students in these skills through a series of soft-skills lab sessions scheduled over the duration of the program. In addition, case-based learning at IBS helps students develop good analytical skills.

Attitudes

A critical attribute for success in life is cultivating the right attitudes like positive thinking, risk-taking, opportunity-seeking, adapting to change, and achieving a proper balance between divergent goals of life. IBS helps students develop the right attitudes and encourages them to grow into balanced and well-rounded individuals capable of taking up leadership positions anywhere in the world.

Business Modelling and Simulation

IBS includes business modelling and simulation games in its curricula for the programmes .

Strong Industry Interface

With experts from a range of leading companies delivering regular guest lectures, and serving as members of various advisory boards.

Placement Training and Guidance

IBS provides Placement Training and Guidance for the students to get better placements.

MBA Student Clubs

Aaina

This club covers two areas: social awareness and women's development. Club Aaina organizes an awareness event for the incoming batch on how to reduce wastage in creative ways, using the 3R paradigm: Reduce, Reuse and Recycle. The club also organizes various drives like "No food wastage drive" and "Donation Drive". Aaina and the Centre for Women Development work together to organize the "National Women Conference" where great speakers share their thoughts on women empowerment. Aaina organizes student visits to various NGOs, old age homes, orphanages and pet shelters around the city. The flagship event of Aaina is a panel discussion called "Aashayein."

ADmire

the official Advertising & Branding Club, imparts the knowledge and skills required for successful advertising and creative branding. The club's flagship event, JUARI brings branding alive by wrapping it in fun and games.

Convergence

The motto of the official HR Club is "With us it is always you first." The club organizes various events which address the needs of the budding HR Professionals.

Diatribe

The Official Rock Band of IBS Hyderabad aims to rejuvenate and recharge students through music.

Dot Club

The Official Techno-Managerial Club of IBS conducts various events in partnership with Finshiksha. It also prepares a timetable for the new batch, conducts introductory fun events, induction classes, online quizzes and KYC sessions. It also conducts technical workshops on a range of topics. The Dot Club is also the technical partner to many other events being organized by other clubs.

Ecobizz

Is the official Economics, Business and Public Policy Club. The most celebrated event of Club Ecobizz is "IBS Mun" where the students attempt to address issues of global significance. Another noteworthy event of the club is "Rajneeti" based on a mini representation of the Indian Political System and is one of its kind in the country.

FinStreet

The Capital Markets Club encourages students to develop sound knowledge of Finance and the Economy. The club consists of three verticals namely, Vriddhi Research, Trividha R.E.D. and IBS Times. Vriddhi Research supports India's 4th largest Student Managed Investment Fund (SMIF) which is managed by IBS Hyderabad students. The vertical also publishes sector and company specific research reports. Trividha R.E.D. is responsible for conducting various events like Over the Counter trading, and financial games and also imparts knowledge in fundamental and technical analysis in the stock markets for investment decisions. IBS Times is the publishing arm of FinStreet.

Gray Matters Club

Broadens the horizon of students by conducting quiz and imparting knowledge in a playful and energising way. The club apprises the students of the momentous happenings of the week around the world.

IBS Analytics Club

Attempts to develop the analytics skills of the students. The Club conducts domain classes related to Business Analytics and also teaches the practical use of analytical tools such as R, Python, SPSS, Google Analytics, etc. The flagship event of the club is Trikona- an analytical fun game. The club also conducts Guest Lectures, Management Discussions and publishes a bimonthly Magazine - 'Analyzia'.

IBS Messenger

Is the central platform for delivering information to all the students within the campus and acts as a digital notice board for IBS Hyderabad. The Club is a promotional partner for the events, guest lectures and flagships of other cubs within IBS Hyderabad. KRIYAVAT hosted by the club is one of the most awaited events of the year. The club shares daily News, company profiles and success stories of business tycoons.

IFHE Blues

This is the official water sport club of IBS. It is responsible for organizing various inter- college and intra-college swimming pool events. It has a collaboration with GHAC for organization of an international event "Triathlon." Other domestic events include water polo, splash dunk. The flagship event of

the club is 'Endurathon' in which participants have to swim for 200 meters followed by 5 kilometres of cycling and 2 kilometres of running.

Infinity Studios

The official Entertainment club provides students with various sources of entertainment through the year. The club organises several events ranging from Bollywood themed quizzes, DJ nights to Videography challenges that emphasise bringing out creativity in all. The club's flagship event is BIOSCOPE where many other clubs/cells/ societies exhibit their unique ideas in the form of a short film. This is followed by the Infinity Studios Award Ceremony.

KAIZEN

Kaizen stands for Continuous Improvement. The club organizes and conducts Conclaves, Panel Discussions, Guest Lectures, Industrial Visit and Events in the domain of Operations Management. Every year, Club Kaizen organizes SANKRIYA (National Operations Fest of IBS Hyderabad), TRI- event (3day Interclub Event), OPERA (Case based event) and a flagship event - BLACKOPS (A Tribute to the Indian Armed Forces).

Maçon

The Official Entrepreneurship Cell conducts incubation classes, design thinking workshops and brainstorming sessions. Many Maçonites have become successful entrepreneurs with start-ups like Shared Mobility, Smart Glove, Riot Enterprise, One Touch crafts, Teerex store, Poster Maniac, Uncover Me, E-Mandi and many more.

Managers without Borders (MWB)

This is a Student Chapter of Managers without Borders- India, a non-governmental organisation (eNGO) under the Andhra Pradesh Societies Registration Act 2001. MWB aims to bridge the gap between various stake holders in the nation-building process by building a wide network of students and professionals. The club believes that the 5 Es - Economy, Energy, Employment, Environment and Entrepreneurship are the pillars for up-lifting world architecture and development. MWB is a Guinness World Record Holder for the Longest Mobile Chain. It is one of the youngest NGOs in South Asia to reach the finals in e-NGO Challenge South Asia Awards in 2015. MWB exposes students to challenging tasks and live projects, research programmes and client servicing.

Maverick

The Official Marketing and Strategy Club helps students to make their mark in the marketing field. The club's motto is "Socho – But Zara Hatke". Maverick organizes Resurge 6.0, which challenges the participants to revive fallen businesses, Impulse 6.0, which gives a real-time sales experience to the participants and Carnival 2020, which is themed around Christmas and Game of Thrones. Maverick also publishes an online edition of their annual magazine Niche 2020.

Money Matters Club (MMC)

This club imparts knowledge in BAFT i.e., Banking, Accounting, Finance & Taxation. The club also publishes its very own "News Bulletin" and "Gyanpath" with a reach of over 50,000 readers all over the world. MMC conducts classes called "Gyandose" especially for Juniors based on domain of Accounting & Financial Management. Their Flagship 3-day event is an online quiz called "REDUX."

Moving Mannequins (MM)

Is the Official Fashion Society. This is an amalgamation of style, art, creativity and glamour. The club's mission is to merge fashion with management, from designing garments to choreography, the moves of models, to walking the ramp and owning it. MM has won prizes in leading B-School fests across the country.

Nazaria

The Official Photography Club enables students to pursue their passion of photography in different ways. Members of the club click more than 30,000 pictures per year. The club hosts two major annual events FRAMES, a photo exhibition of pictures clicked by the members of the club and "Spotlight." The club consists of Tasveer, the technical wing, and a client servicing wing named Nstudios which enables budding photographers to show their talent to the outer world.

Newswire

The Official News and Media Portal projects the dynamic activities of the IBS campus in a mindful and sublime way. The mission is to work in tandem with other clubs/cells/chapters/committees/societies to enable students to develop a deeper understanding and appreciation of the events happening in and around the college campus. The Club has successfully conducted several interviews of eminent dignitaries visiting the campus and posted them on the IBS social media handles.

Prakriti

The Official Nature and Adventure club, aims at the implementation of sustainable solutions, through nature, conservation and adventure related experiences. Club Prakriti is also into adventure sports like trekking, rappelling, camping and cycling. Snake- o-pedia is the flagship event in which an NGO called "Friends of Snakes Society" displays different types of venomous snakes and non-venomous snakes. The club also organises plantation drives. Devil's circuit, scavenger hunt, rush hour and maze runner. Human Foosball and Footpool are the most loved fun events conducted by Prakriti.

Prayaas

The Official Inter B-School and Corporate Events Club enables students to represent IBS Hyderabad at different B-School and Corporate events. Prayaas has been judged the Best Managed Club for the last three years. 'C-Suite' is the flagship event and involves a boardroom challenge for students. Another important event is 'Pecunia' – an online national-level Inter BSchool competition.

Samavesh

The Official Cultural Club of IBS, with a strength of 300 members has been celebrating cultural diversity for almost a decade now. Its flagship event is Sanskriti. The theme of the event is unity in diversity. Starting from Aaghaaz and Independence Day, then Dandiya Night and Jashn-e-Diwali, these festivals are celebrated by one and all.

Sankalp

The Official Leadership and Nation Building club motivates members to work towards the betterment of society as a whole. The activities include CSR activities like awareness programmes , guest lectures, workshops, blood donation campaigns. The club also organizes 'Megistanos - the Best Manager Hunt' which is the flagship event of IBS inter-college fest 'Trishna.' It also organizes other major events like Magnate and Drishti to enable students develop managerial skills. Club Sankalp was named the Best Managed Club of IBS Hyderabad for the academic years 2018-19, 2019-20 & 2020-21.

SpeakUp

The Official Public Speaking, Soft Skills and Debating Club helps students develop their public speaking and other communication skills and makes them ready for the corporate world. The Club organizes the 'IBS Dialogue' which officially introduces all the clubs to the freshers. The flagship event of the club is The Great Debate.

Team V.A.P.S

Is the official sports and fitness club formed in 2005 and manages all the sports activities on the campus, including International Yoga Day, Racqattack, Azaadi Match for women, etc. VAPS Super League (VSL) is one of the largest football tournaments in the college. IPL (ICFAI Premier League) is the ultimate cricket championship. The flagship event of VAPS is AAVEG which is a national-level B-school sports fest.

XpressionZ

The official drama club motivates students to speak up on critical social issues and contribute their bit towards change. The flagship event of the club is "MALANG", a platform where members from different clubs showcase their hidden talent to honor the stage. XpressionZ Theatre Society has won Street Play and Stage Play Competitions conducted by top B-Schools. The club also organizes a National Level Street Play Competition featuring other reputed BSchools.

BBA Student Clubs

Club Aura

Aura is dedicated to celebrating and promoting the rich diversity of cultures with an aim to foster creativity and cultural exchange among students, providing a platform for artistic expression and personal growth through a vibrant array of events. Aura organizes various exciting cultural activities which bring students together and help them bond better. Some of the major events organized by Aura are Ethic day, Thrithi, Farewell etc.

Club Archon

Club Archon is an undergraduate business, career, and personality development club of IBS Hyderabad. It aims to develop skills such as public speaking, leadership skills, administrative skills, among students and help them grow into effective leaders of tomorrow. Archon's vision is to cultivate a dynamic and inclusive community of aspiring business leaders who are equipped with the knowledge, skills, and ethical values necessary for success in the rapidly evolving business landscape. Some of the major events organised by Archon are Board of reasons, Cazar, Talk a thon. Marketverse and workshops which focus on managerial development and skill improvement.

Club Arena

It is the official undergraduate sports club of IBS Hyderabad. It provides several opportunities for aspiring athletes. Through sports, Arena aspires to inculcate self-control, discipline, management and problem-solving abilities that will promote overall growth and development among students. Major events include Olympia and Intercollege sports competitions.

Club Eunoia

Club Eunoia aims to serve as a platform that encourages innovation, fosters collaboration, and provides resources to students who are interested in exploring the world of entrepreneurship. The vision of Eunoia is to create an inclusive environment where students from diverse backgrounds can come together to share ideas, learn from experienced entrepreneurs, and gain practical insights into starting and scaling their own ventures. Eunoia organizes startup competitions, interactions with industry experts, and venture capitalists, to provide students with exposure to real-world experiences and insights. Major events organized by Eunoia include Entrexpo 2.0, Panel discussions, MUN and EPOCH.

Club Ignite

Club Ignite focuses on educating students on topics that will bring change for the betterment of society by spreading awareness on much-needed environmental, social, and general subjects. Its vision is to inspire students to become socially aware individuals and raise awareness of social issues and work to resolve them. Major events organized by Club Ignite include EcoFlow-social awareness seminars, Blood donation camps, EcoClick, IKSHANA, Colours and Concerts – physical and mental health improvement programmes .

Club Fintech Cell

The FinTech cell empowers students with the knowledge and skills required to navigate the dynamic world of financial technology. It helps to keep students updated of the latest trends in blockchain, digital payments, and more. FinTech cell's vision is to foster a community of forward- thinking professionals and thought leaders who will drive innovation in the financial sector. Major events organized by Club Fintech Cell include, Stock Market Simulations, guest lectures, and fintech games.

Club Verba Viva

Verba Viva, a literary and communications club, aims to create a vibrant community where students from diverse backgrounds come together to celebrate, discuss, debate and improve their writing and speaking skills. Its vision is to encourage public speaking, reading and writing, creating an inclusive space for individuals to explore the transformative power of literature. Major events include Open mic, a Business writing workshop, and literary fest.

Club Rock and Roll

Rock and Roll Club creates a space where students can explore various dance styles, from contemporary to hip-hop and traditional. It provides opportunities for skill development through workshops, dance classes, and guest instructor sessions. It organizes dance performances and events to showcase members' talents and contribute to the campus cultural scene. Its vision is to foster a vibrant and inclusive dance community within and outside the college where students can express themselves through various dance forms, develop their skills. Major events include different types of dance workshops.

Alumni Relations Cell –

Alumni Relations Cell (ARC) works toward ensuring the overall benefit of the alumni as well as the students. ARC helps the alumni in staying connected with current and old students. ARC conducts events where students and alumni get a chance to share their experiences and impart the knowledge they have acquired to the next generation of IBS students. ARC's vision is to create a vibrant and mutually beneficial alumni network that empowers current students to achieve their academic and professional goals, while simultaneously enriching the lives of alumni through opportunities for engagement, mentorship, and professional development. Major events include Alumni Talks and Alumni Reunion.

Placement Cell

Placement Cell helps students connect with employers. It works with leading companies to facilitate seamless placements, while also organizing corporate events that equip students with industry insights and networking opportunities. The Placement Cell aims to ensure that the graduates are not only job-ready but also armed to excel in their chosen fields. Its mission is to facilitate a smooth transition from academia to the professional world by offering comprehensive

placement support. Major events include Time Trap, Business Conclave, Industrial Tour, Chalk Talk and Internship Fair- Esperanza.

IcfaiTech

IcfaiTech (Faculty of Science & Technology) is a constituent of the ICFAI Foundation for Higher Education (IFHE). IcfaiTech is located in a scenic campus with smart board classrooms, Learning Resource Center, library facilities, e-resources, well-equipped Laboratories, Computing Resource Center, hostels, sports and recreational facilities.

Highlights

- Inter-disciplinary broad-based curriculum
- Academic flexibilities
- Choice based credit system
- Faculty supervised academically integrated
- Internship for 7 ½ months
- Highly competent faculty
- State-of-the-art campus
- Well-equipped laboratories
- Language laboratory
- Well-orchestrated soft skills program
- Student Clubs for professional development
- Placements assistance

Learning Resource Center (LRC)

IcfaiTech has a well-stocked library containing reference materials, magazines, journals, and books of national and international publications. IcfaiTech has a digital library consisting of various databases, namely, J-Gate, EBSCO, Springer, IEEE, NPTEL & SWAYAM etc. These databases facilitate the research activities of students and faculty members.

Holistic Development

IcfaiTech provides soft skills training, autonomous learning opportunities and projects to the students making them professionally competent. IcfaiTech facilitates extra-curricular and co-curricular activities through students' clubs to make the students well-rounded personalities.

Internship Program

The Internship Program is a unique and integral part of the undergraduate and postgraduate degree programmes offered by IcfaiTech, Hyderabad. The real-time work experience prepares the students to confront diverse challenges in their professional life. A controlled simulation of the real- life adopted at IcfaiTech, Hyderabad creates the circumstances and a formal method whereby the educational institution is linked with the industrial units, scientific laboratories, public sector undertakings, manufacturing units, and other organizations.

Power Skills

This is a unique programme embedded in the curriculum of IcfaiTech. This course commences from the 2nd year for all the students, and this is a credit-based course, where students are taught skills required for working as an intern as well as getting placed in an organisation after four years of B.Tech course. The training of students is carried out in the areas of 'teamwork', 'problem solving', 'communication', 'adaptability' etc.

At IcfaiTech, Hyderabad, the students undertake two Internship Programmes during their four-year B.Tech course at a professional location. Each of the Internship Programmes lasts for 30 weeks where the students and faculty get involved in working on providing professional solutions to the industries.

IcfaiTech Students Clubs

Asana Club

Asana Club, the esteemed hub of creativity and well-being within the Faculty of Science and Technology (FST), stands as a beacon of dynamic expression and holistic health. Since its establishment in 2019, Asana Club has been dedicated to fostering creativity and promoting well-being among its members. Comprising four vibrant domains - Art and Crafts, Videography including Short Film making, Yoga, and Fitness - Asana Club provides unique opportunities for members to explore their interests, develop their skills, and contribute to a supportive and enriching environment. Beyond its regular activities, Asana Club hosts flagship events such as Ethnic Day celebrations and an annual blood donation camp, embodying its commitment to diversity, community engagement, and making a positive impact beyond campus borders. Join us in shaping the future of college experiences through creativity and wellness at Asana Club.

Astitva Club

Astitva, the official music club of ICFAI Tech,

is a club where diversity in music is cherished and celebrated. Embracing languages like Telugu, Hindi, and English, its repertoire spans genres from pop and Carnatic to rock and fusion. Through electrifying live performances, innovative compositions, and collaborative projects, Astitva offers a platform for musicians and vocalists to explore their passion, refine their talents, and connect with a community of like-minded artists. Astitva Club conducts jamming sessions where the club members and audience sing and celebrate music together. Its flagship event, Magnum Opus, held yearly, provides a platform for members to express themselves and their talent through their music, as well as conduct musical games that make the event interactive with the audience while also imparting musical knowledge. The club has numerous bands that specialize in specific genres and compete in intercollege tournaments. Astitva is not just a club, it's a safe house where people with a passion for music come together, and jam to their favourites without any judgement.

Dansation Club

Dansation, the premier dance club of ICFAI Tech, is a vibrant community that celebrates the diversity of dance forms and styles. From Bollywood to contemporary, salsa to hip-hop, it embraces a multitude of genres and cultures, creating a dynamic space for dancers of all backgrounds to thrive. More than just a performance group, Dansation fosters creativity and innovation, encouraging members to choreograph original routines and showcase their talents on stage. Through exhilarating dance performances, collaborative projects, and workshops, Dansation provides a platform for dancers to express themselves, refine their skills, and forge lasting connections with fellow enthusiasts. Dansation Club hosts regular dance sessions where members and audiences alike come together to groove, learn, and revel in the joy of movement. Its signature event, Intensity, held annually, showcases the diverse talents of its members and invites the audience to participate in interactive dance challenges and workshops, fostering a sense of community and shared passion for dance. Dansation isn't just a club; it's a welcoming haven where individuals with a love for dance can come together, express themselves freely, and dance to their heart's content without fear of judgment.

Game Development Club (GDC)

GDC is a community of passionate individuals interested in creating engaging and immersive video games. Its primary motive is to bring together like-minded individuals to collaborate, learn and share their skills in game development. As a member of the club, one will have access to various resources, including workshops, seminars, and networking events, which are designed to help learn new skills, stay updated with the latest trends in the industry, and build a professional network. The Club aims to create a collaborative environment where members can work together to create video games that are not only entertaining but also have a positive impact on society. GDC encourages members to bring their unique perspectives and ideas to the table, as it believes diversity in thinking is essential to creating innovative games that resonate with a broad audience.

IcfaiTech Entrepreneurship Club (ITEC)

ITEC aims to introduce students to a career in entrepreneurship by helping in developing entrepreneurial knowledge and consulting skills through Workshops, Seminars, and Boot-camps, etc. ITEC believes in inculcating, promoting, and incubating innovative ideas that have the potential to change the world. The club aims at encouraging students toward entrepreneurial thinking and supporting them in Entrepreneurship and Start-Up activities. ITEC helps students in setting up their ventures with the help of IFHE'S Institution's Innovation Cell (IIC).

Litgalor Literature Club

Litgalor, the literature club of ICFAI tech, aims to promote the expression of literature and creativity amongst students through a variety of engaging events. Litgalor provides a platform for students to explore storytelling, debates, poetry and various forms of literary expression. Litgalor organizes a captivating storytelling competition called "Linelore" where competitors share their narratives, weaving together tales within a line. These sessions showcase the diverse storytelling abilities within the college and encourage students to hone their skills in narrative craft. Additionally, the club facilitates thought-provoking debates on literary themes and contemporary issues, sparking intellectual discourse and promoting critical thinking among participants. These debates serve as a forum for students to express their opinions, challenge ideas, and engage in constructive dialogue while creating awareness on various topics. As Litgalor continues to thrive, it remains committed to its mission of fostering a deeper appreciation for literature and nurturing the creative talents of tech students. The club

continues to inspire and enrich ICFAI tech through its diverse range of events and activities.

Paritantra Club

The vision of Paritantra Club is to provide a comprehensive platform to students for deriving effective solutions to environmental issues through innovative and efficient projects. Its mission is to focus on creating technological solutions to environmental issues through various projects and activities. It also tries to come up with the latest ideas and projects that can add luxury to human life while at the same time ensuring that mankind and environment coexist.

The Spotlight Club

The Performing Arts & Creative Expression Club is a dynamic community where the art of acting, the flair of fashion, and the magic of makeup converge to create unparalleled theatrical experiences. The club is a melting pot of talent, ambition, and innovation. The club is committed to cultivating a vibrant community of artists who are passionate about exploring the depths of their creativity. Its mission is to empower students across acting, fashion, and makeup domains to develop their skills, showcase their talents, and make an indelible impact on and off stage.

Yantrikee Club

Yantrikee club, the official technical club of icfai tech, focuses on developing the technical skills of students. The club aims at improving the technical skills of students through workshops, coding competitions, etc. It makes students aware of the latest technologies in the market and their usefulness. The club ensures that students always learn new technologies. The club takes inputs from students on a regular basis.

ICFAI Law School

The Faculty of Law commonly known as ICFAI Law School is a constituent unit of the ICFAI Foundation for Higher Education, located in the lush green environment of the campus. The ICFAI Law School endeavors with diversified teaching methodologies, internships, industrial interface and networking with professionals, excellent placements and career-oriented training, class of art infrastructure facilities and learning environment, throw out an open platform for students of all walks of life to acquire required knowledge and accomplish their goals. It provides a blend of theory and practice, law, management, humanities and technology in 360 degrees learning model to equip the students for 21st century challenges. It also strives to inculcate the habit of continuous learning, promote social causes, and implant advocacy skillsets and exponential professional expertise.

Highlights

- Packaged programmes , a blend of theory and practice.
- Theory through class lectures and practice through project work, case analysis, internships, and interaction with experts and professionals.
- Research orientation and continuing education
- Strong, in-depth, dynamic and quality curriculum
- Diversified evaluation components
- Well defined selection process
- Prepares to very widespread career opportunities
- Exposure to national and international subject experts and professionals
- Developing and sharpening the soft skill sets
- Equipping the students towards the problem-solving mode
- Thought leadership and teamwork
- Experienced teachers and resource persons from academia, industry and profession
- Internships with law firms and well-known insolvency resolution professionals
- Learning with live projects
- Special focus on advocacy and awareness programmes
- Participation and organizing the national and international Seminars, Conferences, Workshops and Conclaves
- Use important case studies based upon the decided insolvency projects as one of the pedagogies of the teaching,
- Audio-visual tools and use of recorded videos in the teaching
- Continuous series of expert lectures and expert series of lectures.
- Regular activities such as simulations, competitions.
- Participation in life projects when working with law firms or insolvency professionals.

Student Clubs

Moot Court Society

Moot Court Society is a spinal cord of clinical education in law as it provides practical learning and on-job training. The Moot Court Society conducts competitions and selects the team of students.

The winning team will be directed to participate in National / International Level Moot Court Competitions being organized by various Law Schools / Universities. It will be a platform for 360º learning of 21st century skillsets required for new generation lawyers who take challenges of complicated or composite nature of litigations cropping up in the current socio-legal and political environment.

FRIEDEN (ADR Club)

In the present contemporary legal profession alternative dispute resolution techniques have gained its unquestionable strata in providing quicker justice to the public in need. Considering the above fact the ICFAI Law School has initiated an ADR club being operated by the students under the guidance of a senior faculty to instill soft and hard skills. The ADR club promotes training in the fastest resolution methods in place of litigation and embodies various initiatives such as Client Counselling, Arbitration, Mediation, Negotiation skills and Online Dispute Resolution methods, which helps the students to improve communication and oratory skills by conducting intra and inter University ADR competitions. Our students have won good number of National competitions and laid a path for the success of forth coming students.

Debate Society (Vox Populi)

The debate club aims to enrich students with knowledge regarding certain grey areas of law. It aims to have a deep and sound discussion on certain challenging topics which are disputable. The Debate Society of ICFAI believes that debate is a venue of reasoned discussion from two opposing sides on a well-defined context, where parties deliver their arguments in an organized fashion with the primary function of convincing and persuading the audience to give merit on the contention of their cause. Competitions are conducted internally and also nationwide to have enriching experience throughout the year.

Legal Aid Society

The Legal Aid Club of ICFAI Law School, Hyderabad, provides legal aid to those who cannot afford professional legal services, and we want to champion those public causes for which support is lacking. The Club has conducted many legal aid services, consumer protection camps, and legal awareness programmes in the nearby villages since its inception in 2015.

Recently, the legal aid club, in collaboration with the District Legal Services Authority, RR District, organized a legal awareness program on child welfare and disabled assistance/ aid in the Fathepur village, Sankarpally Mandal, RR district, and almost 25 disabled persons benefited and became aware of their rights.

Knight Rangers (Sports Club)

Knight Rangers, sports club encourage the students to participate in various games and sports events / competitions organized by various law schools / universities throughout India. Our students do have exceptional skills in cricket, football, basketball, throw ball and other individual events like shooting, archery, squash, shuttle, marathon and Trilithon activities. The Club conducts intra Law school and inter University sports and games competition. Opportunity is provided for the student to be a part of any one of the games / sports events and encourage them to lead the teams.

Mirakhi (Cultural Club)

Cultural clubs typically focus on celebrating and promoting diversity through various artistic expressions, such as music, dance, and other various activities. The club provides a platform for students to explore and share their own cultural heritage while learning about others in a supportive and inclusive environment. Participation in a cultural club can help students to develop cross- cultural communication skills, empathy, and a broader worldview.

Erga Literarium (Literary Club)

Erga Literarium, The Literature and Magazine club of ICFAI Law School, Hyderabad. It publishes a bi-monthly magazine, The Student. It is a student run magazine where various articles, poems and stories are written by the students and students also take interviews of legal professionals. Students also host various literary events. The Book Club working under the Aegis of the Literary Club hosts various intra-college competitions as well.

GAIA (Environmental Club)

The GAIA club works for the protection of environment. It has conducted many camps in schools

and colleges for promoting environmental awareness. The students have made paper dustbins and also jute nets which are environmental friendly. The students during Sankranti festival bring awareness how birds are being affected by the kites.

Photography Club

The photography club of the ICFAI Law School Hyderabad has been established to promote photography and creativity amongst the students of the law school.

The club regularly organises photography competitions for the students and faculty of the law school. The winning entries are put on public display and published in the college magazine. Overall, the club is a retreat for photographers and an avenue to display their talent. The club has more than a hundred student members. The club also collaborates in flagship events of the ICFAI Law School such as LexKnot!

Entrepreneurship and Innovation Club "BizLex"

"BIZLEX" carries the pre-incubation/incubation activities for the budding ideas of institute's bright minds. This club is quite active in bringing the business leaders to share their paths or success through weekly webinars. Apart from these the ideas of the students which are at seed level are nurtured by regular mentoring and grown into incubation level. Support with respect to patent filing, market entry is also provided. The club conducts regular business-oriented competitions like marketing solution competition, and business plan competitions.

ICFAI School of Architecture

The ICFAI School of Architecture (ISArch) is a constituent of the ICFAI Foundation for Higher Education. ISArch is established in 2018 with the approval from Council of Architecture (COA), New Delhi. ISArch offers five-year full time Bachelor of Architecture (B.Arch.) Degree Program which trains the students to emerge as professional Architects.

The aim is to make the school a center for excellence in Architecture, through a wholesome approach in Architectural pedagogy. At ISArch, we strongly believe that teaching should focus on having the student achieve an awareness of ideas and values which needs to be focused and realized. The idea is to expose the student to various dimensions in Architecture, and to support them with the latest technology and infrastructure, that enables them to express themselves.

Highlights

An All-Inclusive Approach: The three-fold approach of Theory, Practise and Recreation is to create an all- inclusive experience of learning at ISArch comprising of Vocational Skill Training and Transferable Skills.

Ready for Global Exposure: ISArch has strong collaborative links with architectural practices and environmental design consultants in India and abroad; experts in the field are often invited to deliver lectures, tutorials, and participate in design reviews for students.

Reality in Studio: ISArch enables and aims at creating in-studio experiments of real-time problems and possible challenges evolving in scale and complexity.

To Travel & Learn: ISArch enjoys strong collaborative links with overseas institutions. The students have the opportunity to attend conferences, seminars and training courses both in India and abroad.

Industrial Know-how: The program offers cross-disciplinary interaction and debate with experts from Industry. The 'Material Museum' is constantly updated preceded by an expert talk to keep the students engaged and refreshed with the latest products and technologies in the field.

Internship Programmes : ISArch boosts the students' knowledge by letting them take up Summer Internships and Practical Training to improve their field experience thereby making them professionally competent.

Emphasis on Research Skills Development: Curriculum at ISArch emphasises imparting research aptitude to students in order to instill scientific inquiry in them.

Architecture Readiness: The curriculum at ISArch emphasizes on skill-development courses to broaden career horizon, development of critical thinking skills, development of interpersonal communication and professional presentation skills, cross-disciplinary interaction and debate, work with professionals from other

industrial sectors and sharing experience, as well as enhancing the professional network of contacts and support.

MOUs: ISArch had signed an MoUs with renowned organizations like USGBC (United States Green Building Council), India in 2019 and the Assocham, India in 2020, Plitecnico di Milano, Italy in 2021 and with Boston Architectural College, USA in 2022 for students to update themselves with on latest trends such as green rating, sustainable architecture, carbon free environments, net zero concepts, conservation techniques and many other aspects of climate change problems, etc. Experts on these subjects are teaching students to understand how to minimize the problems the world is facing in terms of environment and ecology.

Laboratories: A Climatology Lab was established in 2018 at ISArch, a first of its kind among Architecture Schools. A Material Museum is being established by ISArch. Also, a Model Making Lab is in the process of establishing with 3D Printers.

Student Clubs

Archi Quest

The Archi Quest Student Club at ICFAI School of Architecture conducts various events aimed at enriching the experiences of architecture students. Through a variety of workshops and screenings, the club fosters creativity, learning, and camaraderie among its members. The two major events organized by the club are Architectural Photography Workshop and Archi-Quest Movie Club Screening.

The primary objective of the Architectural Photography Workshop is to integrate principles of photography, composition, and editing into the daily practices of architectural students. It aims to equip students with essential photography skills applicable to site visits and case studies. Students gain practical experience in handling photography techniques through hands-on learning and outdoor experimentation. Exposure to architectural photography principles enhances students' ability to capture and document architectural elements effectively. The Movie Club Screening aims to provide an educational platform for architecture students to explore cultural and architectural themes presented in films. Additionally, it fosters networking and collaboration opportunities among students with a shared interest in film and design.

UTSAV

The UTSAV Student Club at ISArch conducts sports and cultural activities, bringing together students from all batches to showcase their talents. The club conducts an Annual Sports and Cultural Fest. The primary objective of the Fest is to bring students together and provide a platform to showcase their talents in sports, art, and culture. It aims to foster a spirit of camaraderie and healthy competition among participants. Some of the sport events conducted are cricket, throw ball, tug of war, badminton, chess, carom, and table tennis. The cultural events include dance performances, singing, and guitar performance.

ICFAI School of Social Sciences

ICFAI School of Social Sciences is a constituent of the ICFAI Foundation for Higher Education (IFHE). It seeks to be recognized nationally and internationally as a fine example of an institution producing young talent with immense potential for (a) demonstrating transformative impacts on Indian society to bring about changes that will align with the ideals of the constitution of India, and (b) influencing global conventions focused on realizing sustainability, through persistent and dedicated efforts in education, training, research, and extending intellectual services.

The School offers distinctive, high value education programmes at the under-graduate and post-graduate levels, and promote high quality research at the master's and doctoral degree levels.

Currently, the Department of Economics offers a 3-year BA undergraduate, a 2-year MA postgraduate degree programmes in Economics, and a doctoral research program leading to a PhD in Economics.

Towards internationalizing higher education, a 4-year BA Economics program leading to an undergraduate degree with Honors or Honors with Research is offered from the 2023-24 academic year.

Going forward, the School proposes to offer dual- degree programmes leading to BA in Economics with Psychology (Behavioural Economics), or Law, or Data Analytics, or Management. Similarly, it plans to

come up with innovative programmes in other fields of Social Sciences such as Psychology, Political Science, Public Policy/Administration, Sociology, Social Work, Sustainability Studies, etc.

Highlights

- A unique program with the proper blend of Economics, Mathematics, Statistics and Computer Science
- Faculty-supervised Internship opportunities
- Language labs
- Autonomous learning Opportunities
- Scope for higher studies in India and abroad
- Course on Thesis writing
- Elective streams such as Agricultural Economics, Financial Economics, Health Economics, Environmental Economics, Law and Economics, Entrepreneurship and Data Science
- Students will go through course work including Doctoral Seminars in advanced topics in microeconomics, macroeconomics, theory of finance, economic growth and development, topics in public policy etc
- Students will do a Summer Research Project in their area of interest under the guidance of a mentor and will present a research seminar before he/she takes the Ph.D. qualifying exam.
- The objective of the Summer Research Project is to ensure that the student is exposed to research writing leading to a future publication. This project is evaluated and graded as Satisfactory/ Unsatisfactory.

ICFAI School of Social Sciences

Student Clubs

Y.E.S. Club - The Young Economists Society (Y.E.S.) Club at Faculty of Social Sciences (FOSS) is committed to providing students with enriching experiences and fostering a deep interest in economics and related fields. Through a diverse range of events and activities, the Y.E.S. Club creates a dynamic learning environment for its members. The Society conducts both academic and leisurely activities. They include essay/article writing competitions, debates, group discussions, jovial quizzes, and games as well as artistically creative events, competitions, and research activities.

Case-Based Learning

Pioneering Case Research and Pedagogy

A case, a training tool in business schools and organizations, is a documented study of real-life situations. Learners are encouraged to analyse the prescribed cases and present their perspectives or solutions, supported by sound reasoning or assumptions.

The Case Research Centre (CRC), founded by late Prof. N. J. Yasaswy during the 1990s, is a Centre of Excellence that is involved in developing contemporary cases and promoting case pedagogy, both nationally and internationally. During the late

1990s, ICFAI pioneered the case pedagogy and pursued case development to support this initiative. CRC was formally institutionalized in the year 2000, with the vision of building one of the world's top case development centres in India. Consequently, case development activities were initiated at several centres across ICFAI institutions. During the period 2001 to 2010, a large repository of cases was created. Effective from 2010, the case development initiatives were consolidated at the ICFAI Foundation for Higher Education. The Centre has now established itself as one of the top case developers in the world; both in terms of the number of cases developed and the number of cases used by business schools and organizations. In 2021, The Case Centre, the independent home of the case method based in the United Kingdom, has recognised CRC as a Centre of Excellence in case study research, writing and production.

Case Research

As of 2022, the CRC is one of the top case development centres in the world with a repository of more than 7,000 cases (Exhibit I: Cases developed 2017-2021). CRC is the central source of cases for all the ICFAI group institutions, including the open distance learning and online programmes . The case studies developed by the center are known for their high-quality standards and cover diverse areas. The focus areas for case development include business strategy, marketing, finance, human resource management, operations & information technology, business ethics & corporate governance, sustainable development, economics, healthcare management, among others. CRC has published many award-winning cases addressing sustainable development goals (SDGs) such as No Poverty, Quality Education, Gender Equality,

Affordable and Clean Energy, Reduced Inequalities, Sustainable Cities and Communities, Responsible Consumption and Production, and Life Below Water (Exhibit II: Cases on SDGs). Many CRC cases have been translated into other languages such as Spanish, Russian, French, German, Chinese, Serbian and Portuguese.

Digitization of Cases

With online learning gaining traction, around 2,500 cases have been converted into digital flipbook format.

Access through Exclusive Portal

CRC has designed and developed an exclusive portal (http://ibscases. org/) for providing online access for cases to students and faculty members.

Comic Book Cases

CRC has also designed cases as graphic novels, which have attracted the attention of educators nationally and internationally.

Multimedia Cases

These are cases presented through a combination of media such as, video, written text, spreadsheets and/ or any other medium deemed to be suitable for that particular case.

Teaching Notes

All cases developed by CRC include basic teaching notes with teaching objectives, target audience and discussion questions. For selected cases, detailed and elaborate teaching notes are prepared along with an analysis of the questions. These teaching notes aid the faculty in classroom discussions and in management development programmes .

Case Volumes

CRC has published several case volumes on specific themes of various disciplines which are purchased by libraries all over the country and abroad.

Reprint Services

CRC provides reprint permissions to publishers of textbooks to print cases as support material for classroom discussions. Several authors and international publishers include these cases in their textbooks.

Training & Development Programmes

CRC conducts training programmes for faculty and research scholars, both in India and abroad, on case writing and case pedagogy to help institutions practice case-based learning. A student handbook is also available to orient the students to the case method.

Workshops, FDPs, MDPs & Conferences

CRC conducts workshops/ FDPs/ MDPs in business schools and organizations regularly. National Academy of Defence Production, TAPMI, IIM Ranchi, VIT Vellore, Banasthali Vidyapith, NI-MSME, SBI, etc. are notable organizations where CRC has conducted workshops.

Internationally, members of CRC have been involved as facilitators/chairpersons/ organizers in conducting professional development workshops (PDW) at prestigious AOM Annual Meetings in Boston, Philadelphia, Orlando, Anaheim, Vancouver, Atlanta, and Chicago as well at the 38th Strategic Management Society Annual Conference in Paris.

CRC organizes an International Case Study Conference annually, to promote the use of case method in the pedagogy and provide a platform for case authors from India and abroad to facilitate collaboration. CRC has also collaborated with institutions such as The Case Centre, AMDISA, Uttara University Malaysia, etc. for organizing such annual conferences.

Case Journal

CRC provides editorial support for the publication of the quarterly journal 'Case Folio-The IUP Journal of Management Case Studies' which is published by ICFAI University Press.

Case Repository

All CRC cases are included in the repository at The Case Centre (formerly European Case Clearing House), which acts as a distribution channel. In addition, CRC also distributes cases directly through its own websites icmrindia.org and ibscdc.org.

Institutional Licensing

CRC enters into licensing arrangement with institutions to provide access to cases in the repository.

User Profile

More than 900 B-schools from over 90 countries use the CRC cases, with about 90% of them from outside India (mostly from North America and Europe). Institutions using CRC cases include London Business School, London School of Economics, Oxford Said

Business School, Cambridge Judge Business School, HEC Paris, HEC Montreal, SDA Bocconi, etc. In India, top schools such as IIMs, TAPMI, ISB, SP Jain, and Symbiosis, among others, use CRC case studies. Other organizations using these cases include McKinsey, Boston Consulting Group, KPMG, and Tata Management Training Centre.

Thought Leadership

CRC plays a key role in building the case method community in various ways:

- Editorial Board Member, Case Research Journal (#1 case journal published by the North American Case Research Association)
- Editorial Advisory Member, The CASE Journal (official journal of The CASE Association, published by Emerald Group, UK)
- Editorial Advisory Member, Emerald Emerging Market Case Studies (published by Emerald Group, UK)
- Organizer, Facilitator of Professional Development Workshops - Academy of Management Annual Meetings
- Jury Member, Oikos International (Switzerland)
- Judging panel member for The Case Centre
- Annual Competitions
- Judge for EFMD Case Writing Competition

Accolades, Awards & International Recognition

In addition to the global client base, the prizes and awards that CRC receives internationally are a testimony to its quality and performance. In 2018, the Director of CRC, the late Dr. Debapratim Purkayastha, received the 'Faculty Research Award' for his contributions in the field of Management. Union Minister of HRD, Sri Prakash Javadekar, gave away the award in the presence of Prof. Anil D. Sahasrabudhe, Chairman, AICTE. This award has been instituted by Careers360 to recognize the efforts of India's brightest minds in the field of academic research. The late Dr. Purkayastha also won the 'Outstanding Contribution to the Case Method Award' in 2019, from the executive committee of The Case Centre, UK, which comprised eminent educators from across the world. This award has been received, till now, only by a handful of faculty members from top schools like Harvard, INSEAD, IMD, London Business School, and Ivey School of Business.

IBS CRC has seven of its authors featuring in The Case Centre's Top 50 Bestselling Case Authors' List for 2020-21. This is next only to Harvard Business School with nine authors. The Top Three bestselling authors are from IBS CRC. Other authors in the Top 50 list include professors from Harvard, INSEAD, IMD, Stanford, etc.

Till 2023, CRC has won more than 150 national and international awards and prizes from institutions such as the Academy of Management (AOM), Association of MBAs (AMBA), The Central and Eastern European Management Development Association (CEEMAN), European Foundation for Management Development (EFMD), Emerald Group Publishing, North American Case Research Association (NACRA), oikos International (Switzerland), The Case Centre UK, John Molson School of Business (University of Concordia, Canada), AESE Business School (Portugal), Project Management Institute (USA), Syracuse University (USA), USASBE - Baylor (USA) and CEIBS (China).

Collaborations

CRC has collaborated with The Hindu Business Line as Knowledge Partner for the Case Competition for students in management institutions across India which was branded as IBS BLOC Case Competition.

CRC enjoys competence in developing high quality case studies. It has global presence and is recognized as a leading contributor of cases globally. CRC cases are not only well recognized among international publishers but also widely accepted by prominent international and Indian B-Schools.

Case Pedagogy

In the real world of business, intuition, critical/ lateral thinking, experimentation and the ability to take decisions without sufficient information, are the capabilities managers need to succeed. Cases go a long way in developing such capabilities. Research reveals that roughly 10% of learning happens through listening to a teacher, about 20% through mentoring and coaching and 70% or more happens through learning by doing. Compared to lectures, case discussions come much closer to learning by doing.

A case is nothing, but a management situation written in a simple, narrative style. It provides some but not all the relevant facts. Students must make necessary assumptions and solve the problem at hand.

Cases help students in understanding how to ask the right questions and develop a better conceptual understanding of the problem at hand. Students learn how to create structure in an unstructured situation. They understand that behavioral and emotional issues are important even while seemingly technical decisions are involved.

The case method generates a high degree of student involvement in the learning process. Students come well prepared to each class after having thoroughly analyzed the case. The ownership for learning is passed from the teacher to the students.

By going through some 300 odd cases during their two-year MBA program, the students learn to think, analyze and act like professional managers. They learn from both the successes and failures of the protagonists in different cases. At the end of each case discussion, the students benefit enormously by asking themselves: "What did I learn?" and "How does the situation and the lessons I have learnt, relate to other situations?"

Case studies are also used extensively in the undergraduate programmes of the University.

Placements

ICFAI Business School (IBS) has an impeccable track record of achieving good placements year on year. The best companies visit the campus every year. To uphold this tradition, we at IBS constantly upgrade our curriculum and pedagogy to keep abreast of the changing needs of business. The students are instilled with a strong cross functional perspective which forms the essence of an ideal B-School

Preparation

Every student is assessed for his/her interests, strengths and competencies in the first few weeks of the start of the academic session. This is done through of IBS internally designed assessment tools and a developmental plan is charted out for such students.

The faculty is instrumental in bringing the placement focus into each curriculum topic of the domain course by highlighting its relevance and applicability in the world of business.

Following are some of the capability builders in addition to the syllabus being taught to focus on students acing the campus drives.

1. English Language Proficiency Test (ELPT) assessment-based guidance
2. PACT (Placement Advisory Counselling and Training) Teams cross-functional collaborative interventions
3. Industry professionals' assessment through mock interviews
4. Joint Certification Programmes with Industry for Sector and company-specific development
5. Corporate relevant Certification courses
6. Special coaching for Aptitude Test Formats, approach to psychometric testing, grooming for corporate etiquette and dressing
7. Industry/Sector/ role specific guidance from professors of practice (practicing teachers)
8. Faculty supervised internships leading to placement offers
9. Language lab, IT lab to prepare students for various selection rounds, Excel, Python, R-programming, data analytics.
10. Alumni support in Corporate hand- holding

Each of these preparatory sessions are carefully designed after mapping them with the industry needs.

A dedicated interdisciplinary Faculty team (PACT) is assigned to each class and the sessions with this team helps the student focus identifying and bridging the gap between the expectations of the recruiter and their aspirations. These sessions are focused on internships in the first year and on final placements in the second year of the program.

Placements		
Class of	**2022**	**2023**
Students Placed	98%	96%
Average Salary*	8.71	10.66
Highest Salary*		
National	21.00	21.00
International	53.45	58.19
Average Salary* (Top 10%)	14.31	17.05
Average Salary* (Top 25%)	11.70	14.21
* ₹ in Lakhs		

Faculty

- The Faculty Pool at the ICFAI Foundation for Higher Education (IFHE) has a unique blend of Academic, Research, and Industry Experience. The composition and quality of the faculty play a

crucial role in ensuring quality education. IFHE has a large and well qualified faculty pool comprising doctorates with rich industry experience. Faculty members, apart from teaching are involved in research, case development, executive development programmes , and consultancy. The faculty is known for its high-quality research output.

- One of our faculty members topped the list of best-selling case authors for the Sixth Consecutive Year (2016, 2017, 2018, 2019, 2020 & 2021) from among 8,000 case authors worldwide.
- One of our faculty members was awarded Faculty Research Award in 2018 under Management Category by the former Union Minister for Human Resource Development, Prakash Javadekar, at Careers360 Faculty Research Award function in New Delhi.
- One of our faculty members received a 'Life Time Achievement award' for his contribution to case method (2015). Only a handful of professors from IMD, INSEAD and Harvard have received this award.
- One of our faculty members was awarded 'The Women in Education Award' for the year 2016, by Business School Affaire & Dewang Mehta National Education Awards. The award is given to woman individuals in recognition of their extraordinary work and achievements in academics.
- Several faculty members have won best case writing awards, best research papers and best teacher award.
- Best Practices
- Socially relevant Curriculum with an emphasis on creativity, innovation and employability.
- Faculty of Law introduced clinical courses such as Mock trial, ADR Clinic, Mediation and Client Counseling activities and Drafting & Pleading.
- The Courses are designed to prepare the students with adequate skills, and knowledge essential for employment, entrepreneurship and leadership. Encouragement of startups.
- Cafeteria approach in electives, offering a wide choice.
- Internship is a part of every program and with constant involvement of the faculty and the company guide both onsite and offsite.
- Our students work with about 600 companies across India for internship program and some of them are converted into placements.
- Syndicated Learning (group learning for industry readiness).
- Innovation in Examination & Evaluation through online examination and case-based questions.
- Academic Freedom
- Pedagogy (Case Studies, Application Oriented Approach, Simulations, Games, Modelling, Moot Courts, Client Counseling, Court Visits, Mock Trial, Student Projects, etc.)
- Weekly faculty seminars along with Doctoral Students in every department
- Support for faculty to participate in national and international conferences. The faculty are required to present the conference papers in internal faculty weekly seminars, before they present in conferences in India or abroad.
- Inter-disciplinary research
- Incentivizing research publication
- Seed Money to promote research
- Visiting Scholar Program
- Foreign Visiting Faculty
- Strong Industry-Academia Partnership and conclaves
- Play a catalytic role in helping faculty who have registered for PhD in other universities
- ICFAI Staff College
- Annual panel discussions on 'Union Budget' with eminent persons, and workshops on 'Economic Survey'
- Convocation conducted annually with distinguished personalities as chief guests
- Fifty-Five Student Clubs – helps in development of well-rounded personalities
- Faculty mentor for student clubs
- Mentor-Mentee process
- Role of Alumni in student mentoring
- Student feedback of faculty
- Support to students to participate in curricular and extra-curricular activities

- Best Student, Best Teacher, Best institutional building awards
- Energy conservation (Solar Panels, Reverse Osmosis (RO) Water Treatment Plant, Sewerage Treatment Plant, etc.)
- Program fee waiver to spouses and children of employees
- Fee waiver to students in case of sudden demise of parents
- Fee refund in case of student demise
- Committee approach to decision making. For Example - Strategic Management Committee consisting of Deans and Directors, as a think tank for the Vice-Chancellor, implements Board decisions, UGC and MHRD communications, etc. It also helps taking issues to the Board of Management after a brainstorm. UGC Circulars such as UGC curriculum on Environment, Disaster Management, Swachh Bharat Pakhwada, Digitization, etc. are discussed and implemented.

Eminent Persons on Statutory Boards

Prof. C Rangarajan, Chancellor, IFHE, former Governor, Reserve Bank of India, former Chairman, Prime Minister's Economic Advisory Council.

- Prof. V N Rajasekharan Pillai, former officiating Chairman UGC, former Vice-Chairman, UGC and former Vice Chancellor, IGNOU, New Delhi, and former Director, NAAC.
- Prof R Natarajan, former AICTE Chairman and former Director, IIT Madras.
- Prof R P Kaushik, former Indian Ambassador to Turkmenistan; former Member, UGC and NAAC; former Professor, JNU, New Delhi.
- Prof M R Rao, former Director, IIM Bangalore and former Dean, ISB.
- Prof Abad Ahmed, former Pro Vice Chancellor, University of Delhi, and Chairman of the National Committee of the Aga Khan Foundation (India).
- Prof S Raghunath, Chair, Centre for Corporate Governance and Citizenship, IIM-B and also its former Dean.
- Prof M S Shunmugam, former HOD Mechanical Engineering, IIT Madras.
- Prof U B Desai, former founding director of Indian Institute of Technology Hyderabad. Presently, Professor Emeritus in Electrical engineering and the head of operations at the Center for Healthcare Entrepreneurship at IIT Hyderabad. Ph.D (Johns Hopkins).
- Prof Kavil Ramchandran, Clinical Professor, Executive Director, Thomas Schmidheiny Centre for Family Enterprise, Indian School of Business, Hyderabad.
- Prof R P Mohanty, former Vice Chancellor of the Odisha-based Siksha 'O' Anusandhan (SOA) University.
- P Krishnadeva Rao, Vice Chancellor, National Law University, Bhubaneswar, Orissa.
- Prof R Vaidyanathan, former Professor of Finance, IIM Bangalore.
- Prof T Tirupathi Rao, former Vice Chancellor, Osmania University, Hyderabad
- Prof. V V Bhanoji Rao, Adjunct Professor, Institute of Water Policy, Lee Kuan Yew School of Public Policy, NUS, Singapore.
- Dr. S Kishore Kumar, Member, Board of Governors, IIT Madras, Technical Adviser, NDRF, Inst. of Engg., Bangalore
- Dr. M Ramachandran, former IAS Officer, former Secretary, Ministry of Urban Development, Govt. of India, former Chief Secretary, Govt. of Uttarakhand.
- Prof. Dr. Rao Tatavarti, Senior Professor, Dean and Director (R & D), GVP College of Engineering & GVP-SIRC, Visakhapatnam, Executive Director, CASTLE. ❑

Mapping the Course of Higher Education Institutions towards *Viksit Bharat* @2047

Prabha Shankar Shukla*

On December 11, 2023, the honorable Prime Minister of Bharat, Shri Narendra Modi Ji, envisioned a transformed landscape by 2047 through the ambitious Vision *Viksit Bharat* @2047 initiative [1]. In the words of PM Modi, I quote, "*History gives every country a period when it advances its development journey manifold. In a way, this is the golden age (Amritkaal) of that country. This is the golden age (Amritkaal) for India. This is the period in India's history when the country is going to take a quantum leap. There are examples of many such countries around us, which have developed themselves by taking a similar quantum leap in a given time. That is why I say; this is the right time for India as well. We have to take advantage of every moment of this golden age; we should not waste even a single moment*" [2].

The vision of *Viksit Bharat* @2047 aims to propel Bharat into a comprehensive state of development across economic, social, and technological domains. It outlines a roadmap for the metamorphosis of Bharat into a developed and self-reliant entity. This initiative is spearheaded by a commitment to inclusive growth and a response to the multifaceted opportunities that the nation has. The vision encapsulates economic progress, social cohesion, environmental stewardship, and technological excellence. Born out of a recognition of Bharat's immense potential, *Viksit Bharat* @2047 is a forward-looking strategy proposed to address the needs of the present while laying the foundation for a sustainable future. It recognizes the dynamism of the global landscape, acknowledging the need for adaptability and innovation to navigate the complexities of the 21st century. The significance of vision *Viksit Bharat* @2047 lies in its holistic approach to nation development. It transcends mere economic growth and emphasizes the creation of a society that is equitable, just, and environmentally responsible. The vision sets ambitious goals in various sectors to uplift communities, bridge socio-economic disparities, and position Bharat as a global leader. Notably, the vision recognizes the interdependence of different facets of development. It understands that economic prosperity alone is not sufficient without advancements in education, healthcare, and environmental sustainability. As a result, the vision proposes to create a well-rounded and balanced development model to enrich the lives of all citizens [3, 4].

In the realization of *Viksit Bharat* @2047, higher education institutions (HEIs) will unquestionably play crucial roles. HEIs, which include central and state universities as well as publicly funded research institutions, serve as incubators of knowledge, innovation, and societal progress. Their role extends beyond traditional education as they serve as the catalysts for change and shape the intellectual and professional landscape of any nation. HEIs play a dual role– as generators of knowledge and as cultivators of skilled, socially responsible individuals. They are hubs of research and innovation and contribute to the technological advancements that underpin a developed nation. At the same time, these institutions will mold the next generation of leaders, thinkers, and problem solvers who will drive Bharat towards the projected future. From cultivating critical thinking to promoting entrepreneurship, HEIs are integral to nurturing a workforce capable of navigating the challenges and opportunities presented by *Viksit Bharat* @2047. In this article, there will be discussion on the multifaceted nature of HEIs, setting the stage for a comprehensive exploration of their role in achieving the vision of *Viksit Bharat* @2047.

Objectives of *Viksit Bharat* @2047

Vision *Viksit Bharat* @2047 proposes a comprehensive set of objectives, each strategically designed to propel Bharat towards a holistic and sustainable future. These objectives span economic development, social progress, technological advancements, and environmental sustainability to develop Bharat into a well-rounded and developed nation [5]. At the heart of *Viksit Bharat* @2047 is a commitment to robust economic development. The vision recognizes that a prosperous economy is the backbone of the progress of any nation, which facilitates better living standards and the overall well-being of its citizens. The economic objectives include

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policies for increasing gross domestic product (GDP) that could promote industrial growth and foster an encouraging business ecosystem. *Viksit Bharat* @2047 aims to position Bharat as a global economic powerhouse by boosting innovation, entrepreneurship, and international collaborations.

Importantly, economic development is not pursued in isolation, but it is fundamentally linked with social welfare and environmental sustainability. The emphasis is placed on inclusive growth, where the benefits of economic prosperity reach all sections of society without any distinction so that equity and equality can be maintained, thereby fostering social harmony. The social objectives of *Viksit Bharat* @2047 stress the importance of building a society that is equitable, inclusive, and socially progressive. Together, education, healthcare, and social infrastructure form the foundation of these objectives. The vision seeks to enhance access to quality education and healthcare services and empower individuals. Social progress is also connected to gender equality, social justice, and community development. The vision recognizes the importance of addressing social inequalities, promoting diversity, and fostering a sense of *Bharatiyata*. This vision aims to create a society where every citizen has the opportunity to realize their full potential.

In addition, technological advancements constitute a crucial pillar of the vision, which recognizes the transformative power of innovation. The vision sets ambitious goals for research and development (R&D) and aims to position Bharat at the forefront of cutting-edge technologies. Embracing digitalization, Artificial Intelligence (AI), machine learning, and emerging technologies, *Viksit Bharat* @2047 seeks to create a knowledge-based economy that can thrive in the rapidly evolving global landscape. The aim of technological advancements goes beyond economic considerations and encompasses the integration of technology into various aspects of daily life, governance, and public services.

Environmental sustainability is another central principle of *Viksit Bharat* @2047, which admits the importance of ecological sustainability for the long-term prosperity of a nation [6]. The vision aims to mitigate climate change, preserve biodiversity, and promote sustainable practices. It recognizes the need to balance economic development with environmental conservation and highlights the importance of adopting green technologies and sustainable practices. Vision *Viksit Bharat* @2047 envisions a future where development harmonizes with nature and focuses on renewable energy adoption, waste management, and preservation of natural resources, thereby ensuring that the benefits of progress are not achieved at the expense of the environment.

Role of HEIs in Vision *Viksit Bharat* @2047

Undeniably, HEIs will have to play a pivotal role in shaping the trajectory of Bharat's development in the context of *Viksit Bharat* @2047 [7]. The contributions of HEIs go beyond traditional education and include knowledge creation, skill development, personality development, holistic growth, and social responsibility. The HEIs will play dynamic roles in cultivating an all-inclusive and sustainable development for the nation.

Knowledge Creation and Dissemination through R&D and Collaboration

Higher education institutions are the epicenters of R&D and innovation and drive the knowledge-based economy, which is essential for achieving the objectives of *Viksit Bharat* @2047. Through cutting-edge R&D, HEIs can contribute to technological advancements, scientific breakthroughs, and solutions to national, regional, and societal challenges. Researchers will have to explore uncharted territories, push the boundaries of knowledge, and lay the groundwork for practical applications that can propel the growth of the nation forward. The role of HEIs in R&D extends to creating an ecosystem that nurtures innovation. This involves academic research, collaborative projects with industries, and other research organizations. This could be achieved by establishing multidisciplinary research centers, facilitating collaboration across disciplines, and promoting a culture of curiosity. HEIs can serve as engines of progress to position Bharat at the forefront of global R&D advancements.

To bridge the gap between academia and industry, HEIs will have to engage in meaningful collaborations with various sectors. Industry-academia partnerships are vital for translating theoretical lab-generated knowledge into real-world practical applications. HEIs can contribute to the development of innovative products, technologies, and processes that have everyday implications by collaborating with industries. These collaborations are reciprocal and will benefit both academia and industries. While industries will gain access to the latest research

findings and a pool of skilled graduates, HEIs will receive valuable insights into industry requirements, trends, and challenges. Such synergies are integral to the *Viksit Bharat* @2047 objective of promoting a dynamic and robust economy where the private sector and academic institutions collaborate seamlessly for mutual growth and national development.

Skill Development, Entrepreneurship, and Industry-academia Partnerships

HEIs must design innovative curricula that are relevant to the evolving needs of the economy. They should continually update and adapt their academic programmes and ensure that students acquire the skills and knowledge necessary to succeed in the contemporary job market. The focus extends beyond traditional academic disciplines and encompasses emerging fields and interdisciplinary studies that align with the demands of a rapidly changing world. HEIs must also embrace experiential learning methodologies and integrate practical experiences into their curricula. Such hands-on approaches will equip students with theoretical knowledge and practical skills and enhance their employability and entrepreneurial capabilities [8]. Collaboration with industries extends beyond research to include initiatives focused explicitly on skill development and entrepreneurship. HEIs, in partnership with industries, can design programmes that offer practical insights, internships, and mentorship opportunities. These initiatives will help bridge the gap between academic knowledge and industry requirements and ensure that graduates are well-prepared for the demands of the professional landscape. Entrepreneurship development is a vital facet of this collaboration. HEIs must foster an entrepreneurial mindset among students and encourage them to think innovatively and take risks. The establishment of incubation centers and startup hubs within their campuses will provide a nurturing environment for aspiring entrepreneurs to transform ideas into viable businesses. This will help to cultivate a culture of entrepreneurship within the students, where HEIs will serve as catalysts for the creation of job providers rather than just job seekers.

Social Responsibility, Diversity, and Inclusivity

Higher education institutions are integral to the social fabric, contributing to community development through various outreach programmes and community engagement initiatives. As catalysts for positive change, HEIs should leverage their resources and expertise to address societal challenges. Community service projects, outreach programmes , and partnerships with local communities should be explored to demonstrate a commitment to social responsibility. HEIs can contribute to the local development of the region through community engagement and address issues such as healthcare, education, and infrastructure [9]. This will ensure inclusive development and that the benefits of progress reach all sections of society. HEIs also play a pivotal role in fostering diversity and inclusivity within the academic environment. HEIs must implement initiatives to ensure equal access to education for individuals from various backgrounds. This will include promoting gender equality, providing support for underrepresented communities, and creating an inclusive campus culture. Inclusivity initiatives encompass all aspects of education. From inclusive curriculum design to accessible infrastructure, HEIs must create an environment where every student feels valued and has the opportunity to thrive. This will help to build a socially inclusive society where education acts as a catalyst for breaking down barriers and promoting unity in diversity.

Examination of a Few Successful Models of HEIs in R&D and Innovation

I will now briefly discuss two successfully established and proven models of R&D and innovations in HEI that will provide insights into their transformative impact. The first case is the Massachusetts Institute of Technology (MIT) in the United States, which is renowned for its innovative approach to education, R&D, and technology [10]. The success of the institute lies in its commitment to interdisciplinary collaboration and cutting-edge research. The institution has strategically developed partnerships with leading industries and created a dynamic ecosystem that nurtures innovation and real-world application of knowledge. MIT's model emphasizes a flexible curriculum that encourages students to explore various disciplines and enables a holistic understanding of the interconnectedness of knowledge. The institute's emphasis on hands-on learning, project-based coursework, and entrepreneurship initiatives has produced academically proficient graduates who are equipped to contribute meaningfully to the workforce and society. Additionally, MIT's commitment to diversity and inclusion has been pivotal in creating a vibrant and dynamic learning environment. The institution seeks to attract students and faculty from diverse

backgrounds and countries, cultivating a rich tapestry of perspectives and experiences on its campus. The MIT model successfully underscores the importance of industry collaboration, interdisciplinary learning, and a commitment to diversity as critical components for the holistic development of HEIs.

Another insightful example in terms of innovations and best practices is Singapore's Nanyang Technological University (NTU, Singapore) [11]. NTU constantly embraces technology and innovation in its academic programmes , campus design, and research initiatives. The university has implemented Smart Campus initiatives, integrating technologies such as AI, the Internet of Things (IoT), and data analytics to enhance the learning and living experiences for students. One notable innovation is NTU's push towards flipped classrooms, where traditional lectures are replaced with interactive, discussion-based sessions. This pedagogical approach engages students actively in the learning process and promotes critical thinking and collaboration. Moreover, NTU's focus on sustainability is evident in its EcoCampus initiative, which incorporates green technologies and sustainable practices in campus development. The success of NTU highlights the importance of leveraging technology for educational innovation, adopting progressive pedagogical approaches, and incorporating sustainability initiatives into HEIs.

Considering the case studies of successful international universities can provide valuable lessons for the HEIs of Bharat. We can adopt such models that emphasize collaboration, innovation, interdisciplinary learning, and sustainability and tailor them to the demands of our nation. By studying best practices from established international universities, the HEIs in Bharat can progress themselves for comprehensive development and contribute to the growth of the nation.

Opportunities Ahead for HEIs

Vision *Viksit Bharat* @2047 proposes to explore a spectrum of opportunities that can catalyze the transformative journey towards a developed Bharat. These opportunities have to be strategically addressed to amplify the impact of HEIs to realize this vision. One of the primary opportunities lies in securing adequate funding and optimizing resource allocation for HEIs [12]. Adequate financial support will ensure that HEIs have the necessary resources to invest in cutting-edge research, modern infrastructure, and faculty development. Vision *Viksit Bharat* @2047 strongly emphasizes academic-economic growth to create a conducive environment for public-private partnerships, philanthropic contributions, and innovative funding models. The HEIs should explore funding opportunities to enhance their capacity to offer scholarships, research grants, and state-of-the-art facilities. Infrastructure development is crucial for HEIs to create cutting-edge campuses that facilitate research, innovation, and holistic learning experiences. Vision *Viksit Bharat* @2047 encourages the development of state-of-the-art laboratories, research centers, and smart classrooms. Investing in modern infrastructure will help improve the quality of education and attract top talent in the form of both students and faculty. This, in turn, will facilitate an environment conducive to academic excellence, ensuring that students and researchers have the resources they need to perform their research. Collaborative spaces, technology-enabled classrooms, and high-tech research facilities will create an ecosystem conducive to interdisciplinary R&D and innovation and help Bharat's technological advancement and global competitiveness.

An increase in Bharat's total R&D expenditure will be critical in its journey towards becoming a developed nation by 2047. In recent years, Bharat has made commendable strides in increasing its R&D spending, reflecting a commitment to innovation and technological advancement. However, a comparative analysis with developed countries such as the USA, Japan, Germany, and China reveals a significant gap that needs attention [12]. The United States allocates around 3% of its GDP to research activities. With well-established institutions, a robust private sector, and a culture that values innovation, the U.S. sets a benchmark for R&D expenditure. Similarly, Japan has a rich tradition of technological innovation, which is reflected in its substantial R&D investment (around 4%), particularly in sectors like electronics, automotive, and robotics. Germany, renowned for its prowess in engineering and manufacturing, allocates over 3% of its GDP to R&D. China, which is emerging as a technological powerhouse, has increased its R&D spending to around 2.5%. In contrast, the R&D expenditure of Bharat is comparatively low (about 0.7%) [13, 14]. To achieve the ambitious goals of *Viksit Bharat* @2047, a substantial increase in the R&D budget is required. Enhanced investment in R&D will catalyze innovation across various sectors and foster economic growth, social progress, and environmental sustainability. A boosted R&D budget

would empower our HEIs to attract top talent, foster interdisciplinary collaboration, conduct cutting-edge research, and sustain practices. Furthermore, increased R&D spending will strengthen partnerships between academia, industries, and the government, which will create a vibrant ecosystem that accelerates the translation of research findings into practical applications.

The vision also recognizes the critical role of education in national development and provides an opportunity to enhance the quality of education at all levels [12]. For HEIs, this translates into a chance to reevaluate and redesign curricula and ensure that they are relevant to current needs and promote critical thinking, creativity, and problem-solving skills. Quality improvement will involve investing in faculty development programmes , embracing technology-enhanced learning methods, and benchmarking against global educational standards. HEIs have to produce graduates who are academically proficient and well-equipped to contribute meaningfully to the nation.

The vision strongly emphasizes a globally competitive Bharat that provides an opportune moment for HEIs to nurture international collaborations and exchanges. Partnering with renowned universities and research institutions worldwide can bring diverse perspectives, expertise, and opportunities for joint research projects. Global collaborations will open avenues for students to participate in exchange programmes and allow them to gain exposure to different cultures, educational systems, and research methodologies. This will enhance the quality of education, nurture a global mindset among students, and help prepare a highly skilled workforce.

Recommendations for HEIs

As Vision *Viksit Bharat* @2047 outlines a transformative path for development, HEIs are going to play a critical role in realizing this vision. To effectively contribute to the objectives, HEIs have to consider strategic recommendations that are centered around policy advocacy, institutional reforms, and international collaborations. I now propose a few suggestions and necessary reforms that can help HEIs to position themselves as dynamic contributors to the realization of *Viksit Bharat* @2047. These proposals will ensure that HEIs adapt to the evolving landscape and also actively shape it, contributing to the holistic development of the nation.

Policy Advocacy

Policy advocacy is vital for HEIs to prosper in alignment with the vision of *Viksit Bharat* @2047. HEIs must actively advocate for policies that promote an environment conducive to academic excellence, R&D, and innovation. This will involve influencing national policies and actively participating in their formulation. HEIs can design and advocate for policies that prioritize increased funding for R&D, infrastructure development, and faculty training [14, 15]. This will also include developing policies that encourage public-private partnerships to address financial constraints. HEIs must ensure that the regulatory framework supports their role as contributors to national development.

Institutional Reforms

Institutional reforms are essential to the demands of *Viksit Bharat* @2047 and encompass a range of areas, including curriculum design, faculty development, and administrative efficiency. HEIs should continually assess and update their curricula to ensure alignment with the evolving needs of the economy and society. They must integrate emerging disciplines, incorporate practical learning experiences, and foster interdisciplinary approaches in the R&D. Investing in faculty development programmes is also crucial for ensuring that educators are equipped with the latest pedagogical approaches, research methodologies, and industry insights. This will help provide opportunities for continuous learning, research collaboration, and exposure to global best practices. In addition, streamlining administrative processes is also essential for enhancing the overall efficiency of HEIs. Embracing digital solutions for admissions, student services, and record-keeping to reduce bureaucratic hurdles will help channel the process and improve the overall efficiency of the HEIs.

International Collaborations

International collaborations form a pivotal dimension for HEIs to realize the objectives of *Viksit Bharat* @2047. These collaborations will help exchange knowledge, resources, and diverse perspectives. HEIs must actively seek partnerships with global counterparts for joint research initiatives. Collaborative research projects will enable HEIs to find themselves in a broader pool of expertise, share resources, and address complex challenges that require a multidisciplinary approach. Facilitating student and faculty exchanges is also instrumental in promoting

cross-cultural understanding and exposing individuals to diverse educational environments. HEIs should actively pursue partnerships that enable students and faculty to engage in exchange programmes , which will help develop a global mindset. In addition, collaborations with international industries will play a vital role in aligning higher education with the practical needs of the workforce. HEIs should actively develop partnerships with multinational corporations and encourage internships, joint research projects, and industry-sponsored programmes .

Conclusions

In this Article it has been tried to explore the interplay between the vision of *Viksit Bharat* @2047 and the indispensable role of HEIs in shaping Bharat's trajectory toward comprehensive development. The objectives of *Viksit Bharat* @2047 transcend mere economic growth and encompass social inclusivity, technological advancements, and environmental sustainability. HEIs have to make multifaceted contributions, from knowledge creation through R&D and innovation to the cultivation of skills and the promotion of social responsibility, and emerge as dynamic catalysts for change. In conclusion, the overarching message is clear: HEIs have to play a pivotal role in the realization of vision *Viksit Bharat* @2047. They stand at the forefront of this transformative journey as incubators of knowledge, innovation, and societal progress. The collaborative efforts of HEIs, strategic reforms, and global engagements represent both an opportunity and a responsibility. Reiterating the importance of higher education in this context, we must remember that HEIs are not just stakeholders but architects of Bharat's future, which will contribute profoundly to the vision's goal of creating a developed, inclusive, and sustainable nation by 2047.

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My Vision of Higher Education in India by 2047: A Journey towards Global Excellence

Pawan Agarwal*

Over the past 25 years, my journey through the complex policy landscape of India's higher education sector—first directly and then in a more indirect capacity—has been both fascinating and fulfilling. This period has seen significant shifts in the landscape of higher education, reflecting a dynamic interplay of progress and persistent challenges.

This article aims to provide a comprehensive overview of my association with the sector over the past 25 years, delving into seven significant changes that have reshaped higher education in India during this time. It also highlights seven critical areas that still require substantial change, underscoring the urgent need for continued reform and innovation. Furthermore, the article envisions ten transformative changes between now and 2047, offering a glimpse into a future where these developments could further elevate the quality, accessibility, and impact of higher education in India and help it achieve global excellence.

Higher Education in India at the Centre Stage: A Fascinating Journey

Taking charge of the Central Universities division in the Ministry of Human Resource Development (now the Ministry of Education), in my role as Deputy Secretary/Director in the Higher Education division, I managed the esteemed central university system and the IIT/IIM system but also laid the groundwork for future enhancements in India's educational framework. I was instrumental in moulding policies on open and distance education, overseeing the operation of foreign educational institutions, fostering private participation, and promoting IT education.

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Pawan Agarwal began his tenure in the Ministry of HRD (now Ministry of Education) in October 1998, before transitioning to the University Grants Commission (UGC). Later, he served as the Adviser for Higher Education at the Planning Commission (now NITI Aayog) and then served as Joint Secretary in the Ministry of Skill Development and Entrepreneurship, Government of India.

From February 2000 to April 2003, my focus on integrating digital technologies into higher education culminated in the establishment of the Indian National Digital Library (INDEST Consortium), the National Program for Technology Enhanced Learning (NPTEL), and the launch of the Eklavya Technology Channel. This period also saw the streamlining of admissions through the AIEEE, now JEE Mains, revolutionizing access to educational resources and standardizing entry into engineering programmes nationwide.

The period between February 2002 and April 2003 was marked by significant strides in establishing new higher education institutions and upgrading existing ones, thereby expanding the physical and intellectual infrastructure for quality education in India. This included the introduction of new IITs and IISERs, and upgrading institutions to national importance status.

Transitioning to the role of Financial Adviser for the University Grants Commission (UGC) between November 2003 and September 2005, I spearheaded the financial oversight of the UGC, streamlining grant management for an extensive network of universities and colleges and initiating a consortium-based approach for electronic journal subscriptions. My tenure with the Government of West Bengal as Secretary for the Department of Science & Technology further allowed me to leverage technological advancements for education and state development.

Returning to Delhi, I served as the Adviser for Higher Education at the Planning Commission (now NITI Aayog) between February 2011 and November 2014. In this capacity, I played a key role in shaping national education policies, crucially contributing to the finalization of the 12th Five-Year Plan. This tenure was marked by the development of the *Rashtriya Uchha Shiksha Abhiyaan* (RUSA) aimed at providing system-level funding, the initiation of annual surveys to assess the higher education landscape, and the introduction of university and college rankings to set new standards of academic excellence and accountability.

Later as Joint Secretary at the Ministry of Skill

Development and Entrepreneurship from November 2014 to December 2015, I was leading the 'Skill India Mission' and unveiling the National Policy and Mission for Skill Development. This period saw the launch of initiatives like the PM Kaushal Vikas Yojana (PMKVY) and developing model skill centers were critical in establishing a robust ecosystem for skill development across the nation.

Each of these roles brought its own set of challenges and opportunities, setting the stage for future advancements and enhancing India's position on the global stage in terms of education and skill development. Reflecting on my time within this sector evokes a profound sense of nostalgia and pride. In the following sections, I will detail seven significant shifts that have revolutionized higher education in India over the years and identify seven key areas still in need of considerable transformation. This underscores the critical need for ongoing reforms and innovations. Subsequently, the article will project ten transformative changes anticipated to occur by 2047.

Seven Transformative Changes (1998-2024)

Over the past quarter-century, India's higher education sector has undergone significant transformations, witnessing both remarkable achievements and facing ongoing challenges. This section, "Seven Transformative Changes," delves into the key developments that have reshaped the landscape of higher education in India. These changes range from the unprecedented growth in the number and quality of Higher Education Institutions (HEIs), the rise of the private sector in education, to the digital revolution that has expanded access to knowledge. Each of these transformations has contributed to placing India on the global academic map, introducing innovative educational models, and addressing the evolving needs of students and the industry alike. Here, we explore these shifts that have defined the journey of higher education in India over the last 25 years, highlighting the progress made and the hurdles that remain.

Unprecedented Growth

The last 25 years have seen a remarkable expansion in the number and quality of Higher Education Institutions (HEIs) in India. The establishment and proliferation of Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs) have not only expanded access to quality education but also placed India on the global academic map. For instance, the establishment of new IITs and IIMs in regions previously underserved has democratized quality engineering education across the country.

The Rise of the Private Sector

A significant evolution has been the dynamic growth of the private sector in higher education. Several prestigious private institutions like Ashoka, OP Jindal, and Shiv Nadar Universities were established, and many more like the Symbiosis International University, Manipal University, and Vellore Institute of Technology have grown in size and reach as well in prestige. These institutions have pioneered innovative educational models, blending interdisciplinary learning with rigorous research, thereby setting new benchmarks for quality education.

Streamlined Admissions

The advent of centralized examinations such as the Joint Entrance Examination (JEE) Mains and the Common University Entrance Test (CUET) has transformed the admissions landscape, introducing a level of transparency and meritocracy previously unseen. This shift has significantly reduced the complexity and stress associated with multiple entrance tests for students nationwide.

Escalation of Fees

A critical yet challenging change has been the steep rise in tuition fees, posing accessibility and equity concerns, particularly for economically disadvantaged students. This trend underscores the urgent need for a balanced approach to financing higher education.

Digital Transformation

The digital revolution has swept through higher education over the last 25 years, democratizing access to knowledge through MOOCs, video lectures, and web-based instruction. The National Programme on Technology Enhanced Learning (NPTEL) is a stellar example, offering free online courses and certification in various subjects, significantly widening access to quality educational resources.

Focus on Accreditation and Rankings

There's been a heightened emphasis on accreditation and global rankings, although Indian institutions have struggled to climb the global rankings ladder. This challenge calls for a deeper introspection into the quality and impact of Indian higher education on the global stage.

Enhanced Research and Industry Interface

The period has seen a surge in research output and industry-academia collaborations, although the quality of research remains a concern. Initiatives like the 'Innovation in Science Pursuit for Inspired Research' (INSPIRE) program exemplify efforts to enhance the quality and quantity of research in science and technology.

Seven Areas Awaiting Transformation

As we reflect on the transformative changes in India's higher education over the past 25 years, we must also acknowledge the areas that continue to challenge the sector's evolution towards excellence. This section, "Areas Awaiting Transformation," examines seven critical aspects that have hindered progress and where targeted reforms are urgently needed. From the entanglements of governance and outdated curricula to the crisis in faculty quality and the dominance of traditional classroom instruction, each area underscores the necessity for a systemic overhaul. Additionally, we address the prevalence of private coaching, the need for a greater international presence, and the imperative for enhanced student welfare and development. These concerns highlight the complexity of the challenges at hand and the need for concerted efforts to foster a more innovative, inclusive, and globally competitive higher education system in India.

Governance: Higher education governance is still entangled in bureaucracy and inefficiency, stifling autonomy and innovation. This scenario necessitates a paradigm shift towards more agile and autonomous institutional frameworks.

Curriculum Structure: Despite the changing global landscape, many curricula remain outdated, highlighting the need for curricular reforms that align with contemporary demands and skill sets.

Faculty Crisis: The persistent shortage and varying quality of faculty underline the critical need for initiatives focused on faculty development and attraction of top-tier talent.

Classroom Instruction: Traditional pedagogical methods continue to dominate, despite the growing necessity for innovative teaching approaches that cater to diverse learner needs.

Prevalence of Private Coaching: The thriving private coaching industry points to gaps within the formal education system, necessitating comprehensive educational reforms to make such coaching redundant.

Internationalization: The limited international presence in Indian higher education reflects the need for more aggressive policies and programmes to attract international students and foster global collaborations.

Student Welfare: Insufficient focus on holistic student development and welfare, especially regarding mental health and career guidance, calls for a more student-centric approach in higher education institutions.

Many of these concerns are addressed in the National Education Policy 2020, and its effective implementation is key to resolving these issues and challenges.

The Road Ahead: Vision 2047

Looking forward to the next 25 years, India's higher education is set on a trajectory towards achieving the excellence necessary for a Developed India (*Viksit Bharat*), characterized by innovation, inclusiveness, and global collaboration. By 2047, India aspires to redefine its higher education system as a global exemplar of excellence, accessible to every learner, and attuned to the demands of a rapidly evolving world. This would be defined by ten transformation changes that are underway in India's higher education sector.

Digital Integration and Technological Advancements

The future will see a more profound integration of cutting-edge technologies like artificial intelligence (AI), machine learning, blockchain, virtual reality (VR), and augmented reality (AR) in educational delivery. These technologies will provide immersive and interactive learning experiences, making education not only more engaging but also customized to meet individual learning needs. For example, AI-driven platforms could offer personalized learning paths, adapting in real-time to the student's progress and understanding.

Globalization of Education

By 2047, the Indian higher education landscape will be deeply integrated into the global education framework. This integration will be characterized by a significant influx of international students in India and an increase in Indian students participating in global

exchange programmes . Moreover, the establishment of international campuses by Indian universities and vice versa will facilitate a rich cross-cultural exchange and collaboration, making global education a two-way street. In harmony with its guiding principle of 'Vasudhaiva Kutumbakam'—signifying that the world is one family—India would introduce the esteemed 'Vande Bharat' fellowship. This initiative would welcome scholars from across the globe, contributing to shaping the future of the world together.

Emphasis on Interdisciplinary Studies

The traditional silos between disciplines will increasingly dissolve, giving way to interdisciplinary and cross-disciplinary programmes . Such programmes , blending elements from sciences, technology, arts, and humanities, will cater to the evolving needs of the workforce and society. Initiatives like setting up schools of interdisciplinary learning can foster a new generation of thinkers and innovators who can approach complex problems holistically.

Sustainable and Green Campuses

Sustainability will become a core ethos for higher education institutions, influencing not only campus design and operations but also curricula. Green technologies, sustainable practices, and environmental studies will be integrated into academic programmes , preparing students to contribute effectively to global sustainability challenges.

Equity and Inclusivity

Future reforms will ensure higher education is accessible to all, regardless of socioeconomic background. Scholarships, online education, and outreach programmes will target underrepresented communities, while gender parity and support for students with disabilities will become central to the institutional ethos. This inclusive approach will be crucial in harnessing the full potential of India's demographic diversity.

Innovation and Entrepreneurship Ecosystems

Higher education institutions will transform into vibrant ecosystems supporting innovation and entrepreneurship. Facilities like incubation centers and startup hubs, along with strong industry partnerships, will encourage students and faculty to develop and commercialize innovative solutions, thus fostering a culture of entrepreneurship and making campuses hotbeds for innovation.

Quality and Excellence in Research

India is poised to become a global research hub, with increased investment in research, cutting-edge facilities, and a focus on high-impact research areas. Collaborative international research projects will enhance the global standing and impact of Indian research, addressing both global and local challenges effectively.

Comprehensive Governance Reforms

The governance of higher education institutions will become more autonomous, accountable, and transparent. Regulatory reforms will encourage innovation and excellence while ensuring quality and equity in education.

Enhanced Student Support and Well-being

Institutions will place a greater emphasis on comprehensive support systems for students, focusing on mental health, career counselling, and holistic development, ensuring students are well-prepared for both personal and professional challenges.

Lifelong Learning and Continuing Education

Recognizing the rapid pace of change in the job market and technology, higher education will embrace the concept of lifelong learning. Flexible learning options, such as online courses, micro-credentials, and executive programmes , will support ongoing professional and personal development, ensuring individuals remain competitive and adaptable throughout their careers.

Conclusion: A Vision of Hope and Excellence

The vision for Indian higher education by 2047 is one of transformation, characterized by inclusivity, innovation, and internationalization. Embracing these changes, India can address current challenges and anticipate future needs, ensuring that India's higher education system not only contributes to national development but also positions India as a global leader in education. By fostering a dynamic, equitable, and forward-looking educational environment, India will empower generations to come, turning the challenges of today into the achievements of tomorrow.

❑

Foundation of *Viksit Bharat* @2047

K C Vashishtha* and Shiwani**

The India@2047 vision is deeply grounded in reviving and incorporating the Indian Knowledge Tradition (IKT), with the aim of utilizing the extensive traditional wisdom across various fields like philosophy, science, medicine, agriculture, architecture, and spirituality. This vision highlights the significance of safeguarding and disseminating ancient scriptures, texts, oral traditions, and indigenous sciences, recognizing their considerable value in today's world. Initiatives are in progress to integrate traditional wisdom into educational systems at all levels, fostering a holistic comprehension of India's cultural legacy. In the realm of healthcare, traditional practices such as Ayurveda, Yoga, Siddha, and Unani medicine are being rejuvenated alongside modern methods, emphasizing holistic approaches to health and well-being. Similarly, traditional agricultural techniques are being reinstated to support sustainability, environmental conservation, and food security, leveraging indigenous knowledge on soil health, crop rotation, and water management. Preserving cultural heritage, encompassing languages, literature, art forms, and architectural marvels, is given precedence as they serve as reservoirs of traditional wisdom. Furthermore, traditional ecological knowledge is acknowledged for its role in promoting environmental sustainability and addressing climate change, guiding contemporary environmental policies. Embracing the digital era, efforts are directed towards digitizing and archiving traditional knowledge, ensuring its accessibility and applicability. The India@2047 vision celebrates the diversity of cultures, encourages interdisciplinary dialogue, and promotes global cooperation, envisioning a vibrant Indian Knowledge System contributing to sustainable development, societal welfare, and global leadership.

In looking ahead to India's future in 2047, there's a profound focus on nurturing and harnessing the wealth of traditional wisdom ingrained within the Indian Knowledge Tradition. This entails a concerted effort to uphold and utilize the profound insights passed down through generations. Central to this vision is the acknowledgment of the immense value embedded in ancient Indian systems across diverse fields like philosophy, science, medicine, agriculture, architecture, and spirituality (Sahoo and Vadranam, 2024). The overarching goal is to seamlessly integrate these age-old systems into contemporary practices, thereby fostering a more holistic approach to societal advancement. Key to this vision is the preservation and propagation of traditional knowledge systems. Initiatives are underway to revive ancient scriptures, texts, and oral traditions, ensuring their continued relevance and application in modern-day contexts. There's a deliberate push to incorporate traditional wisdom into educational frameworks at every level, offering a comprehensive understanding of India's rich cultural heritage. Within healthcare, there's a revival of traditional systems such as Ayurveda, Yoga, Siddha, and Unani medicine, alongside modern medical practices. These holistic approaches, emphasizing equilibrium and harmony, are valued for their profound insights into health and well-being. Similarly, traditional agricultural practices, steeped in indigenous wisdom, are being revitalized to promote sustainable farming techniques, environmental conservation, and food security (Planning Commission of India, 2014). Indigenous knowledge concerning soil health, crop rotation, and water management is being tapped into to address contemporary agricultural challenges. According to Padder, (2023) the preservation of cultural heritage and conservation of India's diverse cultural expressions are also paramount. Efforts are underway to safeguard and promote languages, literature, art forms, music, dance, and architecture, all serving as repositories of traditional knowledge. Furthermore, traditional ecological knowledge is recognized for its significance in fostering environmental sustainability and mitigating climate change. Indigenous communities' deep understanding of ecosystem dynamics, biodiversity preservation, and natural resource management is invaluable in shaping contemporary environmental policies. In the digital age, there's a concerted push to digitize, document, and archive traditional knowledge, ensuring its accessibility to a wider

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audience. Digital technologies play a pivotal role in preserving and disseminating this knowledge, ensuring its relevance in the modern era. In essence, the vision for India@2047 within the Indian Knowledge Tradition celebrates the nation's cultural diversity, fosters interdisciplinary discourse, and encourages global collaboration. By embracing and revitalizing traditional wisdom, India aspires to chart a path towards sustainable development, societal well-being, and global leadership. In the vision for India@2047, the Indian Knowledge System (IKS) represents the nation's rich cultural heritage and intellectual legacy. It encompasses a wide array of traditional knowledge, wisdom, and practices that have been passed down through generations. Rooted in ancient scriptures, texts, oral traditions, and indigenous sciences, the IKS reflects the essence of Indian society. The goal of India@2047 is to preserve, revive, and promote the diverse aspects of the Indian Knowledge System. This involves integrating traditional wisdom into modern education, acknowledging the contributions of ancient systems like Ayurveda and traditional agriculture, and safeguarding cultural heritage. Additionally, the IKS provides valuable insights for environmental sustainability and climate change mitigation. Efforts are also underway to digitize traditional knowledge, making it more accessible and facilitating cross-cultural exchange. Overall, India@2047 envisions a dynamic Indian Knowledge System that celebrates cultural diversity, fosters interdisciplinary dialogue, and contributes to global progress.

Brief Histography of Colonial and De-colonial Period in India

Charter Act of 1813:

Initiated the formalization of educational efforts in India during British rule, with allocated funds for education and cultural development.

Lord Macaulay's Minutes (1835):

Proposed English as the instructional language in Indian schools to cultivate a class of elites with Western education and values.

Wood's Despatch (1854):

Established the groundwork for the modern Indian educational system, suggesting a hierarchical structure of primary, secondary, and collegiate education.

Hunter Commission (1882): Evaluated educational progress in British India and recommended reforms to enhance accessibility and quality, including primary education expansion and vocational training.

Montagu-Chelmsford Reforms (1919): Delegated education-related powers to Indian provinces, fostering indigenous initiatives in education and culture.

Post-Independence (1947): India prioritized educational expansion, introducing initiatives like Sarva Shiksha Abhiyan (SSA) and establishing prestigious institutions like Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs).

Laxmanswami Mudaliar Commission (1952): The Mudaliar Commission, formed in 1952 as part of India's post-independence educational overhaul, concentrated on enhancing higher education, with a specific emphasis on science and technology fields. Its main objective was to evaluate the status of higher education in the country and propose improvements to cater to the needs of the newly established nation. The commission's suggestions were pivotal in molding the direction of higher education in India, providing a foundation for subsequent reforms in the sector

Radhakrishnan Commission (1948) - The Radhakrishnan Commission, led by Dr. S. Radhakrishnan, was established in 1948 to assess university education in India after independence. Its proposals aimed at improving standards, widening accessibility, fostering cultural values, boosting research, and elevating teaching norms significantly influenced the direction of higher education in the nation.

National Education Policy (NEP) 1986: Focused on ensuring free and compulsory education up to age 14, promoting science and technology education, and adopting child-centric learning approaches.

National Education Policy (NEP) 2020: A comprehensive reform aimed at revamping the Indian education system, emphasizing holistic development, flexible learning, and technological integration to ensure universal access and promote vocational training.

India@2047 Vision: Seeks to elevate India into a developed nation with a $30 trillion economy.

Education is pivotal in this endeavor, with a focus on quality, accessibility, and innovation to address

socio-economic disparities, integrate technology, and cultivate a skilled workforce for India's growth and prosperity (Kumar, 2024).

Developed India Programme @2047

India's economic ascent, beginning in 1991 when it represented merely 1.1% of global economic output, and now standing at 3.5% as the fifth-largest economy worldwide, has been powered by reform and liberalization initiatives. Looking ahead, India aims for a growth rate of 9% between 2030 and 2047 (Government of India, 2021). India's significance on the global stage cannot be overstated, as it plays a pivotal role in addressing numerous global challenges. The recent Ukraine crisis highlights the eagerness of major powers to engage India as a strategic ally. Additionally, any effective solution to combat climate change necessitates India's involvement. Recognizing the importance of maintaining this growth trajectory and avoiding the middle-income trap, efforts are underway to develop the Vision India@2047 document (Sahoo & Vadranam, 2024). This paper aims to chart a course for India's sustained progress and resilience into the future.

Vision India @2047?

The Vision India@2047 document encompasses re-engineering government processes, enhancing global engagement, laying out implementation roadmaps, and devising strategies to steer clear of the middle-income trap. It will also outline initiatives to foster global leadership, mitigate regional disparities, and bolster human capital development.

The Middle-Income trap is defined by the World Bank, the a trap that describes a scenario in which a middle-income country struggles to transition into a high-income economy due to escalating costs and diminishing competitiveness.

The formulation of the strategy to achieve this goal commenced in December 2021 and is currently being undertaken by NITI Aayog.

Major Themes for 2047

The focal points encompass infrastructure, welfare, commerce and industry, technology, and governance.

Adaptability: This document will delineate the requisite alterations and reforms necessary to attain the objective.

Timeframe: The Vision India@2047 document delineates action points and outcome goals across two periods: 2030, and the subsequent 17-year period leading up to 2047.

Opinions: NITI Aayog will soon present its core concepts and objectives to eminent figures, including the President of the World Bank, the CEO of Apple, as well as prominent Indian industrialists and thought leaders, for further refinement.

About *Amrit Kaal*

Era of Elixir: The Prime Minister of India introduced the concept of *Amrit Kaal*, or 'The Era of Elixir,' to the entire nation on India's 75th Independence Day. New India: *Amrit Kaal* represents the Vision India@2047 for 'New India,' heralding a new era for the country, offering the opportunity to fulfill the nation's aspirations. Objective: The aim is to revamp all facets of the Indian economy through rapid, sustainable growth, improving living standards for all, advancing infrastructure and technology, and revitalizing global trust in India

Strengths of India

Abundant Demographic Dividend: India boasts a population of over 600 million individuals aged between 18 and 35, with 65% under the age of 35. This demographic advantage is projected to persist until 2055–56, peaking around 2041.

***Vibrant Democracy*:** India stands as the largest democracy globally, with a populace of approximately 1.44 billion, encompassing around 945 million eligible voters. Amidst a global landscape characterized by fragmentation, India's resilience is underscored by its rich composite culture, fostering a dynamic democracy.

Resilient Economy: India's economy has demonstrated resilience, adapting flexibly at both macro and micro levels since the onset of liberalization three decades ago. Despite significant global challenges, India has weathered multiple economic shocks, including a rapid post-COVID recovery. Forecasts by NITI Aayog project India's economy to reach $30 trillion by 2047, with a per capita GDP of $17,590. The World Bank's latest India Development Update (IDU) recognizes India as one of the fastest-growing major economies, registering 7.2% growth in FY22/23.

Diplomacy: In the digital era, effective public diplomacy is imperative for responsible global engagement, and India has adopted a proactive public diplomacy strategy to convey its narrative to international audiences. India's prominence on the Global Soft Power Index 2023, ranking 28th for the second consecutive year, reflects its diplomatic endeavors. Trust among ASEAN nations has also seen an upsurge, according to the State of Southeast Asia Survey 2023. India's soft power was further accentuated through its hosting of the G20 and SCO in 2023, as noted by Bloomberg.

***Sustainable and Inclusive Development*:** India has emerged as a key player in combating climate change and promoting sustainable development over the past decade. Notably, India pledged to achieve 'net zero' carbon emissions by 2070 at the COP26 summit. Initiatives like 'Mission LiFE' emphasize environmental consciousness among citizens. The nation also prioritizes gender equality, exemplified by schemes like 'Beti Bachao Beti Padhao,' aimed at empowering women and ensuring their equal participation and representation.

***Technology and Innovation*:** India's advancements in healthcare and agriculture, leveraging technologies like Artificial Intelligence (AI), underscore its commitment to innovation. The integration of AI in agriculture has revolutionized farming practices, benefiting over 7000 farmers. A robust digital public infrastructure (DPI), comprising digital identification systems, payment platforms like Unified Payments Interface (UPI), and data exchange mechanisms, plays a pivotal role in driving economic transformation and fostering inclusive growth.

The Challenges Confronting India

The Challenges Confronting India Encompass several key areas:

Inequality and Exclusion

The 2024 Asia-Pacific Human Development Report highlights persistent disparities and disruptions within India. Despite rapid economic growth, income distribution remains heavily skewed, with the top 10% of the population capturing 57% of the national income, and the top 1% claiming 22%. Factors such as globalization and technological advancements have widened this wealth gap, alongside historical issues like a large proportion of the workforce in the unorganized sector and gender disparities in the care economy.

Global Uncertainty

Geopolitical conflicts and structural transformations, such as the energy transition, pose challenges to India's labor market flexibility and mobility. These uncertainties impact various sectors, including transportation infrastructure and housing markets.

Trade Openness

Protectionist policies in affluent nations, justified under environmental concerns, present emerging risks. Additionally, traditional supporters of a rules-based trading system exhibit waning interest in its defense. India's economic growth in FY 2023-24 is anticipated to be constrained by weak global demand and monetary tightening aimed at managing inflation, limiting real GDP growth to 6%.

Transition to Higher Income Status

While India's economy continues to expand, the current growth trajectory falls short of achieving middle-income and high-income status. To become a middle-income country, India needs substantial prosperity growth, equivalent to a $7 trillion economy, 2.5 times its current size. To reach high-income status, the target is a $60 trillion economy, twenty times its current size (Ghatak & Chandrasekhar, 2020).

Additional Challenges

Risks to positive GDP growth projections include potential declines in banks' asset quality, delays in fiscal consolidation, complexities in trade negotiations, and the impact of below-average monsoon seasons (Pawar & Harale, 2024).

Road Map for the Vision India@2047

The "Way Forward" involves crafting a roadmap for the Vision India@2047 initiative, aimed at addressing these challenges and steering the country towards sustainable economic growth and inclusive development

Utilizing Demographic Dividend

It is imperative to enhance the skills of millions of working-age individuals across the country, ensuring their readiness for emerging job roles resulting from disruptive changes in business models. Acquiring

pertinent skills aligned with futuristic products and services, such as robot maintenance, AR/VR device repair, and chip manufacturing, is crucial for future employment opportunities. Collaboration among private, public, and civil society entities is essential for achieving this goal. Initiatives like "One District One Skill" (ODOS), akin to the "One District One Product" (ODOP) scheme, could serve as an initial step in this direction.

Boosting Education Sector Investment

Government expenditure on education in India, currently below 3.5% of GDP, lags behind the global average of approximately 4.5% of GDP. There is a pressing need for a gradual increase in the education sector budget to align with global standards, with a focus on optimizing spending efficiency. The implementation of the National Education Policy (NEP) 2020 is crucial in this endeavor. Additionally, initiatives like the introduction of the Combined University Entrance Test (CUET) for central university admissions, instead of solely relying on examination scores, represent positive steps (World Bank, 2020).

Promoting Inclusive Growth

India's labor force participation rate (LFPR) stands at approximately 40%, significantly lower than Spain's over 74% and Portugal's around 75%. A major contributing factor to this disparity is the limited participation of women in the workforce, with a female LFPR of approximately 20% in India. Encouraging women's employment not only enhances family prosperity but also contributes to poverty alleviation and fosters India's journey towards prosperity, safety, and health by 2047.

Unlocking Manufacturing Potential

India aims to increase the contribution of its manufacturing sector to 25% of the economy from the current 15%. The disruptions in global supply chains due to the pandemic and geopolitical tensions present a unique opportunity for India to bolster its manufacturing capabilities. Initiatives like the Production Linked Incentive (PLI) scheme aim to capitalize on this growth trajectory. Furthermore, emphasis should be placed on modern manufacturing sectors such as space, telecommunications, renewables, and metaverse devices. The National Skill Development Mission should focus on equipping individuals with the requisite skills for these new-age manufacturing industries.

Objectives for Educational Front

GER/Girls/Boys/Primary/Secondary/Tertiary Ratio

In the context of India@2047, the educational objectives concerning Gross Enrolment Ratio (GER) and gender balance across various education levels can be summarized as follows:

Gross Enrolment Ratio (GER): The aim is to substantially boost GER at all educational stages to enhance access and involvement. Initiatives will prioritize expanding educational infrastructure, broadening institutions' reach, and implementing inclusive policies to accommodate more students.

Gender Equality**:** The goal is to ensure equal educational opportunities for both genders, addressing discrepancies in enrollment and retention rates between boys and girls. Strategies will target eliminating gender-based barriers like societal norms, financial limitations, and accessibility challenges.

Primary Education**:** Emphasis will be placed on making primary education universally accessible with balanced enrolment for boys and girls. Efforts will concentrate on improving primary education quality, reducing dropout rates, and elevating learning standards.

Secondary Education: The focus is on providing equitable access to secondary education for all, particularly marginalized groups. Actions will tackle issues such as inadequate facilities, teacher shortages, and socio-economic obstacles to enrollment.

Tertiary Education**:** Encourage wider participation in tertiary education, encompassing universities, colleges, and vocational training centers. Enhance higher education programmes ' quality and relevance to meet evolving societal and workforce demands.

Gender Ratio**:** Strive for gender equilibrium in educational institutions across all levels, fostering inclusivity and diversity. Implement targeted measures and affirmative action policies to bridge gender disparities in enrollment and retention rates.

In summary, the vision for India@2047 in education revolves around achieving universal

access, fairness, and excellence, with a specific focus on increasing GER, fostering gender equality, and ensuring balanced participation of boys and girls across primary, secondary, and tertiary education levels.

Objectives for Vocational Development (Jobs Available/ Created Given)

In the vision for India@2047, the focus on vocational development and job creation can be encapsulated as follows:

***Skill Enhancement*:** Priority lies in enhancing vocational skills through tailored programmes , ensuring individuals are equipped with industry-relevant expertise for enhanced employability. Diverse vocational training opportunities across sectors like manufacturing, healthcare, agriculture, IT, and services are emphasized.

***Employment Generation*:** A conducive environment for job creation is emphasized across various sectors of the economy. Encouragement of entrepreneurship and innovation aims to nurture SMEs, startups, and micro-enterprises. Sectors with substantial job potential, such as renewable energy, infrastructure, healthcare, and technology, are targeted for investment (Vinay, 2024).

Industry-Education Collaboration: Strengthening partnerships between industries and educational institutions aims to align vocational training with industry demands. Programmes like apprenticeships, internships, and on-the-job training offer practical experience to students and job seekers.

Inclusive Job Opportunities: Ensuring equal employment opportunities for all groups, including women, persons with disabilities, and marginalized communities, is a priority. Initiatives for inclusive hiring practices in both public and private sectors are promoted through affirmative action policies and diversity initiatives.

***Focus on Emerging Industries*:** Identification and support for emerging industries like AI, renewable energy, biotech, and digital services are highlighted. Tailored vocational programmes cater to the skill requirements of these sectors, capitalizing on burgeoning job prospects.

Continuous Learning: Encouraging lifelong learning and upskilling remains pivotal to adapt to evolving job markets and technological advancements. Accessibility to vocational education and training programmes ensures individuals at all career stages have opportunities for career advancement and adaptability. In essence, the vision for vocational development and job creation in India@2047 centers on skill enrichment, fostering entrepreneurship, ensuring inclusivity in employment, aligning training with industry needs, and promoting ongoing learning for a dynamic workforce of the future

Objectives Cultural Development

In the vision for India@2047, cultural development is outlined as follows:

Preserving and Showcasing Heritage: Emphasize safeguarding and promoting India's diverse cultural heritage, including traditions, languages, arts, and customs.

Implement strategies to conserve historical sites and intangible cultural practices, encouraging both domestic and international appreciation through cultural tourism.

***Cultural Education and Awareness*:** Integrate cultural teachings into the education system to instill pride in Indian heritage and enhance cultural literacy among students. Organize events like workshops and exhibitions to raise awareness and facilitate intercultural dialogue, leveraging digital platforms for wider reach.

Supporting Traditional Arts: Provide assistance to traditional artisans, ensuring the continuation and revitalization of ancient crafts in modern contexts. Establish platforms and cooperatives to empower artisans economically and foster innovation in traditional crafts.

***Cultural Exchange and Collaboration*:** Foster international cultural exchanges and partnerships to showcase Indian culture globally and strengthen diplomatic ties. Facilitate collaborations among artists, scholars, and institutions for mutual learning and cultural enrichment.

***Enhancing Cultural Infrastructure*:** Invest in cultural infrastructure like museums and performing arts centers to provide spaces for artistic expression and engagement. Strengthen cultural institutions to support research, documentation, and dissemination of cultural knowledge, fostering accessibility and community involvement.

In essence, the goal for cultural development in India@2047 revolves around celebrating and preserving the nation's diverse cultural heritage,

promoting awareness and education, supporting traditional arts, fostering international collaborations, and enhancing cultural infrastructure for widespread engagement and appreciation.

Objectives International Development (Applaud/ Recognition/ Foreign Policies)

The vision for India@2047 regarding its international stance, the following objectives are outlined:

Recognition and Acknowledgment: Aim to gain global acclaim and acknowledgment for India's advancements across diverse domains such as technology, culture, and economy. Strive to become a respected global entity admired for its contributions to sustainable development and cultural diversity.

Foreign Relations Strategy: Develop foreign policies prioritizing India's national interests while promoting global peace, stability, and collaboration. Strengthen diplomatic bonds with both traditional allies and emerging powers, fostering strategic alliances and cooperative efforts to tackle worldwide issues.

Diplomatic Initiatives: Actively participate in international platforms and organizations to advocate for India's concerns and contribute to shaping global agendas. Utilize soft diplomacy methods, including cultural exchanges and educational partnerships, to enhance India's global influence and reputation.

Economic Diplomacy: Utilize economic diplomacy to expand India's trade networks, attract foreign investment, and boost Indian industries' presence on the global stage. Enhance bilateral and regional trade agreements while advocating for equitable global trade practices.

Strategic Partnerships: Foster strategic collaborations with like-minded nations to address shared security challenges, combat terrorism, and promote regional stability. Actively engage in regional and global security endeavors, including peacekeeping missions and conflict resolution efforts.

Global Leadership Role: Aspire to assume a leadership role in global governance structures, advocating for reforms to make international institutions more inclusive and efficient. Champion causes like climate action, sustainable development, and human rights, positioning India as a responsible and proactive global leader.

In summary, the vision for India@2047 in its international engagement involves seeking acknowledgment for its achievements, crafting a balanced foreign policy approach, engaging in diplomatic endeavors, leveraging economic diplomacy, fostering strategic partnerships, and striving for global leadership in addressing critical global challenges.

Objectives IT Development

In the vision for India@2047, the progress of information technology (IT) is envisaged as follows:

Technological Progression: Continuously innovate and progress in information technology, including fields such as artificial intelligence, machine learning, internet of things, and blockchain. Foster an environment conducive to research and development, encouraging collaboration among academia, industry, and government to drive innovation.

Digital Infrastructure Enhancement: Strengthen digital infrastructure by expanding broadband connectivity, improving network reliability, and encouraging the adoption of high-speed internet services across urban and rural areas. Invest in constructing resilient data centers and cloud computing facilities to meet the increasing demand for digital services and storage.

E-Governance and Digital Service Delivery: Implement comprehensive e-governance projects to enhance government service provision, increase transparency, and engage citizens. Develop user-friendly digital platforms and mobile applications for accessing government services, ensuring accessibility for all segments of society.

Digital Literacy Promotion and Education: Promote digital literacy and skill development initiatives to empower individuals with the necessary knowledge and abilities to utilize digital technologies effectively. Integrate digital education into school curriculums and vocational training programmes to equip the workforce for the digital era.

Supporting Startup Culture and Innovation Centers: Cultivate a vibrant startup ecosystem by offering support for incubation, funding access, and mentorship to aspiring entrepreneurs. Establish hubs for innovation and technology parks to facilitate collaboration, knowledge exchange, and entrepreneurship in emerging tech sectors.

Cybersecurity and Data Protection: Enhance cybersecurity measures to protect digital infrastructure, sensitive data, and essential systems from cyber threats. Implement robust data privacy regulations to

ensure the confidentiality and security of personal and sensitive information in the digital realm.

Global Leadership in IT: Position India as a frontrunner in information technology by promoting the export of IT goods and services, attracting foreign investment, and fostering international partnerships. Showcase India's IT prowess and capabilities through participation in global events, conferences, and collaborations with leading tech entities worldwide.

In essence, the vision for IT development in India@2047 revolves around advancing technology, enhancing digital infrastructure, improving e-governance, promoting digital literacy, fostering innovation, strengthening cybersecurity, and establishing India as a global IT leader.

AI Mission

In the vision for India@2047, the Artificial Intelligence (AI) mission represents a groundbreaking endeavor geared towards unlocking the immense potential of AI to revolutionize innovation, foster economic expansion, and promote societal advancement. Here's an in-depth summary of the AI mission:

Mission Objective: The central aim of the AI mission is to establish India as a frontrunner in AI research, development, and application by the year 2047. This initiative is geared towards harnessing AI technologies to tackle pressing societal issues, enhance productivity across diverse sectors, and elevate the overall quality of life for citizens.

Research and Development: To achieve this objective, the AI mission will establish state-of-the-art AI research centres and innovation hubs across the nation. These hubs will serve as focal points for cutting-edge research and development in AI, fostering collaboration among academia, industry, and government entities.

Skill Development and Capacity Building: A key component of the AI mission involves implementing comprehensive programmes aimed at cultivating a skilled workforce in AI. This includes integrating AI education into academic curricula at all levels and offering specialized training courses to enhance the capabilities of existing professionals in AI-related fields.

AI Infrastructure and Ecosystem: To support AI innovation and entrepreneurship, substantial investments will be made in building robust AI infrastructure. This encompasses high-performance computing resources, data repositories, and AI-powered tools and platforms, alongside creating a conducive ecosystem for AI startups and entrepreneurs.

Ethical and Responsible AI Adoption: The AI mission places a strong emphasis on promoting the ethical and responsible use of AI technologies. This involves the development of guidelines, standards, and regulatory frameworks to ensure transparency, accountability, and fairness in AI systems, thus mitigating potential risks and biases.

AI Applications Across Sectors: The AI mission aims to encourage the widespread adoption of AI technologies across various sectors, including healthcare, agriculture, education, finance, transportation, and governance. Efforts will be directed toward exploring AI applications in areas such as precision medicine, smart agriculture, personalized learning, financial inclusion, intelligent transportation systems, and e-governance.

Global Collaboration and Partnerships: Recognizing the importance of international cooperation, the AI mission will actively foster collaboration and partnerships with leading AI research institutions, technology companies, and governments worldwide. This includes engaging in joint research projects, collaborative initiatives, and knowledge-sharing platforms to accelerate the development and adoption of AI on a global scale.

Monitoring and Evaluation: To ensure the effectiveness of the AI mission, robust mechanisms will be established for monitoring and evaluating its progress and impact. This entails setting key performance indicators, benchmarks, and conducting impact assessments, with a commitment to making necessary adjustments along the way to ensure the mission's success.

In summary, the AI mission in India@2047 aims to harness the transformative potential of artificial intelligence to drive innovation, economic growth, and societal development. Through focused efforts in research and development, skill development, infrastructure enhancement, ethical adoption, sectoral applications, global collaboration, and rigorous monitoring and evaluation, India aspires to emerge as a global leader in AI by the year 2047.

Objectives two words Defence Front

In the context of India@2047, the defense front is envisioned as a comprehensive strategy aimed at safeguarding the nation's sovereignty, territorial

integrity, and national interests. Here's a detailed overview of the defense framework envisaged for India in 2047:

***Strategic Readiness*:** India@2047 foresees a well-equipped and modernized defense force, equipped with cutting-edge technology, weaponry, and infrastructure to effectively deter and respond to potential threats.

***Technological Innovation*:** The defense sector will prioritize research and development in advanced technologies like artificial intelligence, cyber warfare, space defense, and unmanned systems to maintain a technological edge.

Integrated Defense Capabilities: Efforts will be made to improve coordination among the Army, Navy, Air Force, and other defense components, ensuring seamless integration and interoperability in joint operations.

***Boosting Indigenous Defense Production*:** India@2047 aims to enhance indigenous defense manufacturing capabilities, reducing reliance on imports and fostering self-sufficiency through initiatives like Make in India.

***Border Security and Maritime Awareness*:** Heightened border surveillance, intelligence gathering, and maritime domain awareness will be prioritized to secure India's land and maritime boundaries, including coastal regions and exclusive economic zones.

***Counterterrorism and Internal Stability*:** Comprehensive measures will be implemented to counter terrorism, insurgency, and internal security threats, including empowering security forces, intelligence sharing, and community engagement programmes .

***Strategic Alliances and Diplomacy*:** India@2047 emphasizes strengthening strategic partnerships and defense collaboration with like-minded nations to ensure regional stability, address emerging threats, and tackle common security challenges.

***Cybersecurity and Space Defense*:** Given the evolving nature of modern warfare, particular attention will be given to enhancing cybersecurity measures and developing capabilities for space defense to safeguard critical infrastructure and assets.

***Human Capital Development*:** Investment in the training, education, and skill development of defense personnel remains crucial to cultivating a highly skilled and motivated workforce capable of adapting to evolving security demands.

Peacekeeping and Global Security: India@2047 reaffirms its commitment to global peacekeeping efforts and participation in international security endeavors, including UN peacekeeping missions and regional security initiatives. In summary, India@2047 envisions a forward-thinking and proactive approach to defense, aimed at ensuring national security, fostering regional stability, and contributing to global peace and security through strategic readiness, technological advancement, indigenous defense production, and international collaboration.

Conclusion

The Vision India@2047 offers an extensive strategy to elevate India into a developed nation boasting a $30 trillion economy. Through strategic foresight, inclusive development, and leveraging the nation's strengths, this roadmap aims to pave the way for a prosperous future.

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Changing Orientations and Future Directions of Change in Higher Education in India

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Universities form an intellectual base and a key source in shaping the collective imagination to design pathways for economic development and social progress. Universities, in this sense, have been contributing to making tomorrow a better place for all. Sustainable development and improved living in the present context depend on the ability of higher education institutions to generate, adapt and apply knowledge. The essence of higher education is about developing analytical capacities of the learners to produce knowledge and to realise individual potential. Universities help students to develop a good knowledge base to make them quick learners and problem solvers rather than confining to imparting of job-specific skills. The university experience is transformative which people may not get elsewhere and it is an experience that all eligible people should eventually have in the future.

A university has an intrinsic and an extrinsic mission. The intrinsic mission includes educating students, generation and dissemination of knowledge and is measured through examinations, grading, peer review, and academic quality assurance instruments. The extrinsic mission is carried out in partnership with external actors including the public authorities and employers, the professional network and communities at large. The extrinsic mission is assessed by external agents through graduate employment, salaries and rates of employment/unemployment of the graduates. The success of universities and higher education institutions lies in their capacities to reposition them in response to the changes external to them. The recurrent pressure to respond to external pressures compel higher education institutions to change and reorient the focus of their operations.

Although universities became teaching and research institutions in the twentieth century, they remained slow growing institutions with limited access and catering to the elite sections of society. The expansion of the sector in the past century and massification of the sector in this century helped democratising access to higher education in India. The National Education Policy–2020 (NEP 2020) envisages further expansion and universalization of the sector by 2035. This paper attempts to analyse the changing orientation of universities and higher education institutions in the past and to speculate the nature and direction of changes they may undergo in the future. The paper argues that the future of universities and higher education institutions will depend upon their capacity to : a) provide flexible pathways for higher learning; b) produce employable graduates; and c) integrating and mainstream technology in higher education.

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Orientation of Universities : Stage 1 Knowledge Transaction

The Universities have been medieval institutions engaged mainly in knowledge transaction centred around religion and spirituality. The major source of demand for higher education in the West was within the church, and the majority of students and teachers were clergymen (Cobban, 1975). Universities remained a place of *teaching or transacting knowledge* and of passing on the inheritance of past generations rather than engaged in the advancement of knowledge. The universities attracted knowledge seekers driven by curiosity rather than by economic motivations or employment considerations. In other words, the demand for higher learning emerged more for its intrinsic value than for its instrumental value.

The demand for knowledge came from the elite sections of society. The use of Latin as the academic language in Europe implied that the university students and teachers could be very mobile within the region The earliest university setup in Bologna in 1088 and the higher learning institutions established in Paris in 1150, in Oxford in 1167 and in Salerno in 1173 were all engaged in similar missions (Bresler, 2018).

Orientation of Universities : Stage 2 Emergence of Research in Universities

Research became an important function of higher education when Humboldtian initiatives led to establishment of research universities in Germany in the 19th century. The United States, United Kingdom and Japan recognized the value of research and established research universities and

promoted research in the universities. Some countries such as in France, the Soviet Union, and China, research was very often carried out in specialized institutions, outside the university structure. The immediate objective of research in the universities was to support the production sectors, especially industrial development in Europe. Thus, the role of universities expanded to include not only transaction but also creation of knowledge to support industrial development. Most of the universities in Europe were founded in the twentieth century (Perkin, 2007) to fulfil these twin objectives.

Orientation of Universities : Stage 3 Emergence of Developmental Universities

Universities came to be recognized as institutions promoting national development and thus evolved the idea of developmental universities (Coleman, 1986). The land-grant universities of the US in the nineteenth century, the universities of the post-World War II reconstruction phase in Europe and universities in the post-colonial period in most of the less developed countries are examples of developmental universities. The idea of developmental universities implied linking university engagements with national priorities to support economic and social development while maintaining institutional autonomy and academic freedom.

The state became an important, if not primary, recipient of the research findings and employer of the trained human resources produced by the universities. The university graduates assumed roles in government and in policy and planning. Since engagements of developmental universities were aligned to national priorities, public support and state funding for higher education were forthcoming. Thus, higher education became a public sector activity in most countries of the world. The developmental universities also played a social role of preserving and passing on the inheritance of the past generation to the next through nationalizing the content and curriculum. The public sector support also helped to successfully transmit the cultural heritage and national traditions from one generation to the other.

Orientation of Universities : Stage 4 Emergence of Entrepreneurial Universities

The evolution of knowledge economy underlined the importance of knowledge becoming the crucial factor in economic growth and social development. In fact, knowledge has replaced other resources as the main driver of economic growth. It saw a steady acceleration in knowledge production and it was realized that knowledge production itself has become an economically rewarding activity. Since universities are the major sources of knowledge production, they became dear to knowledge users and knowledge-based production sectors of the economy.

The debate on the type of knowledge to be produced centred around knowledge as knowing and knowledge as operation. Those who argued for knowledge as knowing argued for intensifying discipline-based knowledge production and tended to tilt towards Mode 1 knowledge production characterized by theory building and testing within the boundaries of their disciplines. Others argued that knowledge production should take into account diverse viewpoints, collaborative thinking, interdisciplinary orientation and collective action. The transition from mode 1 to mode 2 knowledge production made research and the higher education sector more democratic and less elite.

Another interesting development during this phase is the realization that knowledge production in itself was an economically rewarding investment and the corporate sector started attracted to be involved in research and knowledge generation activities. The massification of the sector also implied demand for diversified objectives of seeking higher education. Employability became an important reason for seeking higher education. The demand for educated increased in the knowledge economy and jobs in the knowledge intensive sectors of the economy invariably demanded post-secondary level of education as entry level qualification. The public sector investment could not keep pace with the ever-increasing social demand for higher education and changing demand for the higher educated. Universities became entrepreneurial in their orientation and market mediated in their engagements. Higher education was placed in market place as a commodity to be traded in the market within and across national boundaries. The corporate involvement in higher education promoted sponsored research and proliferation of private higher education institutions to meet the increasing demand for higher education.

Expansion and Massification of Higher Education in India

When universities were established in India in 1857, their main function remained academic administration such as granting of affiliation to colleges, conduct examinations and award degrees.

Teaching used to take place in colleges and research was not a priority area in the universities till the twentieth century.

Indian higher education has been a slow growing sector with enrolment ratios remaining at single digits in the first fifty years of planned development. The growth of the sector accelerated and the country moved to a stage of massification of higher education in this century. The massification of higher education in India is also a contribution of the market friendly reforms in the public institutions and fast growth of private universities (Varghese, 2022). At present the private sector accounts for a major share in higher education institutions and student enrolment.

The evolution of the private sector in higher education in India has seen different phases. In the 1970s grants-in-aid institutions - public funded private higher education institutions - were common. In the 1980s self-financing private institutions most commonly called 'capitation fee colleges' came into existence. The capitation fee colleges were mostly for-profit private institutions offering courses mostly in the subject areas of engineering, medicine, and management. They proliferated, especially in the Southern states of India. These colleges were mostly teaching institutions affiliated to public universities and their degrees were awarded by the parent universities.

The Ambani-Birla Report of 2000 recommended for the establishment of private universities in India. Although the federal parliament could not legislate on the private universities Act many of the state legislatures passed the Act and private universities became a new feature of development in higher education from 2002 onwards and private universities proliferated in India. These developments helped accelerate the growth, expansion and massification of the sector

Although private sector is a major player in higher education, many of them provide low quality education and are in the verge of closing down. For example, as per the Supreme Court order in 2005, 117 private universities were closed down in Chhattisgarh. Similarly, many private technical and professional colleges are closing down in Tamil Nadu and operating at suboptimal levels in other states due to declining enrolment primarily due to questionable quality of education provided.

At present India has a massified higher education sector and is the second largest higher education system in the world. According to All India survey of Higher Education (AISHE) enrolment in higher education in India increased to 43.3 million in 2021-22 and Gross Enrolment Ratio (GER) increased to 28.4 %. Nearly 78.9% of the total students are enrolled in undergraduate level courses; most of them look for a job immediately after graduation. The NEP–2020 envisages further expansion and universalization of higher education by 2035. What will be the nature of changes in higher education in the coming decades?

Drivers of Change in Higher Education

Based on the past trends and new initiatives following the NEP 2020, it is argued in the following paragraphs that the future changes in higher education will depend mainly on : a) employment opportunities; b) technological changes; and c) financing arrangements for an expanding higher education sector.

Employment and Employability of Higher Education Graduates

Massification of the sector changed the prime objective of seeking higher education. Today, many young people enter university mainly to prepare for careers. Unfortunately, India is experiencing a phenomenon of increasing of youth unemployment accompanied by a widening of job-skill mismatches. Some argue that universities are producing unemployables and a reorientation of higher education institutions to focus on skill development may be needed to minimise, if not eliminate, graduate unemployment. However, the reality is that youth unemployment situation is worsening because of the phenomenon of jobless growth and job loss growth experienced in the recent past.

According to NCAER Report of 2018, India is experiencing a seemingly conflicting situation of high level of unemployment of the educated and high degree of shortage of skilled and trained labour needed in the industry and business (NCAER, 2018). In fact, the rate of unemployment among the youth in the country is at a 45-year high (UNESCO, 2020). One of the reasons for the increasing unemployment among youth is lack of training in communication, technical know-how and analytical skills. For example, the 2019 *National Employability Report for Engineers* found that about 80 per cent of Indian engineers did not possess the skills needed to meet the demands of their employers.

Nearly 90 per cent of the youth in India have no formal or informal vocational or skill training. The *India Employment Report 2024* by IHD and ILO shows only 15.6 per cent of the youth had vocational training, only 4.09 per cent of the youth had formal vocational training and only 4.6 per cent of the youth are technically trained and qualified. It is expected that India will lose 85 million jobs and may create 97 million new jobs in the immediate future (UGC, 2023). The skill requirement for the emerging jobs will be different from the stock of skills possessed by the Indian workforce. Therefore, the demand for skill training will be expanding.

One of the difficulties in expanding skill development programmes is that a large share of the workforce in India is engaged in informal and non-formal sectors of the economy. At times jobs in the formal sector are also informalized. It is difficult to identify training needs in the informal sector partly because both the employers and employees do not recognize the need for skill training

Households are investing in skill development courses and many prefer short-duration courses offered by non-university institutions compared to long-duration degree programmes offered by the universities. The preference for short-duration courses is also due the fact that open unemployment in India today is majorly for those under 35 years old and among those who are educated beyond secondary levels of education. Households also make a trade-off between investing four years for a university degree or investing in a short-duration skill-based course. More often than not, the decision is in favour of skill-based courses offered by non-university institutions mostly in the private sector. The higher education institutions may respond by reorienting their study programmes towards a more mixed offering which includes degrees plus shorter cycle qualifications and credentials

Technology Integration in Higher Education

The past two decades have seen an increasing trend of reliance on digital technology in all spheres of life including education. Globally, the percentage of internet users rose from 16 per cent in 2005 to 66 per cent (5.3 billion) in 2022. The share of internet users is around 92 per cent in the high-income countries and 99 per cent among youth in high income countries. Many believe that reliance on technology provides an alternative to the traditional brick and mortar system of providing higher education. The emergence and fast expansion of massive open online courses (MOOCs) in the past decades have changed the landscape of higher learning globally. COVID-19 has further accelerated the use of technology in education and the transition of the entire educational process from face to face to online and virtual modes within no time. How far these developments would be widespread in India?

Distance learning in higher education started with correspondence courses at the Delhi university in the 1960s. Open Universities were established in India in the 1980s. At present India has 18 open universities and 220 dual-mode institutions offering distance education courses. The technology-assisted learning facilities are widening opportunities for pursuing higher education. India has developed a SWAYAM MOOCs platform which is one of the largest online free E-Learning portals. According to the new regulations, each university is expected to have 20 per cent of their course credits to be offered from the courses available on SWAYAM portal.

The advent of technology-mediated higher learning has challenged the traditional universities and their modes of curriculum transactions. The successful survival of universities depends on their capacity to change and transform to offer flexible pathways for higher learning. The students in the future opt for multiple flexible modes, switching between on-campus, blended and fully online modes of delivery of study programmes and courses. Further, the credit transfer facilities expanded the opportunities for students to opt for courses from different departments of the same university and of other universities to acquire total credits required for award of a degree. The students may register for one long term study programme with courses offered by different institutions and in varying modes and follow simultaneously several short duration online programmes. It is probable that a student may graduate with a degree along with many short cycle credentials from different institutions acquired through multiple modes. Online courses and fully accredited online universities may become a reliable substitute or supplement for existing institutions of higher learning and skill formation.

Artificial intelligence (AI) is the latest to enter to transform education. Several countries have evolved national AI strategies to integrate AI in teaching and learning and have developed and implemented the AI curricula. AI has gained new impetus after the release

of ChatGPT. In short, AI is redefining the landscape of higher learning with unlimited possibilities that were not foreseen in the past. There is also a strong argument for applying caution to indiscriminate reliance on AI and ChatGPT in higher education.

All these indicate that technology is changing the face of learning. It becomes impossible for any youth to keep away from personal computers, the internet and search engines, mobiles and smartphones and social media which are transforming the way people learn, work and live. The pace of change is unrelenting and the boundaries between the real physical world and the virtual world are becoming blurred. Recognizing these changes and internalizing these new forms of learning opportunities are far better option than remaining in doubt and hesitating to be part of the change induced by technology.

These changes are not without adverse implications. The availability of technological devices and infrastructure are unevenly distributed among youth. The *India Employment Report 2024* (IHD and ILO) shows that nearly three-fourths of the youth in India were unable to send an e-mail with an attachment file and more than 90 per cent of the youth could not use arithmetic formula on a spread sheet, or make a power point presentation. The unequal access and uneven capacity to use technology may increase inequalities when one moves from offline to online mode of education in India.

Changing Financing Arrangements for Higher Education

One of the important features of the twentieth century is the expansion of education primarily through public funded institutions. This trend continued till the 1980s when state funding became a constraint for higher education sector to expand. Reliance on non-state funding has taken two forms - privatization of public institutions and promotion of private institutions (Varghese, 2022). Both the modes ensured that the cost of pursuing higher learning is systematically shifted from the public exchequer to the households. In the process higher education became an area for operation of the market forces and an attractive investment avenue for the profit seeking private entrepreneurs.

A general trend is that most of the educationally backward states of India allocate a larger share of their resources to elementary education. For example, in 2020-21 nearly 40 per cent of the education budget was allocated to higher education and 60 per cent to school education. Some states such as Jharkhand invested more than 70 per cent of its resources in primary education and the remaining to other levels of education. The higher education sector got low share (a share less than 15 %) the total education budgets in many states.

The high private returns to investment in higher education incentivized the households to support and expand the market base in higher education. In fact, many households shifted part of the financial burden to the banks through student loans. The government increased student support systems through fellowships to pay fees to the institutions of higher education and ensured the survival of many private higher education institutions. The fee reimbursement scheme introduced in some of the Indian states is a good example of the new modality of public financing of private institutions.

India adopted varying measures of cost recovery to mobilize non-state resources for higher education. These measures included an increase in fee for all courses offered by the existing public institutions, introduce fee-based financing of new courses and create public institutions which are operating on a self-financing mode. For example, the tuition fees and other fees in IITs have been increased in the recent past. Similarly, the medical colleges of Maharashtra, Tamil Nadu and other states also announced a hike in student fees, especially for technical and medical education. The fee levels in private institutions are at times prohibitively high which forces students seek admission in medical colleges in the East European countries and China.

The NEP 2020 does not give scope for increased public funding for higher education. It reiterates the commitment made in earlier polices of allocating 6 per cent of the GDP. Even if this target is achieved, it will remain grossly inadequate for meeting the expansion requirements of the sector. Given the fact that more than two-thirds of the students and 75 per cent of the institutions of higher education are in the private sector, regulations on the market process to ensure equity and quality becomes important public policy intervention in India than relying on public funding. What is more important may be to better targeted the public funding in favors of the disadvantaged to ensure social equity. The emerging picture seems to be to rely on non-public sources of funding for further expansion of the higher education sector.

Directions of Change in Higher Education

The directions of change in the higher education sector will be influenced by the recommendations of the NEP 2020. NEP 2020 envisages an expansion and universalization of the sector. NEP envisages reaching the target of a GER of 50 per cent by 2035. While educationally advanced states may find it an easy to achieve the target, the less developed states such as Bihar, Jharkhand, Uttar Pradesh, Odisha, Rajasthan, Madhya Pradesh and other similar states may find it almost an unachievable target.

The NEP 2020 considers to transform existing higher education institutions into multi-disciplinary institutions-Research Universities, Teaching Universities and Multidisciplinary Autonomous Colleges - to develop world-class Multidisciplinary Education and Research University (MERU). It will also put an end to the system of affiliated colleges over a period of next 15 years.

The NEP promotes flexible pathways to higher learning. The system will promote 4 or 3 year- long undergraduate degree programmes, one or two year-long Master's programmes, credit transfer between universities and between online courses and face-to-face courses. The flexibility of curricular choice shall be an important element of the restructuring of pedagogy.

Another policy prescription is institutional consolidation to ensure that each higher education institution will have a student strength of 3000/. As of 2019 nearly 6.5 per cent of the colleges have an enrolment of less than 500/students; nearly 92 per cent of the colleges have less than 2000/students and only 4 per cent of the colleges have more than 3000/ student enrolment. There are many single-disciple institutions with low enrolment which are in the private sector. It will be difficult to consolidate or merge institutions under different management.

The NEP 2020 accords high priority for enhancing quality of higher education outcomes. The NEP 2020 is considering setting up of a meta-accreditation agency called the National Accreditation Council (NAC). The NAC attempts to create a set of accreditors at the regional level. The NAC will accredit the accreditors (the decentralized or regional accreditation agencies) to create a pool or an ecosystem of accreditors. These decentralized efforts for the provision of accreditation facilities may increase the number of institutions accredited in the future years. Further, India is also planning to develop 20 institutions (10 public and 10 private) of eminence (IoE).

The NEP 2020 proposes to transform the governance system by setting up a single regulator as Higher Education Commission of India (HECI) with four verticals: for regulation (NHERC), accreditation (NAC), higher Education Grants Council (HEGC) for funding and General Education Council (GEC) for academic standards. The standard setting functions will be performed by the professional standard setting bodies (PSSBs) under the GEC. The idea of creating a single regulator is to facilitate 'light but tight' regulation and to avoid problems of over-regulation in higher education. All the professional bodies, except the medical and law stream of education will be under the HECI. The private and public sector institutions of higher education will have the same set of regulations.

The major challenge facing higher education in India is providing affordable higher education of comparable quality in a market mediated framework. The high incidence of unemployment among the higher education graduates questions credibility of degrees and their reliability as indicators of learning outcomes. The other major challenge is addressing the issue of student diversity. Many of the new entrants to higher education institutions are first generation learners, belonging disadvantaged groups from remote locations and mostly proficient in regional languages. Addressing student diversity both for academic integration in the classrooms and social inclusion on the campuses need to be addressed with empathy.

The Future Orientations of Higher Education in India

Following from the analysis and discussions in the preceding paragraphs it is important to draw some conclusions with regard to the directions of change and future of Indian higher education in the global context.

Global higher education shows signs of contraction in the coming decades. More than 50 percent of the world's population live in countries where population growth is less than the replacement rate of 2.1 children per woman. The higher education sector has already been shrinking in countries such as Japan, Korea, Russian Federation and USA (Varghese, 2024). It can be reliably speculated that India will

experience a continued growth in youth population and enrolment in higher education to become the largest higher education system in the world.

Although the brick-and-mortar universities will continue to be the main source of knowledge production and transactions in India, they have to change to survive and remain relevant. From this viewpoint, the future of universities and higher education institutions lies in their capacity to offer flexible pathways to learning. Studying in multiple flexible modes, switching between on-campus, blended and fully online modes as per the convenience of the learners may become common modes of higher learning. Students may opt for courses from different departments within a university and from other universities to accumulate the credits required for a degree.

Some of these changes are already in the making. According to the *European University Association (EUA) Trends 2018, report,* 80 per cent of surveyed European higher education institutions see the need for more flexible provision for degree programmes, and 62 per cent of them indicate a growing demand for short-duration (non-degree) learning opportunities. Following flexible pathways and Modularisation and credit transfer mechanisms emerge as a global phenomenon coming decades.

While certification will be based on credits, the modes of credit accumulation maybe flexible. Universities may also offer short certificate courses along with long degree programmes. It is probable that institutions awarding degrees as the only form of credential may eventually disappear. The most common model may be the one where the students may graduate with one degree and a multiple of short cycle credentials (Varghese, 2020). The short duration credentials will be in areas more closely linked to employment than the degrees. This may be the way higher education and employment will be linked in the future.

The brick-and-mortar universities may lose their hold in imparting job-specific skills. The non-university institutions will be fast expanding their influence and attracting students for skill training. Becoming work-ready may cease to be a good reason to go to a university; instead, many students may seek admissions in non-university sectors to be trained in employable skills. Online courses and fully-accredited online universities may become a common feature to supplement institution-based learning and skill formation.

In other words, universities will provide on-demand learning in multiple modes, with a seamless handoff between those modes. There will be a move away from degrees as the only form of credential offered, and a move towards more mixed offering of degrees plus shorter cycle qualifications and credentials. It can be argued that the engagement of universities in research and knowledge production and training for research will remain central to their functions even when knowledge transaction may rely on diversified modes and multiple channels.

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Role of India in Steering Ahead through Education Policies in G20 in Achieving 'One Earth, One Family, One Future'

Neelima Gupta*

The Group of Twenty commonly called G20 was founded in 1999 as a forum for the Finance Ministers and Central Bank Governors after the Asian financial crisis to discuss global economic and financial issues. It was upgraded to the level of Heads of State/Government in the wake of the global economic and financial crisis of 2007, and further, in 2009, was designated as the '*premier forum for international economic cooperation'*. It plays an important role in shaping and strengthening global architecture and governance on all major international economic issues. It has been estimated that the G20 countries jointly contribute to approximately 85% of the global GDP and 75% of international trade. These figures underscore its substantial influence, as decisions made, or not made, within the group hold significant weight.

Under the leadership of a rotating Presidency, the G20 Summit is held annually. Initially, the G20 focused mainly on broad macroeconomic issues, but it has now expanded its agenda to inter-alia including education, trade, agriculture, health, environment, climate change, energy, anti-corruption, and sustainable development.

G20 accounting for two-thirds of the world's population is a leading forum of major economies that seeks to develop global policies addressing the world's most demanding challenges. The G-20 members are Argentina, Australia, Brazil, Canada, The People's Republic of China, The European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, the Republic of Korea, the Russian Federation, Saudi Arabia, South Africa, Turkiye, the United Kingdom and the United States. Each year, the Presidency invites guest countries to fully participate in the G-20 exercise.

The theme of the international summit was '*Vasudhaiva Kutumbakam'* or '*One Earth. One Family. One Future'*. It is derived from Maha Upanishad, a famous ancient Sanskrit text.

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It was indeed a proud privilege for India to host the Presidency of the G20 from 1 December 2022 to 30 November 2023.

The 18th G20 Summit was a culmination of all the G20 meetings held throughout the year among ministers, senior officials, and civil societies. A G20 Leaders' Declaration will be adopted after the G20 Summit, stating Leaders' commitment towards the priorities discussed and agreed upon during the respective ministerial and working group meetings. The summit was held from September 8 to 10 at the newly constructed Bharat Mandapam, Pragati Maidan, New Delhi, placing a strong emphasis on showcasing its rich culture and cuisine to world leaders and their spouses.

The 2024 G20 Rio de Janeiro summit is the upcoming nineteenth meeting of Group of Twenty, a summit scheduled to take place at the museum of Modern Art in Rio de Janeiro on 18-19 November, 2024, the first G20 summit to be held in Brazil. The motto is Building just world and a sustainable planet.

G20 Education Working Group (EdWG)

The Education Working Group (EdWG) was established in 2018 during Argentina's G20 Presidency to address skills for life and work and financing of education. UNESCO supports the G20's education initiatives by promoting policies to shape the future of education, life, and work. This year, G20 Education Working Group 2023 was focused on areas for inclusive, equitable, relevant, and quality education and lifelong learning opportunities for all.

India as a host, built on and carried forward the deliberations held under past presidencies and addressed the problems that are preventing the full transformational potential of education from being realized. In tune with this spirit, priority areas were identified for deliberation with the purpose to:

1. Identify and address major problems that are being encountered by learners across the world, preventing education from becoming an effective tool for improving lives;

2. Help build on the strengths acquired during the past years, especially the use of technology in education;
3. Enable a relook at the teaching and learning methods, contents, curricula, pedagogies, assessment and more, so that education can be made more relevant for the capacities and skills required in the 21st century and to ensure that education prepares learners of all ages and throughout life to address contemporary challenges;
4. Encourage collaboration between people, industries and societies in the quest for widening the horizons of knowledge and using it for the good of humankind.

Past Education Working Groups

The Education Working Groups under the past G20 presidencies have focused on strengthening educational systems by making them more inclusive, accessible, and innovative. During the previous presidencies, themes on educational poverty, universal quality education, continuity of learning in times of crises, and supporting teachers have been discussed. The Education Working Group has also discussed the use of technology for educational continuity and universal access, addressing challenges of digital divide, impact on early learners, and issues of data privacy, cyber safety and responsible use of technology. Issues related to the changing nature of work and the need to build capacities in response to this by reorienting, reimagining and rebuilding the education and skilling ecosystem have also been discussed. G20 members have shared their experiences of dealing with disruptions and learning losses by adopting of innovative methods of teaching-learning especially during the COVID-19 pandemic.

G20 EdWG has drawn the attention of policy-makers across the G20 member countries to a number of 8 education issues, for mutual dialogue and peer learning. The United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Children's Fund (UNICEF), and the Organization for Economic Co-operation and Development (OECD) have been invited this year to participate in the knowledge learning process of the G20 EdWG.

India taking Presidency of G20 Education Working Group (EdWG)

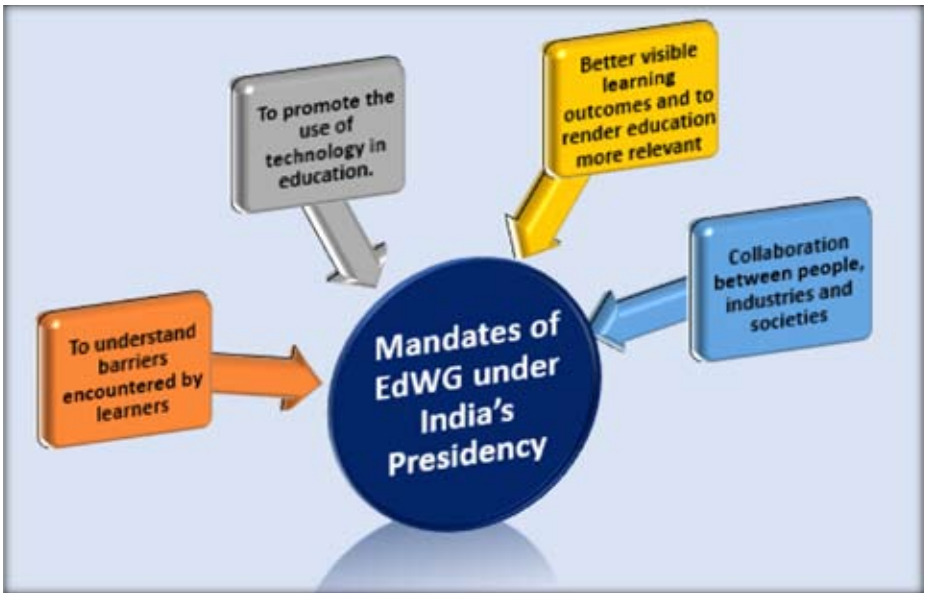
India's G20 Presidency centres focused on striving for just and equitable growth for all holistically and sustainably. It is this spirit that is embodied in the theme '*One Earth, One Family, One Future*', which is in tune with India's ancient concept of the world is one family.

India's G20 Presidency, has identified new priority areas: bolstering FLN as the building block for future learning; fostering open educational resources, strengthening the digital resources and encouraging standardized frameworks for educational content, technology, and pedagogy; and enhancing research collaboration among educational institutions in G20 countries, through student mobility and joint or dual degree programmes .

Mandates of EdWG under India's Presidency

1. To identify and understand barriers encountered by learners that reduce the impact of education as a tool for improving lives.

Fig 1: Mandates of EdWG under India's Presidency



2. To help build on the strengths acquired over the years, especially the use of technology in education.
3. To enable critical reflection on teaching and learning methods, curricula, contents, assessment and pedagogies to ensure better visible learning outcomes and render education more relevant to the skills, competencies, values and attitudes required in the 21st Century.
4. To encourage collaboration between people, industries, and societies in the quest to broaden the horizons of knowledge for human welfare (Fig.-1).

Priority Issues

The G20 Indian Presidency identified the following four priority issues (Fig.-2):

1. Ensuring Foundational Literacy and Numeracy (FLN), especially in the context of blended learning.
2. Making Tech-enabled learning more inclusive, qualitative and collaborative.
3. Building capacities and promoting lifelong learning in the context of the future of work.
4. Strengthening research and promoting innovation through richer collaboration and partnerships.

FLN has been regarded as the essential building block for further learning and development. Although school accessibility has expanded over the past decades, nevertheless, a large number of children across the world still lack FLN competencies. Therefore, there is a compelling need for countries to accelerate learning system reforms and redesign approaches for achieving global FLN.

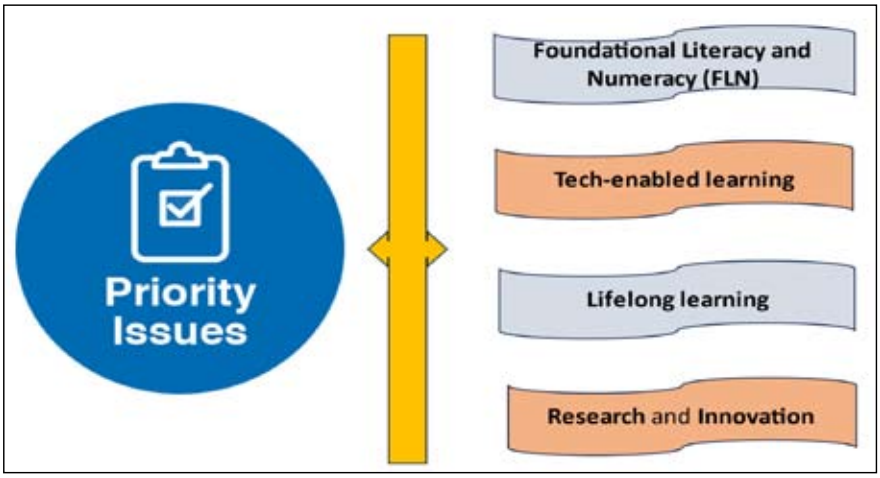
Technology-enabled teaching learning is now gaining momentum as an important tool for expanding educational access and enhancing student learning, but leveraging it depends on several interconnected factors, including access to infrastructure, affordable devices, trained teachers and facilitators, and relevant educational content. In addition, appropriate policies and practices are required to ensure safe and purposeful use of technology to support effective teaching and learning.

Presently, transformative changes are occurring like jobs and the way they are being performed. It is critical to ensure that learners gain knowledge and skills that are relevant to the emerging work ecosystem and that every individual gets empowered to take benefit of skilling, reskilling, and upskilling.

It is the need of the hour that countries collaborate on research and knowledge creation. This entails enhanced cooperation among higher educational institutions in G20 and invited countries.

The four priority areas mentioned above are expected to lead to the desired outcomes of inclusive, equitable, and quality education and lifelong learning opportunities for all. They are interconnected and mutually influential, acting as a valuable frame of reference that threads across interconnected education policies from a lifelong learning perspective. Progress across all priority areas – and more broadly across all the SDGs – is advanced by accelerators. These accelerators can be identified as : digital transformation, women-led development and the sustainable transition to a green economy (Fig.-3).

Fig 2: Priority Issues



Accelerators

Digital Transformation

Digital platforms and content have played a crucial role in providing access to

education during the COVID pandemic. Digital tools offer personalized instruction and support, catering to the specific needs and preferences of learners, emphasizing the requirement for content in local languages and considering the needs of individuals with disabilities. They also foster cooperative avenues for knowledge production, research and innovation in higher education institutions. Collaboration between higher education systems, research clusters and clients can drive progress in SDG areas like energy, health, food security and technology. Artificial Intelligence (AI) has transformative potential, automating tasks like content creation and grading.

The development and deployment of digital technologies can result in transformations that power inclusive and sustainable growth. It has a profound impact on achieving the SDGs, by revolutionizing the connectivity, accessibility, affordability, governance, security and regulation of technology.

Adult learners can be upskilled and reskilled in emerging job markets, benefiting various industries, including the gig economy and informal sectors through digital transformation. Access to information on job opportunities and industry insights empowers individuals to make informed career decisions. Participation in the digital economy is crucial, and necessitates promoting equal and affordable access to digital skills, especially for those who are disadvantaged and vulnerable. Furthering digital literacy and skills in education and lifelong learning is essential to bridge the digital divide, including the gender gap. In 2023, the G20 EdWG has emphasized the cross-cutting role of digital transformation in preparing learners to build foundational skills; facilitating learning that is qualitative, collaborative and inclusive; and enabling lifelong learning.

Women-led Development

Women are well placed to define young girls' education needs in terms of foundational learning, skill preparation and upgrading opportunities. Involving women and girls more closely in thought leadership, governance and management positions within green transition models and research is therefore paramount to accelerate progress towards the SDGs.

To ensure women's meaningful participation in the digital era, it is important that women participate in policymaking pertaining to emerging technologies like AI, the future of work and cyber safety. Not only the barriers be reduced, but also women's employment and entrepreneurship be increased in the digital space. Consistent investments in mentoring and programmes for upskilling and reskilling can boost women's employment and increase opportunities for entrepreneurship.

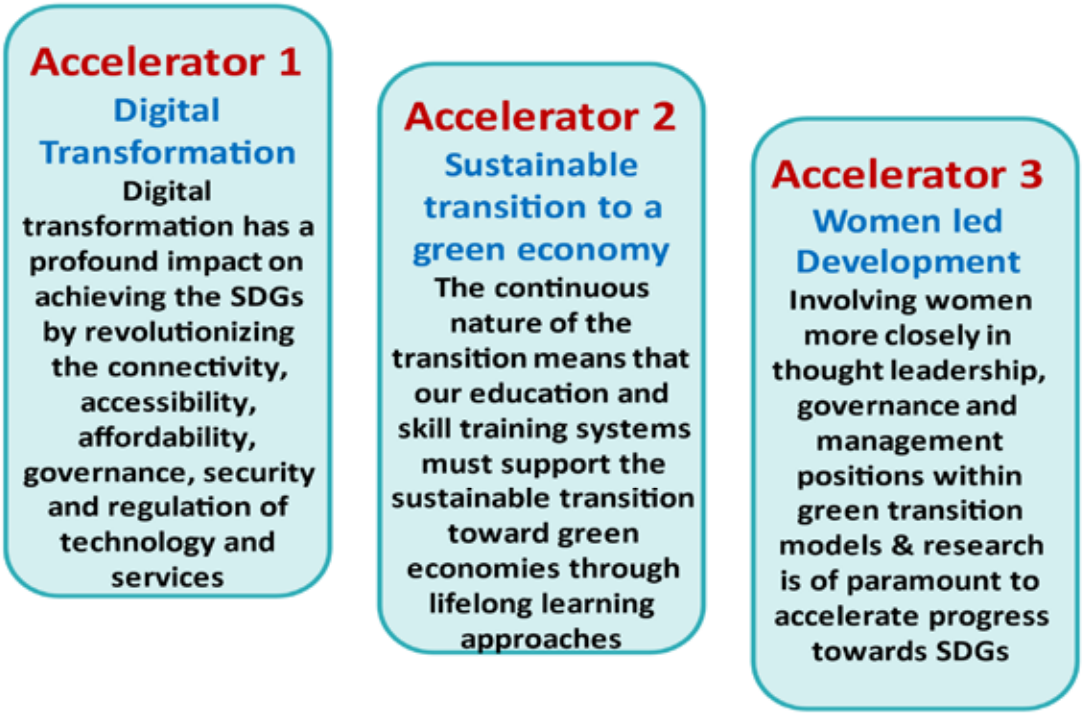
It is time to solutions for addressing the gender digital divide and enhancing the representation of women and girls in science, technology, engineering and mathematics. Hearing women's voices more clearly at the centre of education requires formal mechanisms for expanding women's inclusion and authority within community decision-making and civic spaces; in high-level agenda setting, review and monitoring roles; and within private-sector management positions. Harnessing the power, responsibility and commitment of the G20 EdWG platform, India will highlight women's participation, leadership and contributions to educational progress, and enhance women's decision-making role. The India Presidency considers that such an approach would accelerate the redistribution of limited opportunities, resources and choices towards women.

Sustainable Transition to A Green Economy

Education and skill training provide the backbone for achieving a fair and inclusive transition to low-carbon economic models, in G20 countries. To ensure achieving the goal, schools should integrate sustainability and green-economy skills in their curricula including the foundational and 'green skills' needed to develop resilience, promote community involvement and ensure contributions to renewable energy, sustainable agriculture, waste management and resource efficiency.

As nature is in continuous transition, our education and skill-training systems must support the sustainable transition toward green economies through lifelong learning approaches. Green-transition should benefit individuals entering the workforce, in transitioning industries and vulnerable communities in particular. Higher education institutions can play a major role in bringing about this transition by undertaking interdisciplinary research in overcoming energy and resource limitations, addressing climate-change impacts, exploring greener business models and studying the

Fig 3 : Accelerators for the Transformation of Education



role of advanced technologies. Through collaboration and problem-solving networks, these institutions can actively participate in designing greener and fairer economies for sustainability.

G20 has shown remarkable commitment and action to spearhead the sustainable transition to a green economy, but all member countries face serious challenges. Financing the transition is a major concern, especially for nations with low resources. India's leadership of the G20 EdWG aims to foster dialogue and action on aligning education and skill training, with the desired trajectory of an equitable and efficient green transition. India's Lifestyles for the Environment (LiFE) initiative specially aims to encourage the adoption of sustainable lifestyles and bring individual behaviours to the forefront of the global climate-action narrative. LiFE envisions replacing the prevalent 'use-and-dispose' economy with a 'circular economy' and plans to leverage the strength of social networks to influence social norms. Through the G20 EdWG, India aims to catalyse international action on sustainability, with particular emphasis on the role of foundational learning, lifelong skill acquisition and higher education in the context of the future of work and society.

India, while taking the Presidency of 2023 G20 summit, aimed to work together with G20 countries to bridge gaps in quality education and skilling. The concerted efforts made in education have focused on working together to find viable solutions to the challenges facing the world and support each other so that the desired goals may be achieved. G20 summit is an excellent opportunity for India to take the theme of the summit forward.

❑

Reimagining Future Universities

Ranbir Singh*

Nearly 100 years after the world was ripped by a massive Spanish Flu pandemic, the year 2020 has been a repeat of what one would say 'history repeats itself' story.

All walks of life, and every type of person, whether the rich or the poor have been severely impacted by the COVID–19 Pandemic worldwide, leaving no country unaffected, and with such a scale that has forced everyone to reimagine themselves, and acclimatize to the new post-covid era.

This new normal has ripped everyone's life or profession and HEIs are no exception, that they may not have been aloof to the scale of such a massive impact.

While the pandemic came down with a body blow to humanity as a whole, those who survived, cuddled together to come out of a devastating period that imbued this generation to in fact re-imagine everything that was being done per se until now. Post 2020 we now live in a new world, which is hard to reimagine.

Right from the virtual classrooms for tiny toddlers to the serious studies of college, everything now relies on online teaching-learning. Perhaps, history would stand as testimony of how this pandemic has molded us to rethink and reimagine how we all conduct ourselves. And, in this backdrop, it is quite natural that we look forward to charting a course in order to reimagine the future universities as well.

Student-centered, interconnected, and striving for a better world should be the new focus for universities they will have to show more empathy and commitment toward the changing landscape of the students' needs.

Driven by globalization, massive technological changes are imbibing institutions to redefine their role and the value they provide to students and society in general.

HEIs will now be expected to be exceptionally committed and subservient to the needs of students and concentrate on providing:

- On-demand and customized education.
- An amalgamation of degrees and lesser qualifications.
- Quality and skill-oriented career advice.
- Entrepreneurship and collaboration, a higher education moment of choice.
- The necessity now is immersive learning experiences.

Student-centered learning education will enable them to foster technical as well as transferable skills once they take it upon themselves to learn according to their choice. The new norm would be blending traditional with non-traditional methods.

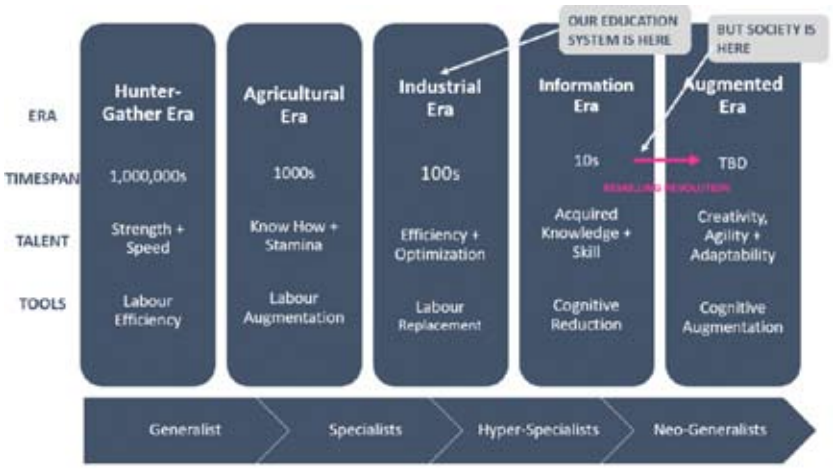
It has been estimated (by UNESCO Institute for Statistics) that 120 million people are going to enter higher education by 2030, and by that time we should have a system in place that allows students to learn at a time, place & pace of their own choice.

There is an urgent need to move toward 'Reskilling Revolution'[1]. The chart-1 would give a clearer picture of where we are standing today and how badly we require remodeling our current education systems by engaging multi-stakeholders and taking a giant leap to reskill the students in the future.

A sustainable future is now calling for reinventing higher education like never before. For example, "In the US even before the COVID-19 crisis, however, the higher-education sector faced significant challenges. Consider student completion: only 60 percent of all those who started college actually earned a degree within six years in 2017 (the latest year for which data is available). The figures are even worse for Black (39.9 percent) and Hispanic (54.4 percent) students. Other troubling disparities persist. In student enrollment, for example, 69 per cent of white high-school graduates enroll in college, compared with 59 per cent of Black high-schoolers and 61 percent of Hispanics. Furthermore, the level of student debt is rising, while repayment rates plummet, creating a potentially unsustainable burden for many students"[2]. Now this leads us to some fundamental question we have to ask ourselves, like:

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Chart 1: Remodeling Current Education system through multi-stakeholders



(*Source:https://www.reimagine-education.com/18-university-future-reimagining-higher-education/*)

- How distinct is your university?
- Is your university diverse as well as inclusive?
- Are you creating an environment for a high-quality student experience?
- Is your university achieving its educational mission and how? What models or channels are being used towards achieving these goals?

It is only through collaborative efforts that we can face all these new challenges that have been thrown upon us in a globalized world where mitigating these imminent risks affecting the future of higher education, especially in a knowledge-driven society has become more and more crucial.

Re-imagining the Future of Higher Education Together

We are in an era of technology-oriented start-ups who are promising to provide more focused solutions to more or less all problems, overnight.

Though this is something impossible to believe, the fact remains that no single venture can change the face of higher education.

It would probably be best if solutions do not just remain pure-tech ones and significantly remain human-centric with a niche technology empowerment approach. This would be the real panache to reimagining the future of higher education and together we should strive to achieve it.

Universities of tomorrow are going to face challenges that are very central to human progress in the 20th century. The new relationship that the future universities have to negotiate are issues like sustainability, which implies meeting current human needs, while preserving the environment, and natural resources needed by future generations. Hunger and poverty still exist in significant parts of the world. Climate change, environmental degradation, and economic disparities will be growing concerns facing the human race of tomorrow. We have to grapple with how knowledge can be utilized to improve the human condition, and how the future of tomorrow is going to bridge the demographic divide, digital divide, the genetic divide, and the nutritional divide in developed and developing countries. As modern societies are overtly consumption-driven societies, consumption will involve greatly the transformation of natural resources and energy, which will impact sustainability, and also tremendously deplete the natural resources. As economies and affluence continue to grow the knowledge of tomorrow has to grapple with new patterns of consumer behavior.

The journey in the 21st century will be into the increasingly interconnected world and to quote Peter Drucker, "The next society will be a knowledge society in which knowledge will be the resource and knowledge workers will be the dominant workforce. In the future, there will be two workforces made of under-fifties and the over-fifties." One of the most important driving forces due to globalization will be the movement of people, business, industry, and skills in the global market. In times to come, the world would be changing so fast that every tomorrow would be different and the universities of tomorrow have to keep pace with this change.

Endnotes

1. *https://www.reimagine-education.com/18-university-future-reimagining-higher-education/*
2. *https://www.mckinsey.com/industries/education/our-insights/reimagining-higher-education-in-the-united-states* ❑

Higher Education in 2047

Dhrubajyoti Chattopadhyay*

2047 will be a year that has a lot many science fiction marked in itself. Various predictions surround this very year as to how mankind will be and how will human lifestyle change. But have we ever thought about what will happen to the education scenario and more particularly the Higher Education sector? Let's take a look at how what Higher Education would be like in 2047.

At present, technology continues to be a catalyst for change and its impact on Higher Education will have innumerable dimensions. In 2047 it is expected that there will be a seamless integration of Virtual Reality (VR) and Augmented Reality (AR) in a way that will redefine physical and virtual learning spaces. Students will be able to attend virtual campuses and will be collaborating with their peers globally along with accessing resources in real time. Artificial Intelligence (AI) will play a pivotal role in defining adaptive learning. 2047 would see education in a much more customized manner where AI algorithms will continuously analyse each and every student's performance and it will generate targeted offerings specially designed to address the weakness of each and every individual and at the same time build mechanisms to enhance their respective strengths.

The traditional lecture-based model would be replaced by dynamic learner-centric pedagogies. Teachers would become more of facilitators and mentors whose main job function would be guiding students through interdisciplinary projects which would be a prototype of the real-world challenges.

Blockchain technology will be used in the certification process wherein its immutability along with security would ensure the authenticity of academic achievements, thereby reducing manipulations and frauds. The decentralization of certification will empower the learners to showcase their skills globally promoting equality and inclusivity.

Gamification and simulations would widely be used in education which will offer a variety of experiences ranging from historical reconstruction to scientific experiments making learning enjoyable and at the same time effective. There will be a gradual shift towards experimental learning which will nurture retention and critical thinking abilities.

Higher Education would be a competency-based education and will be flexible as well as customized learning. The students would be able to tailor their own educational journey and would be more of a choice-oriented education driven by the passion of a particular domain. Since cognitive skills would be measured by AI, the question "Why do you want to read this subject" will have a very definite and logical answer. Skills would be mapped by the job market and curricula will incorporate those skills to have a knowledgeable workforce. Academia and industry partnerships will be more prominent and will be more in numbers.

Since Higher Education would have so many changes, the cost of education will also rise. Various revenue models will also replace the old concept of tuition fees and there will be plenty of outcome based funding. They will have access to income share agreements and other alternative financing options to reduce the upfront financial burden of education and align the cost with success. Open Educational Resources and Massive Open Online Courses will continue to gain traction thereby offering affordable content and video lectures.

Higher Education would be at its zenith in 2047 and would encompass humanoids to deliver lectures since both android and humanoid would work jointly to make Higher Education more meaningful to the learners. This democratisation would challenge the traditional academic structures dismantling systematic barriers and would bring in green campuses, digital campuses, and energy-efficient campuses. The landscape of academic integrity would move to several uncharted territories of merit and brilliance. Brain-computer interfaces and neuro-feedback technologies will delve deep into student's cognitive insights unlocking new dimensions of human cognition and learning.

There will be a rise in quantum computing and there will be phenomenal problem-solving abilities in STEAM. Quantum education programmes would make students ready to navigate the complexities of

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quantum information science. Augmented Human intelligence would dominate each and every sector. Human Machine collaboration will enable better decision making processes and education will prepare students to interact with intelligent system. They will learn to leverage these i-systems to create and innovate. There will be continuous reskilling and upskilling.

Advancements in biohacking and bioinformatics will open new domains in collaborative research, knowledge development and an interconnected global research community. Data ethics and digital citizenship will also form an integral part of Higher Education. As Hybrid learning systems will rise, there will be a significant surge in data security and intelligent data monitoring systems for Higher Education. Immersive learning environments will be quite popular in the education scenario.

As we peer into the future of Higher Education, emerging technologies, and evolving pedagogies will shape a Higher Education that is no less than Science Fiction which has multifaceted terrain and will require a commitment towards innovation and will become a catalyst for a better tomorrow.

In navigating this journey the ethical concern would also become pretty evident hence a commitment to ethical principles would also be required. The future of Higher Education is not a destination but will be a journey that will see various phases and will be shaped by the collective efforts of educators, innovators, learners, and collaborators. The journey will not be a linear growth but will be an iterative process that will be resilient, responsive, and reflective of the values that we will be nurturing at that moment. The canvas is vast but the strokes are in our hands. Adaptability and foresight will be the beacon of knowledge, empowerment, and shared humanity. The potential for discovery, growth, and positive societal impact beckons but at the same time Higher Education would be flooded with pedagogical evolution, economic recalibration, and ethical considerations.

We have an immense world of exciting technologies waiting in the Higher Education sector. These technologies will redefine learning and will make education a new journey for learners. At the same time, various policies would also come up like that of 'National Education Policy' both nationally and internationally which would not only govern the landscape but will also shape the education through various hybrid technologies to make it inclusive and equal in real terms. The jobs will also undergo a sea change and the learning would be more of job training which would be a direct applied approach to theoretical concepts taught in Higher Education. Hence education for all who deserve it will be possible highlighting equality, accessibility, and Inclusivity. ❑

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India @ 2047 through the Lens of Sustainable Development Goals and CSR Intervention

P K Biswas*

Since Independence, India has witnessed considerable activity on the economic front. The government of India has designed several plans and schemes from time to time for the upliftment of the poor and the overall development of society. Some of these schemes have been very popular such as – the five-year plans, MNREGA, Pradhan Mantri Jan Dhan Yojana, etc. Despite such massive schemes being launched by the government, the poverty levels, education standards, access to education, access to water, livelihood, electricity, housing, etc.; have not been too encouraging if not dismal. As per NITI Aayog, at least one in 4 persons in India lives below the poverty line and as per the MPI 2021 (multi-dimensional poverty index), India ranks 66 out of 109 countries.[1] The GER (gross enrolment ratio) for higher education was 25.8 as of 2018-19; the adult literacy rate is around 70 percent, and just 70% of elementary and secondary schools have a student-teacher ratio of 1:30 or less.[2] The unemployment rate was 7.97% in 2020, around 12% in 2021, and 8% in 2022.[3] Besides these, India is grappling with issues related to pollution, malnutrition, access to basic health and hygiene, high dependence on fossil fuels, etc. The governments in India have been addressing these issues with all their might and have had some significant successes. However, it was soon realized that the participation of the corporate sector is necessary to enhance the pace of economic development and ensure that social development assumes a place of importance among the private sector which has to be accountable for the resources utilized by them for their growth. Thus, on 1st April 2014, India became the first country in the world to make Corporate Social Responsibility (CSR) mandatory through the Companies Act 2013. The Act mandated large companies to spend at least 2% of their average profits of the previous 3 years on activities related to Corporate Social Responsibility (CSR) each year. On the other hand, the government is encouraging the corporates to map the CSR spend with the Sustainable Development Goals (SDGs).

CSR and Sustainable Development Goals (SDGs)

The SDG framework was proposed by the UN as post-2015 development agenda that consists of 17 Goals and 169 action points for their implementation.[4] They recognize the interrelated nature of issues such as poverty, inequality, decent work, gender equality, and ecosystem conservation, as well as the necessity for all societal actors to jointly tackle them. The SDGs were developed through inter-governmental collaboration using public engagement processes to actively mobilize and consult national governments of both 'developing' and 'industrialized' countries in addition to various civil society groups.

It was suggested by many that to make CSR work well, an element of sustainability should be incorporated into a firm's strategies for better financial performance, better image and improved stakeholders' relations. Moreover, it is just not the corporation per se but the engagement with various stakeholders that provides an impetus for sustainable development. Thus, multi-stakeholder partnerships have become crucial for the sustainable development agenda. SDG goals 16 and 17 specifically talk about this 'to enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources.

As the SDGs have to be attained by 2030, as indicated by the UN; so the world is left with just about a decade only. This imposes a question on all the countries, regions, governments and corporates – what has been done by them toward this goal? What kind of effort has been taken by them in this regard? Several studies have reported that though the SDGs had called for worldwide action by the government, corporates and civil societies to achieve shared and sustainable prosperity; the corporate sector has shown very slow progress in adherence to the targets.

The SDGs call for worldwide action among governments, businesses, and civil society organizations to achieve shared and sustainable prosperity. However, the corporate sector still exhibits slow progress about working towards a sustainable world. For example, according to Price Waterhouse Cooper (PwC, 2019), 72% of companies publicly mention SDGs in their reporting publications, yet only 20% of companies set quantitative targets linked to achieving the goals, and only 8% of these companies, (only 1% of the overall sample) are reporting quantitative measures to show their progress towards targets.

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Development – the Indian Scenario

India's prominent place in the world as one of the fastest growing economies (World Economic Outlook Update 2017) is definitely due to the gain in business activity while at the same time, India's social and human index is challenging and calls for concerted efforts of government and corporates by creating better opportunities for weaker sections and leveraging corporate resources, technology, and know-how to create social value and ultimately shared prosperity. As the world moves towards the middle of year 2022, a decade remains for the completion of the SDGs by 2030. With 17.7 % of share in the total world population, India has a very high degree of responsibility towards the achievement of world SDGs. The spill-over score for India is 98.8 which implies that India is in a strong position to create very positive spill-over effects for other countries.

Despite India's best efforts to reduce poverty, it has the highest number of people living below the international poverty line. As per the World Bank Report 2013, 30 per cent of its population was under the $1.90-a-day poverty measure. According to the United Nations MDG 2014 report, despite high economic growth, in 2010, one-third of the world's 1.2 billion extreme poor lived in India alone. At today's level of investment – public and private in SDG-related sectors in developing countries, an average annual funding shortfall over 2015-2030 of some $2.5 trillion remains. This gap can be bridged only through increased private sector investments, especially in infrastructure, food security and climate change mitigation sectors, some $2.5 trillion remains. This gap can be bridged only through increased private sector investments, especially in infrastructure, food security, and climate change mitigation sectors.

Historically poverty estimation is predominantly related to income as the sole indicator. However, the global Multidimensional Poverty Index (MPI) captures overlapping deprivation in health, education & living standards. It complements increased poverty measurements because it measures and compares deprivation directly.[5]

India's national MPI has three equally weighted dimensions – health, education and standards of living which are represented by 12 indicators – Nutrition, Child & Adolescent Mortality, Maternal health, Years of Schooling, School attendance, Cooking Fuel, Sanitation, Drinking water, Housing, Electricity, Assets & Bank Account.

These estimates have been computed using data from the 5th round of the National Family Health Survey (NFHS-5) conducted in 2019-21. MPI has estimated the decline in the proportion of population in Multi-Dimensional Poverty from 24.85% to 14.96% between 2015-16 and 2019-21. In other words, 135.5 million persons have exited poverty between 2015-16 and 2019-21. It is a major contribution towards achieving the SDG target of reduction in poverty.

Govt of India has initiated a lot of programmes to alleviate poverty and ensure a just and sustainable society. Social protection and financial inclusion is of paramount importance. NGOs have been rendering yeomen services to supplement government initiatives. India's national MPI report underlines the government's commitment to understanding, measuring & addressing the many dimensions of poverty and leveraging this understanding as a key tool in policymaking. This only indicates that India is marching towards *Viksit Bharat*-2047. More than 50 reform actions have identified in areas such as nutrition, financial inclusion, education, rural development and housing among many others.

India is determined to be counted as a developed nation by 2047. Accordingly, the government's focus is on investments in critical areas of education, nutrition, water, sanitation, cooking fuel, electricity and housing which have played pivotal roles in driving positive outcomes. Key government schemes such as Swachh Bharat Mission (SBM), Jal Jeevan Mission (JJM), Poshan Abhiyaan, Samagra Shiksha, Pradhan Mantri Ujjwala Yojana (PMUY), Pradhan Mantri Jan Dhan Yojana (PMJDY), Pradhan Mantri Awaas Yojana (PMAY) and many more such schemes have contributed significantly in achieving tremendous progress so far.

CSR Interventions in Development Initiatives

However, it has been realised that given the complex situation and diverse socio-cultural conditions requirement of capital and manpower is imperative. In this context, the role of Indian corporations becomes significant in accelerating progress towards the 2030 agenda of SDG driven through CSR intervention.

A study in 2018 (Singh & Kaur) looked at 266 companies that did not meet the compliance requirement on CSR expenditure in 2015-16 and found that while 34 firms did not spend any amount on CSR, 170 spent less than half their prescribed amount. Furthermore, several large multinational firms operating in India also failed on that front, including Indian arms of global business giants such as Apple India, Pfizer Ltd, BMW India, and Nestle India, who failed to spend even half their prescribed CSR spend for the year.

Another study found that Companies complying with the Mandatory CSR law remain largely uninvolved

in the social projects they support. Previously, when the corporate roadmap for engagement had been social and/or philanthropic, company involvement had been more significant. The Mandatory CSR fostered gaps in three important aspects. The first is motivation—does the corporate leadership wish to measure and assess the social impact of its financial allocation? The second relates to the program's design, which is crucial for monitoring its progress and evaluating its results—is the leadership willing to learn and determine outcomes for its CSR initiatives? The last one is capability—do companies have the internal capability to implement social tracking and impact-evaluation related tasks?

However, a recent study in 2023[6] carried out by CSR BOX indicates that 26% of the companies have health care & WASH (Water, Sanitation & Health) as their first CSR priority followed by environment & sustainability (23%) & promotion of education (23%). Environment & sustainability have emerged as the 2nd & 3rd CSR priority areas with more than (33%) & (25%) of the companies respectively.

Keeping in mind the philosophy of *Viksit Bharat* 2047 while implementing CSR 55% companies prefer government partnerships. Since companies are more involved in long-term sustainable goals, almost 64% prefer 3 years duration of CSR projects for better outcomes and impact. Now many companies have their own CSR foundation and almost 41% of companies are implementing development projects through their own CSR Foundations.

Another interesting feature in the same report, it has been pointed out that companies are moving towards ESG (Environment, Social & Governance) almost 78% of companies perceive that "push towards net zero" & ESG policies have led to more projects in the environment and allied areas. The companies are aggressively pursuing employees volunteering program (EVP) to encourage their employees to be part of the CSR projects which leads to the creation of a better work culture. Almost 82% of companies look at embedding employee volunteering with CSR projects.

In consonance with government initiatives & policies CSR projects are preferred in the environment and sustainable dimension like water conservation (59%), afforestation & plantation (55%), climate change & adaptability (45%), renewable energy solution (41%), waste management (41%), wildlife & biodiversity conservation (23%), nature-based solutions (9%), technology for climate change (5%). Due to this, there is an increased focus and experience of funders towards better project planning and execution using the continuum of need assessment, baseline, monitoring & evaluation & impact assessment.

If we analyse the CSR portfolio of large 301 companies, it will be seen that companies have spent almost Rs.12890 crores out of the prescribed CSR budget of Rs.13426 crores. Almost 55% have spent more than the prescribed CSR budget, 22% have spent as than the prescribed CSR budget, and 22% have spent less than the prescribed budget. Considering the fact that CSR is being implemented from 2014 it is significant progress and it is helping to march towards *Viksit Bharat* 2047.

Conclusions

From several studies, it is interesting to know that there is gender equality prioritisation and women's participation in CSR committees. Gradually, women's representation in CSR committees is increased. This has helped to prioritise the areas for intervention which led to the reduction of poverty.

Towards continuing the SDG goal and moving to *Viksit Bharat* the following industries are in the forefront in CSR intervention: Tata Consultancy, HDFC Bank, Reliance Industries, Tata Steel Ltd., ONGC, ICICI Bank, Infosys, ITC, Hindustan Zinc, Wipro, Vedanta, Ambuja Cement, NTPC, Power Grid Corporation which is not only spending in development projects but also some of them are going beyond the CSR compliances.

It is evident that there is a golden opportunity to form an alliance of Governments, corporations and Civil Societies for the betterment of society given the complex situation of economic, social deprivation and environmental degradation. This partnership can lead to effective realisation of Sustainable Development Goals which can lead to India being a developed nation or we are *Viksit Bharat* by 2047.

End Notes

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A Glorious Journey into *Viksit Bharat* through Higher Education

Sanjay Kumar Bahl*

India, a land of diversity, resilience, and innovation, stands at the cusp of transformation as it envisions the year 2047 - a significant milestone marking the centenary of its independence. In this essay, we embark on a comprehensive exploration of *Viksit Bharat* 2047, a visionary roadmap that encapsulates the aspirations, progress, and achievements of a nation determined to rise and shine on the global stage. This visionary endeavor encompasses multifaceted dimensions, including defense, civil infrastructure, energy sector growth, education, security, social welfare, and economic prosperity.

Viksit Bharat 2047 envisages a robust defense framework that ensures the sovereignty, integrity, and security of the nation. Through strategic investments in technology, modernization of armed forces, and collaborative partnerships, India stands prepared to counter emerging threats while fostering regional stability and peace.

Modernization of Armed Forces

Comprehensive modernization programmes aimed at enhancing combat readiness and operational capabilities across all branches of the armed forces. Integration of cutting-edge technologies such as artificial intelligence, cyber warfare, and space capabilities to bolster India's defense capabilities. Investment in research and development to foster innovation and indigenous defense production.

Collaborative Partnerships

Strengthening strategic alliances and defense partnerships with like-minded nations to foster interoperability, intelligence sharing, and joint military exercises. Emphasis on indigenous defense production to reduce dependency on imports and bolster self-reliance in defense manufacturing. Enhanced coordination between defense and other government agencies to ensure a holistic approach to national security. All this requires robust, intelligent and mature Indians through higher education.

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Civil Infrastructure

The infrastructure landscape of *Viksit Bharat* 2047 is characterized by world-class connectivity, sustainable urban development, and inclusive growth. From smart cities to modern transportation networks, India's infrastructure backbone catalyses economic progress and social development.

Smart Cities

Development of smart cities equipped with advanced infrastructure, digital connectivity, and sustainable amenities to enhance the quality of life for citizens. Integration of smart technologies for efficient resource management, urban planning, and delivery of public services. Promotion of green spaces, eco-friendly buildings, and waste management systems to ensure environmental sustainability.

Transportation Networks

Expansion and modernization of transportation networks including highways, railways, and waterways to facilitate seamless connectivity and logistical efficiency. Adoption of green transportation solutions such as electric vehicles and renewable energy-powered public transport to mitigate environmental impact. Integration of digital technologies for traffic management, real-time monitoring, and passenger safety. Investment in last-mile connectivity and rural infrastructure to bridge the urban-rural divide and promote balanced regional development.

Energy Sector Growth

Viksit Bharat 2047 embraces a sustainable energy future driven by renewable sources, technological innovation, and energy security. With a focus on clean energy adoption and energy independence, India charts a path towards a greener and more resilient future.

Renewable Energy Revolution

Accelerated deployment of renewable energy sources including solar, wind, hydro, and biomass to reduce carbon footprint and mitigate climate change. Investment in research and development of next-generation renewable technologies for enhanced efficiency and affordability. Promotion of decentralized energy systems and community-based renewable energy projects to empower local communities and enhance energy access.

Energy Security

Diversification of energy sources and reduction of reliance on fossil fuels through strategic partnerships, energy conservation measures, and promotion of indigenous energy resources. Strengthening of energy infrastructure to ensure reliability, resilience, and uninterrupted supply of energy to meet growing demands. Adoption of smart grid technologies, energy storage solutions, and demand-side management strategies to optimize energy usage and reduce wastage.

Education Sector

Education forms the cornerstone of *Viksit Bharat* 2047, nurturing a skilled workforce, fostering innovation, and empowering the youth to lead the nation towards prosperity. With a focus on quality education, digital literacy, and lifelong learning, India aims to unlock the full potential of its human capital.

Quality Education for All

Universal access to quality education from primary to higher levels, with a focus on inclusive education, gender equality, and equitable opportunities. Integration of technology-enabled learning platforms, digital resources, and vocational training to enhance learning outcomes and employability. Strengthening of teacher training programmes , curriculum development, and assessment mechanisms to ensure educational excellence and relevance.

Innovation Ecosystem

Cultivation of a vibrant innovation ecosystem encompassing research institutions, startups, and industry collaborations to drive technological innovation, entrepreneurship, and job creation. Promotion of STEM (Science, Technology, Engineering, and Mathematics) education to nurture critical thinking, problem-solving skills, and creativity among students. Establishment of innovation hubs, incubators, and accelerators to support aspiring entrepreneurs and facilitate technology transfer from academia to industry.

Policies could be made but implementation is very important with the correct intention. Even religious organizations can reign in educational instructions for organizing various functions/ activities. Education has to be practical for students with exposure to higher learning by visiting parliament, the President's House, corporate houses, Industries, and other big facilities to encourage vision and information. Here are some suggestions: Centralized portal for Admissions, Exams, Placements, Attendance, Internships, Subject Curriculum and Content, Activities-Co-curricular. Single Window भारतीय उच्च शिक्षा अध्यापकगण centralized portal Recruitment, Research Initiatives, Attendance, Activities-Academic Co-Curricular, Daily Teaching and Research Work.

Industry-Academic Association शिक्षा एवं उद्योग मैत्री Portal. Every Industry is to be associated with educational schools, colleges, and Universities in the region for visits, Lectures, school functions, seminars, and CSR for funding in educational institutions.

Single window compliance for all types of courses. Institutions waste a lot of resources in compiling with each regulatory body for medical, paramedical education, Law, Pharma, etc. It is also suggested that higher education should be taken over by the central Government in the first step for better governance in the interest of all stakeholders.

The inspections and Accreditation should be clubbed and to be conducted by specialists from all concerned branches. The specialist should act as a Think tank for the future transformation of our workforce including Administrative, Defense, and Industry, and help the organization to grow faithfully.

The dedicated, talented, and disciplined citizens can only be brought by imparting valuable practical education to the generations for *Viksit Bharat* @2047.

Security Sector

Viksit Bharat 2047 envisions a secure and resilient nation, safeguarding its citizens, borders, and critical infrastructure against evolving threats. Through proactive measures, intelligence-led operations, and community engagement, India strengthens its security apparatus to ensure peace and stability.

Intelligence-led Security

Enhancement of intelligence gathering capabilities, surveillance systems, and cyber security infrastructure to detect and deter threats from non-state actors, cybercriminals, and hostile entities. Collaboration between law enforcement agencies, intelligence agencies, and private sector stakeholders to counter emerging security challenges and safeguard national interests. Implementation of robust counter-terrorism measures, border security arrangements, and crisis management protocols to address internal and external security threats.

Community Engagement

Empowerment of local communities through community policing initiatives, neighborhood watch programmes , and civic participation to foster a sense of ownership, resilience, and social cohesion. Promotion of trust-building measures, dialogue, and conflict resolution mechanisms to address socio-economic grievances and prevent radicalization. Investment in social welfare programmes , economic development initiatives, and cultural exchanges to promote inclusivity, diversity, and social harmony.

Social Welfare

Viksit Bharat 2047 is characterized by inclusive growth, social justice, and holistic development, with a strong emphasis on poverty alleviation, healthcare access, and social security. Through targeted interventions and welfare schemes, India aims to uplift the marginalized sections of society and bridge the socio-economic divide.

Poverty Alleviation

Implementation of targeted poverty alleviation programmes , social safety nets, and livelihood support schemes to uplift the economically disadvantaged and vulnerable communities. Promotion of sustainable livelihoods, skill development, and entrepreneurship opportunities to enable upward mobility and economic empowerment. Expansion of social protection measures, including universal basic income, food security initiatives, and housing assistance, to ensure a dignified standard of living for all citizens.

Healthcare Access

Universal healthcare coverage, accessible and affordable healthcare services, and investment in healthcare infrastructure to ensure equitable access to quality healthcare for all citizens. Focus on preventive healthcare, disease surveillance, and public health awareness campaigns to combat emerging health challenges and epidemics. Strengthening of primary healthcare delivery systems, telemedicine services, and health insurance schemes to enhance healthcare access and affordability, particularly in remote and underserved areas.

Economy and Export

Viksit Bharat 2047 emerges as a global economic powerhouse, driven by innovation, entrepreneurship, and sustainable development. With a conducive business environment, robust infrastructure, and competitive advantage in key sectors, India expands its global footprint and enhances its role in the international arena.

Economic Growth

Sustainable economic growth, job creation, and wealth generation through investment-friendly policies, regulatory reforms, and infrastructure development. Promotion of MSMEs (Micro, Small, and Medium Enterprises), startups, and innovation hubs to foster entrepreneurship, innovation, and economic diversification. Facilitation of ease of doing business reforms, single-window clearance mechanisms, and investor-friendly incentives to attract domestic and foreign investment across sectors.

Global Trade and Export

Expansion of global trade partnerships, market access, and export competitiveness through trade agreements, diplomatic engagements, and market diversification strategies. Leveraging India's strengths in sectors such as information technology, pharmaceuticals, manufacturing, and agriculture to capture global market share and enhance export earnings. Investment in trade facilitation measures, logistics infrastructure, and supply chain efficiency to reduce transaction costs and enhance competitiveness in global markets.

Conclusion

In conclusion, *Viksit Bharat* 2047 represents a bold vision for the future, guided by the principles of inclusivity, sustainability, and progress. With concerted efforts, visionary leadership, and collective determination, India is poised to realize its full potential and emerge as a beacon of hope, prosperity, and leadership on the global stage. As we embark on this transformative journey, let us unite in our resolve to build a brighter tomorrow for generations to come. Jai Hind!

This comprehensive exploration of *Viksit Bharat* 2047 highlights the key dimensions of India's vision for the future, encompassing defense, civil infrastructure, energy sector growth, education, security, social welfare, and economic prosperity. Through strategic planning, bold reforms, and inclusive policies, India is poised to achieve sustainable development and emerge as a global leader in the 21st century. As we celebrate the centenary of our independence, let us reaffirm our commitment to the ideals of democracy, equality, and progress, and work together to build a prosperous and inclusive future for all citizens. ❑

Integrating Bhartiya Knowledge System with Higher Education

Nihar Ranjan Biswas* and A R Srinivasan**

The term Bhartiya Knowledge Systems and Traditions is synonymous with the Indian Knowledge Systems (IKS) and Traditions. This system is a repository of knowledge and represents age-old traditions. The Indian Knowledge Systems and Traditions hold the pride of place with reference to the vast, variegated bowl of culture, scriptures, time-tested knowledge, arts including liberal arts, science, sociology and most significantly the special attribute that IKS possesses, namely the moorings that are firmly entrenched in the spiritual traditions that have evolved over several thousands of years in our country.

National Education Policy (NEP-20) from the Viewpoint of tenets of the Indian Knowledge System: Metamorphosis of Higher Education in India

One of the cardinal attributes of the National Education Policy 2020 is the emphasis laid on the seamless integration of the knowledge of ancient India into the folds of the revamped education systems in India. This acquires special significance in the sense that it encompasses both school and collegiate curricula. The Ministry of Education, Government of India has spared no efforts in recognizing this endeavour that also depicts the 'Bhartiya path' of emancipation for a society that would invariably patronize holistic welfare.

It needs to be mentioned in no uncertain terms that the essential tenets of the *Bhartiya path*have evolved mostly out of experiential learning, discerning observation, intense experimentation and introspection, besides conscientious analysis that has been eventually put into practice under diverse academic disciplines. The policy elaborated by the Ministry of Education takes cognizance of the fact that the rich and diverse knowledge inherent in the Indian sub-continent needs to be imbibed by avid learners in a logical and scientific manner based on embracing knowledge and traditional methods of learning in disciplines as diverse as Vedic mathematics, philosophy, medicine, yoga, music, engineering, arts and literature. In the quest for Ek Bharat Shrestha Bharat or *Unity in diversity*, we need to mobilize all the resources in the armamentarium in order to widen the horizons, thereby culminating in a facile, explicit roadmap for establishing the all –comprehensive IKS.

The Higher Education Scenario in India: From the Proverbial Silos to the Modern, Invigorating Inter- and Multi-disciplinary Realms

Since Independence, higher education in India has undoubtedly been fostering the culture of institutions depicting compartmentalized organizational structures, namely the 'silos'. One of the byproducts of this approach is that despite offering the choice and luxury of several academic disciplines, the practical applications and importance of working knowledge in the chosen domain is sub-optimally explored. This has led to restricted academic environs. This has also exposed the weakness of the learners in being unable to adapt themselves to the ever-changing scenario in an era of globalization. Educationists and policy makers have issued stern warning that the trend of silos could prove to be counter-productive as well as fatal with respect to the various cardinal attributes including the growth of the individual, organization, and the nation at large.

In the health care sector, unfortunately the education imparted to the health care professionals has not kept pace with the requirements depicted by the health care needs of the rapidly changing society. Furthermore, plenty of expectations are on the anvil when it comes to confronting the challenges of our rapidly evolving system. As a valid extension of this statement, the educational silos dominating in the health care professions stand in the way of effectively addressing the lacunae prevalent in the health care set-up. It is imperative and also in the fitness of things that the health care professionals require an all-encompassing integrative education that could indeed act as an effective nexus between passive, didactic

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learning and comprehensive clinical, community practice settings. This necessitates interprofessional education which must be implemented across the disciplines for envisaging optimal benefits. When it comes to interprofessional education, it necessarily implies a systematic, multidisciplinary approach that would break the silos. More importantly, the presence of interprofessional education in our midst could appropriately usher in the integration of the Indian Knowledge System in health professions education, as deemed appropriate.

The comprehensive educational culture often warrants professional independence instead of interdependence among the health professions. Curricula need to be essentially dynamic, but we confront many a time irrelevant, subjective, obsolete, and static content. To our disappointment the focus on competencies do not necessarily address the needs of the stakeholders and the general population. This culminates in gross aberrations in the arena as to what the learner should essentially learn and what they need to know in order to apply their knowledge and skills. It is more important to realize the fact that inter professions education would solve many a hurdle including the seamless manner and extent to which the IKS could be brought under the folds of modern medicine.

In the contemporary Indian context, the National Education Policy 2020 has made significant strides that could overcome some of these stiff challenges. The onus is on inching towards multi-disciplinary higher education that would also provide immense opportunities to infuse and integrate the IKS in health professions education and practice. The NEP envisages the conversion of all Higher Education Institutes (HEIs) to multi-disciplinary portals of academics and research bythe year 2040. This, we hope would also sincerely strive to attain the target of 50% Gross Enrolment Ratio (GER) by the year 2035.

The Need for the Establishment of An Exclusive Cell: The Indian Knowledge System

The IKS has evolved over several thousand years and offers a wide gamut of branches and disciplines ranging from Ayurveda, Yoga, and music for salutogenesis (the modern-day definition of wellness), Mathematics, Logics, Linguistics, etc. The treasure is rich in contents and quantity. However, the potentials of IKS have not been appropriately tapped, though there are Institutes and Councils in silo largely fostering a solitary facet or two of the IKS. The result is that the present generation of learners from diverse disciplines is sub optimally exposed to the rich and variegated content inherent in the IKS.

The Indian Knowledge systems (IKS) came into existence in October 2020. भारतीय ज्ञान परम्परा विभाग (Bhāratīya Jñāna Paramparā Vibhāga) was established with the motto Let us strive for the wisdom that leads to the welfare of all. The birth of a dedicated IKS Division of the Ministry of Education (MoE), Government of India synchronized with the one-day workshop on "Research in Indian Traditional Knowledge Systems (Bhāratīya Jñāna Paramparā)" held on the 18th of March, 2020. The IKS Division of MoE was setup in a dedicated mode at the AICTE headquarters, N. Delhi with the committed purpose of fostering interdisciplinary research on a variety of facets aimed at valuing, preserving, and disseminating the broad tenets of IKSin the frontiers of academics, research, general well-being, and societal obligation-oriented endeavours. For this noble purpose-Arts, Fine Arts, literature, basic sciences, Engineering & Technology, Mathematics, Yoga, Music etc. have been earmarked as specialized areas for patronizing inter- and multi- disciplinary activities.

Scope for Infusing Bhartiya Knowledge Systems and Traditions in Higher Education of Modern India

Tapping the rich potentials inherent in the IKS and utilizing the same for teaching and learning is a firm step in laying a transformative and learner-centric path aimed at realizing all round development. Our country boasts of a rich heritage and ethos about ancient wisdom and applications of the principles of sublime philosophy in a scenario that eventually would portray a unique perspective on education that is all comprehensive and one that would extend much beyond the frontiers of mere acquisition of knowledge. At its core, this approach recognizes that true learning involves not just the mind but also the heart and soul. It encompasses a diverse array of disciplines, including yoga, meditation, Ayurveda, and spiritual insights, which, when integrated into modern education, can lead to profound personal growth and holistic development. The Bhartiya Knowledge System acknowledges the interconnectedness of all knowledge, thereby emphasizing the importance of ethics, values, and social responsibility. It encourages students to

not only excel academically but also to become compassionate and socially conscious individuals. By adopting this approach, we would comfortably pave the way for an education that nurtures not just the intellect but also the emotional and spiritual dimensions of human existence. It equips learners with the tools to navigate life's challenges with resilience, empathy, and a profound sense of purpose. In a world that often prioritizes material success, the Bhartiya Knowledge System would remind us that true wisdom lies in the holistic development of the self – a timeless lesson for both students and educators alike. The Bhartiya knowledge system offers invaluable insights and practices that can contribute significantly to sustainable development in today's world. Rooted in millennia-old wisdom, this system has always emphasized the nexus among the life forms and the importance of living in harmony with nature. For example, Ayurveda, the ancient Bhartiya system of medicine, focuses on maintaining and restoring balance in the body and mind. By emphasizing preventive healthcare, a holistic approach to well-being, and the use of natural remedies, Ayurveda encourages sustainable health practices. Yoga fosters mindfulness, reduces stress, and encourages conscious living. This mindfulness extends to our relationship with the environment, fostering a greater sense of responsibility towards sustainable practices and ecological preservation.

Embedding the Bhartiya Knowledge System into futuristic education is a visionary step towards equipping the next generation with holistic, adaptable, and culturally rich learning experiences. India's ancient wisdom, encompassing philosophy, science, and spirituality, offers profound insights that resonate with the demands of the rapidly evolving world. India's diverse cultural heritage, including its art, music, literature, and philosophy can be woven into the curriculum to foster cultural appreciation and global awareness. This not only enhances cultural literacy but also would encourage creativity and critical thinking.

UGC Guidelines for Incorporating the Essentials of Indian Knowledge in Higher Education Curricula

1. Following the promulgation of the NEP 2020, efforts are being made on a war footing to ensure that the curricula prescribed in the realms of academics including school and higher education should incorporate a substantial, but need based portion(s) of the IKS.
2. Accordingly, the learner in the colleges and universities, be it an undergraduate or postgraduate student should be encouraged to take credit-based courses encompassing well-defined curricula in IKS. The recommendations further point to the fact that a minimum of five per cent of the total mandated credits should be in the domain of the IKS.
3. The NEP 20 policy based UGC guidelines also paves the way for an augmented fraction leading to the incorporation of IKS into the total credits, provided that the credits earmarked for the IKS should necessarily be concerned with the major discipline and also accrue to the academic credits specifically earmarked for the major discipline.
4. The guidelines also necessarily imply that due caution must be exercised while recommending the course materials in IKS. A point that acquires relevance is that the metamorphosis of the IKS as evidenced in recent times must be vividly reflected in the curriculum design, development, and implementation.
5. The guidelines enshrined in the UGC document also extol the fact that a sincere attempt should be made while framing the curriculum for depicting the characteristic, special and star features of the IKS. More importantly, it needs to be emphasized that at all levels, efforts need to be undertaken to ingrain a substantial portion of the course curriculum based on credence, relevance and value.

Integrative Medicine and the Role of Bhartiya Knowledge System

The policy makers and statutory scientific bodies of our country have been embarking on the inclusion of the IKS from the perspectives of integrative medicine to infuse fresh and newer insights into modern medicine, but with the solitary objective of providing medicine not only from the viewpoint of treating a disease but also from the salutogenesis or wellness frame of reference. An excellent instance is the collaboration realized between two premier organizational portals, namely the Ministry of AYUSH and ICMR. Based on the understanding effected through an MoU, inroads have made to promote integrative health research. This cooperation would essentially lay focus on specified areas of significance for facilitating developmental initiatives in integrative medicine. Further, the endeavour would enable India

to foster quality, evidence based and nodal research. Also, the holistic approach would usher in novel attempts to generate evidences in the light of the IKS, utilizing modern scientific gadgets and methods.

The Relevance of the Bhartiya Knowledge System in Health Sciences /Professions Higher Education: The Sri Balaji Vidyapeeth (SBV) Model

Ever since Sri Balaji Vidyapeeth(SBV), a health sciences HEI came into existence, as a Deemed to be University in the year 2008, it has been earnestly striving to incorporate two of the ancient modalities available in the IKS, namely, yoga and music into the folds of modern medicine. SBV has been a pioneer in putting forth the tenets of yoga and music in terms of therapeutic modalities, namely yoga therapy and music therapy, not only from the standpoint of treating non-communicable and psychosomatic illnesses but also from the domain of salutogenesis or wellness.

The activities at SBV pertaining to yoga and music began on a humble note at the time of the formation of the Deemed University. The Deemed University status to SBV was accorded by the then Ministry of Human Resource Development, Department of Higher Education, Government of India in the year 2008. Presently, the Deemed University offers academic programmes in medicine, dentistry, nursing, pharmacy, physiotherapy, biomedical sciences, allied health sciences, yoga therapy, music therapy and health professions education. Presently intense efforts are being made to infuse the concept of multi-disciplinary approach to imparting higher education as related to health sciences.

Over the years, the progress has been steady saw the Centre for Yoga Therapy Education and Research (CYTER) as well as the Centre for Music Therapy Education and Research (CMTER) spring into action. Right from the inception of these centers, academic programmes, research, and patient care have been given due impetus. The centers caught the attention of the globe and this soon resulted in a few important partnerships that were enabled by tagging with established global institutions and organizations.

It is worthy of mention that in the year 2018, that SBV created a landmark event by putting forth an administrative policy, namely "SBV Policy on Salutogenesis Implementation and SBV Standard Operating Procedure for Salutogenesis" This event happened much before the advent of the NEP 2020. The policy bears ample testimony to the commitment of SBV to creating a health-promoting environment that is synonymous with wellness or salutogenesis.

The equivalent related to the concept of wellness in the Indian Knowledge System is *'Swastha'* that denotes a sense of being at ease with oneself. Sushruta who propounded the Sushruta Samhita as early as 600 BC eulogises this positive sense of complete or holistic wellness as a 'dynamic mix of the elements and humors in the light of homeostasis, but impregnated with a serene mind, intact senses and a gratified soul.' All these concepts ingrained in the Sushruta Samhita have been underlined in the efforts of SBV while launching Yoga and music as tools of wellness, but integrated into modern, allopathic medicine.

The sustained efforts at SBV have presently led to the establishment of an exclusive Institute of Salutogenesis and Complementary Medicine (ISCM). ISCM has under its folds a School of Yoga Therapy as well as a School of Music Therapy. The academic endeavours at ISCM follow the guidelines of the UGC concerning the incorporation of the IKS in the academic courses and programmes. Presently, certificate, diploma and Masters's programmes are in place that are based on credits, as stipulated in the Credit framework. Furthermore, the Academic Bank of Credits(ABC) is in place. A noteworthy feature is that Ph.D. programmes are available in yoga and music therapy and care is being taken to add a component or two related to the IKS even at the doctoral level.

For the first time in this part of the country, a multi-disciplinary profile has been created by SBV, primarily health sciences HEI through the addition of yoga and music into the folds of medicine, dentistry, nursing sciences, pharmacy, physiotherapy, biomedical and allied health sciences, wherever appropriate and without violating the guidelines laid down by the respective statutory councils. This has opened a plethora of opportunities to infuse the essence and essentials of the IKS into diverse disciplines and specifically into the stream of health professions.

Conclusion

The Indian Knowledge system is rich in contents, values, ethical aspects and offers a well-rounded domain that could be integrated into the folds of arts, science, liberal arts, and medicine. etc. While the impetus on multi-disciplinary

education is slowly but steadily on the rise, sustained efforts need to be mobilized to infuse the Indian Knowledge system into modern medicine, and health professions, in general with the thrust being not only on knowledge and skills but also on the applications to confer optimal benefits on the stakeholders,

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❑

Vedic Education: The Very Basis of the Indian Knowledge System

Bhuvnesh Sharma*

Bhartiya Gyan Parampara, the Indian Knowledge System is eternal and immortal, emerging from the Un-manifest eternal Being and flowing through various levels of manifestations and continues to impart the Total Knowledge from generation to generation. Here Total Knowledge is the Knowledge of Un-Manifest Pure Consciousness and all its manifestations, subtler and grosser. It is the Un-manifest pure Being that knows itself and in the process of knowing itself gives rise to the whole manifestations while remaining pure un-manifest pervading all the manifestations.

Like the Sun always shines but at times is hidden by the clouds, anyway not for long as the clouds move away and Sun shines again in its full Glory. We are very fortunate because in India, Bharat, the land of the Veda, Ved Bhumi Bharat whenever this Vedic Knowledge is hidden from the conscious awareness of people, the almighty nature does not allow people to remain long in ignorance and some incarnation of the almighty nature like Bhagwan Shree Krishna, Bhagwan Buddha, Adi Shankaracharya, Holy Vedic Tradition and many more great saints appear to show the ideal way for evolution, creating harmony, progress and peace in society.

Knowledge actually is created or structured in the Consciousness of the learner, "Knowledge is structured in Consciousness" "Gyaanam Chetnayaam Nihitum" "ज्ञानम् चेतनायाम् निहितम". As per the following Sanskrit proverb "What the scriptures/ books will be of use to a person whose consciousness is not awake like a mirror is not of any use for a person who cannot see.

यस्यनास्तिस्वयंप्रज्ञाशास्त्रंतस्यकरोतिकिम ।
लोचनाभ्यांविहीनस्यदर्पणःकिंकरिष्यति ।

So basically, all the efforts to educate the masses will be more useful if the technologies to develop consciousness of the learner are incorporated in education.

Enlivening accessing ability, the Consciousness of the students as the "Knowledge is structured in Consciousness" is essential for imparting education. All the knowledge is gained, registered, expressed and used by the Consciousness of the individual.

At present all the emphasis is on the physical modes of imparting knowledge whether in classrooms or through online courses without considering expanding the container of the knowledge "The Consciousness of the knower". Developing alertness, and sharpness of the mind, intellect and senses is not considered.

The contribution India can make to the field of Higher Education not only in the country itself but throughout the whole world is providing the technology to access the hidden infinite potential within the Self of everyone. One of the Maharishi's principles of Science of Creative Intelligence says Seek the highest first", Capture the fort and the whole territory is yours, indicating that get the knowledge and experience of Self, Aatma.

Knowledge has three parts Knower, Process of Knowing, and the Known. The education to be learner-centered the learner must be trained to experience his own Self, In the present-day education system knowledge of the knower and developing the process of knowing is missing. Only 33% of the knowledge is being provided to the learners. In Vedic terminology, Knower is termed as Rishi, the process of knowing the Devata and known, as the object of knowledge as Chhandas. The togetherness of all the three Rishi, Devata and Chhandas is called Knowledge "Veda". Veda is Pure Consciousness and has been correlated and found to be the Unified Field of Natural Law, the source of infinite creativity and order.

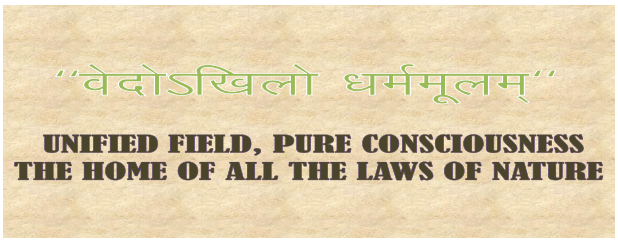
So Samhita, the togetherness of Rishi, Devata and Chhandas, Pure Consciousness, Atma is Veda, (*Atmai Vedam Sarvam*) only Aatma, the Self of everyone is Veda or Total Knowledge.

Knowledge and experience of one's own Self is stated as the supreme amongst all kinds of knowledge in Srimad Bhagwad Geeta

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"अध्यात्मविद्या विद्यानाम्"

Consciousness that is *"Chetna"* when knows or experiences itself, becoming Self- referral it reverberates giving rise to impulses of the Veda, the *Richaas*. Chetna becoming Chetan that is awareness becoming aware or conscious of itself provides peace, order, creativity and energy to the experience. Using the Vedic terminology it is so timely that UGC has named a lecture series as *"Chetna"* making learners aware of various topics but the knowledge and experience of *"Chetna*" or Consciousness itself has yet to be provided. Veda, the Self of every human being is the reservoir of all the laws of Nature as stated in the following Vedic proverb *Veda*, Pure Consciousness is the home of all the *Dharma* that is the eternal laws of Nature.



Bhartiya Gyan Parampara is the tradition of imparting Total Knowledge to every learner, enlivening total potential of the individual Self, developing unbounded Consciousness and holistic Consciousness.

The enlightened Consciousness of the teacher *"Guru"* helps and initiates the process of enlightening the student. The teacher in general nowadays provides knowledge of some disciplines but does not provide the knowledge and experience of the holistic basis of all these disciplines in the silent level of awareness of the learner.

Here again, it is interesting to mention that UGC realizing the importance of *'Deeksha'* initiation of the disciple by the Guru, the teacher of Total knowledge has started calling the induction program for students and faculty *Deeksha* but somehow the initiation for enlivening the Total knowledge providing the experience of Transcendental Consciousness is missing. To complete the real process of *Deeksha*, initiation in the technique of Transcendental Meditation could be easily incorporated into Induction programmes .

Though the Knowledge being suggested is not new for India because it is this Knowledge for which India was known to be *Jagad Guru*, the teacher of the whole world as per the Vedic proverb "एतद् देश प्रसूतस्य शकासाद् अग्रजन्मन : स्वं–स्वं चरित्रं शिक्षरेन् पृथ्वियां सर्व मानव" *(Eatadesh Prasutasy Sakaashdi Agra Janman Swam Swamchraritren Shiksheran Prthiviyasarwa Maanawa)* People born in this country will teach to all the mankind on this earth through their own values the ideal way to live life. But somehow the knowledge and its practice was gradually lost due to long lapse of time, Knowledge diminishing or being lost partially in being transferred from generation to generation as Lord Krishna says in *Bhagvad Geeta* स कालेनेह महता योगो नष्टः परंतप** (*Sa Kale naihmahata Yogo Nashta Paramtapa*) with the long lapse of time the knowledge is lost as the gap between the Consciousness of the teacher and the taught increases with time. Fortunately, the ancient technique of Meditation for enlivening Total Knowledge, the Vedic Knowledge has been revived by Pujya Maharishi Mahesh Yogi the foremost scientist of Consciousness, the Great Seer of modern times, the disciple of His Divinity Swami Brahmanand Saraswati Shankarachary of Jyotishpeeth. Maharishi not only brought up and established the simplest technique of experiencing Pure Consciousness, Veda but also explained the whole process of Consciousness manifesting itself in the form of Veda, Vedic literature, and the whole manifested creation through Maharishi Vedic Science. We should offer our dear students such a knowledge which will make them more creative, alert, self confident, healthy, and ideally behaving individuals besides radiating harmony for all others around. Transcendental Meditation is the simplest, most scientifically researched and validated technique of Yoga which can be easily practiced by any individual to develop all aspects of life, like watering the root of a tree nourishes the whole tree, just one action of taking deep rest through TM practice, develops all aspects of life. Transcendental Meditation can be easily learned in 5 consecutive days in just one and half hour every day and then can be practiced individually and collectively for 20 minutes morning and evening. Realizing the importance of developing Consciousness the Yoga Departments in several Universities were renamed as Department of Human Consciousness and Yogic Science by University Grants Commission (UGC) many years back, though the techniques to develop Consciousness for all students and Faculties at

large has yet to practically applied for the benefit of all the students. As our Honorable Prime Minister says technology has to be democratized so the supreme technology of developing Consciousness to program human mind, the Cosmic Computer must be provided to all the students. All India Council for Technical Education (AICTE) has included Transcendental Meditation (TM) in the skill management for developing Consciousness.

With the regular practice of Transcendental Meditation (Fig-1) students will feel more at home with all the objective knowledge and will be able to use the same with a holistic approach besides fulfilling the goal of Higher Education. Ancient Seers of Bharat experiencing the Transcendental consciousness have found Consciousness to be the source of whole creation, Consciousness of the *Rishi* goes out to explore the manifest creation and the Cosmos but ultimately comes back to realize that the whole creation is only the manifested impulses of his own Self.

Fig-1:Transcendental Meditation



TM easily develops higher states of Consciousness to enrich all aspects of life.

Similarly the modern science analyzing the matter is finding its basis in non physical Unified Field, the abode or source of all the laws of nature. From Molecular level to Atomic, sub atomic level to quantum Field Theories and finally unifying different fields to a Unified Source (Fig-2). It is the unique ability of human nervous system to contact this Unified Field, the source of all the laws of nature and enlivening that infinite order of nature in simplest level of one's own awareness.

The Unified Field is located to be the basic

Fig-2:Unified Field of all the Laws of Nature

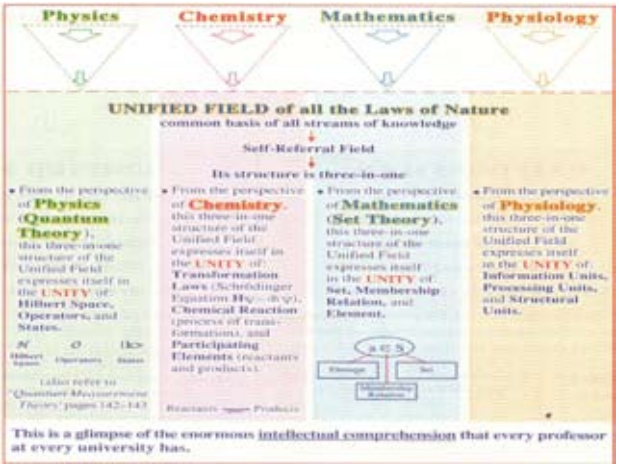
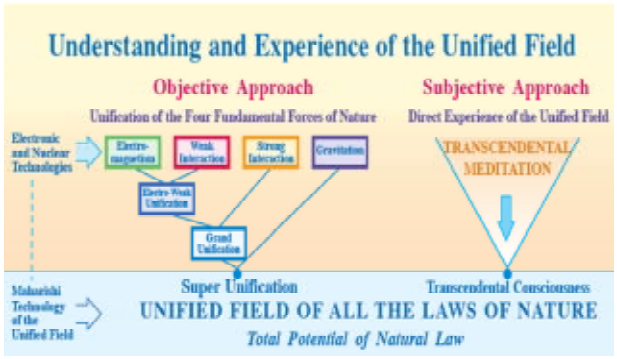


Fig-3:Understanding Unified Field



field of various objective approaches of knowledge which can only be experienced in one's own Self through the practice of Transcendental Meditation (Fig-3).

Exploring the matter to its ground state, the Unified Field is located as the source of all the laws of nature, the pure awareness, and the source of thought. Experience of Pure Consciousness, the Unified field of all the Laws of nature will establish the common basis of all the fields of knowledge achieving the purpose of interdisciplinary studies. Individual (अहं) realizing the Totality (ब्रह्म) in his own awareness, the whole creation as the expression of "Self".

''दूरेदृशंगृहपतिमर्थयुम्''।

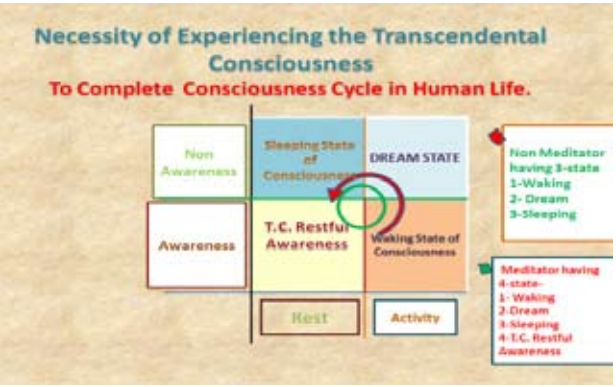
Looking farther and farther beyond the dweller finds the whole cosmos reverberating within his own 'Self'. The experience and existence of fourth state (First three being the waking, dreaming and sleeping states of Consciousness) and higher states of Consciousness through the technologies of Transcendental Meditation and its benefits has

been verified by hundreds of scientific researches in various Universities throughout the World.

As is said in ancient Vedic Texts. **शिवम् शांतम् अद्वैतम् चतुर्थम् मन्यन्ते, स आत्मा, स विज्ञेयः**

The fourth state of Consciousness is *Atma* (The Self) and that is specially to be known.

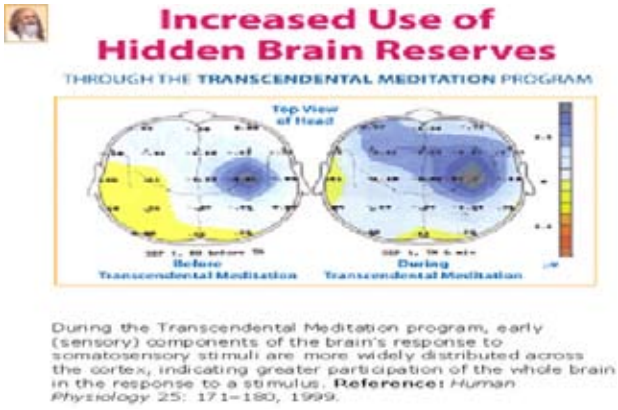
Fig-4:Transcendental Consciousness



As is seen in the (Fig-4) every non-mediator experiences only ¾ of the cycle that is waking, dreaming and sleeping states of Consciousness but the experience of fourth state of Consciousness, restful alertness, the Transcendental Consciousness is a must for everyone to complete the cycle of Consciousness.

Incorporating the organizing power of nature through which nature maintains the ever-evolving and expanding universe with great precision will lead to the ideal sustainable development including social, economical and environmental areas. Referring back to the source is the technique to progress without making mistakes. Even in Human Physiology through Homeostatic feedback looks the whole Physiology maintains proper development. All the developments in physiology are referred back to DNA to maintain progress in Totality. Similarly, when the individual, the knower refers back to his own 'Self', which is the silent, Transcendental level of his own awareness, the Unified Field of all the laws of nature, his thoughts are spontaneously aligned with the organizing power of nature and brings the support of nature to the activity and progress.

Fig-5:Increasing Brain used through TM



The whole cosmos reacts to the thinking and action of every individual. When collectively the whole population thinks and act according to the laws of nature increasing positivity *(Sattwa)* and harmony in the Collective Consciousness of the world, the rain and seasons come in time, mother earth produces abundant food grain and people are without worries, and fearless.

''कालेवर्शतुपरजन्यः पृथ्वी भास्यशालिनी।
लोकोयं क्षोभरहितासज्जनाः सन्तुनिर्भयाः।।'*

Besides that the technologies of consciousness Transcendental Meditation and TM Siddhies, benefit all aspects of life, like by watering the root of a tree the whole tree is nourished similarly with these techniques all mental, physical and social aspects of life are enriched (Fig-5).

Some of the benefits of Transcendental Meditation and its advanced techniques as verified by more than 600 scientific researchers in 250 Research Institutes and Universities in about 30 countries around the world are summarized below:-

A) Full development of Mental Potential --- Improved memory, Increased creativity, Improved Postgraduate Academic Performance, Improved College Grades, Development of Intelligence-Increased IQ in University Students, Increased Self-Development, Increased EEG coherence during T.M. Consciousness, Increased use of hidden brain reserves, Increased self Actualization.

B) For Better Health --- Physiological indicators of deep rest, Reduction of high blood pressure, Reduction of high cholesterol, Decreased Insomnia, Decreased depression, Decreased outpatient visits indicating healthier ageing, Reduced illness and medical expenditures, Decreased cigarette smoking, Decreased anxiety.

C) For Better behavior ---Increased Tolerance, Greater Moral Maturity.

D) For Creating World Peace --- Decreased Terrorism, Decreased crime rates in city, Global Maharishi Effect, Reduced international conflict.

Transcendental Meditation and its advanced techniques are most easy to be learned by every individual and are the simplest techniques of Yoga.

Nowadays Yoga is popularly taken as *Yogasanas and Pranyam* while actually there are eight limbs or parts of Yoga (*Yam, Niyam, Asana, Pranayam, Pratyahar, Dharma, Dhyan, and Samadhi*) and Yoga is the experience of the Self, the Transcendental Consciousness, Which is easily experienced through Transcendental Meditation technique and helps to develop all the other aspects of Yoga. In Srimad *Bhagwad Geeta Bhagwan Krishn*a says, *"Yogastha Kuru Karmani"* getting established in Yoga perform action which clearly indicates that one should have the Yogic Consciousness, stabilized Transcendental Consciousness and then perform action and not sit in Yogasan and perform activity which anyway is not feasible.

Based on the experience and researches on Transcendental Meditation and Transcendental Meditation Siddhi programmers a whole system for imparting education has been developed known as "Maharishi Consciousness Based Education" system and is being used in many Maharishi schools and Universities,

Creating Ideal citizens of the world. Maharishi Consciousness Based Education besides raising the level of Consciousness of the students also enables them to "own" every subject and realize that the diversity in nature and all the disciplines are expression of their own "Self", Diversity as the expression of Unity.

Incorporating these technologies of Consciousness will help achieving all the following objectives and many others ----Orderly thinking, behavior and action, Enhanced Cognitive ability, Balanced activity in all aspects of life, Creative thinking, Better Health and fitness, Thinking and acting in Holistic manner good not only for themselves but also for the whole society and environment, Getting success in action through support of Nature, Living stress free, Blissful life, Realizing infinite potential of their own selves, Ability to contribute harmony and peace in society.

The Indian Philosophy is not just to be talked off but a real technology to be practiced for living life in perfection by the individual and for all others. Now as the Modern Science is indicating towards the Vedic Science and has helped to verify the beneficial effects of application of the Technologies of Consciousness., it is up to our present leaders in the field of Higher Education to use the simple practical and supreme technologies and lead the whole world or just to follow the system of education lacking the vision of Totality. So now as discussed above almost all the objectives of National Education Policy can be easily achieved by incorporating Bharatiya traditional Vedic Technologies, Transcendental Meditation, its advanced techniques and other Vedic Technologies in Hr. Education and our Indian Youth can be trained to lead the whole world to become an Ideal world family. Incorporating *Bharatiya Gyan Parampara* can be easily accomplished by including Transcendental Meditation, which can be taught in only 5 consecutive days, one and half our daily in the Induction or *Deeksha* program followed by lessons on Maharishi Vedic Science.

Vedic Education is to enliven Total knowledge of Natural Law in the Consciousness, *Atma*, the Self of everyone. Raising the quality of individual intelligence to cosmic intelligence, so that everyone always lives daily life in accordance with the Total creative cosmic intelligence of Natural Law all the thought and action spontaneous in the direction of evolution, progress, suppurated by nature. Experience and knowledge of *Atma* through Transcendental Meditation enlivens all the levels of Consciousness and opens Transcendental Consciousness, the Self Referral Consciousness, the Total potential of Natural Law to direct experience. Vedic Education is to develop Vedic Consciousness through experience and understanding of the Veda, knowledge gained by experience and intellectual understanding. All the areas that constitute education must be supported by Vedic Consciousness, which alone is Holistic consciousness and which is supported by the total creative potential of Natural Law, the forty aspects of Veda and Vedic Literature. Only the Vedic Consciousness of those in charge of education can create a balanced education that will support all values of individual life and its relationship with family, community, and the world and with its Cosmic Counter parts the Sun Moon, and galaxies. To ensure holistic development of the teachers and learners with inculcation of ethics and human values as enshrined in Indian culture. Our suggestion is

connected with all the given themes because it is going to provide the most basic and essential element missing from present-day education. Knowledge of the Knower is missing from the present Education. As it is said that only a new seed will bring a new crop one of the objectives of NEP is emphasized as New Knowledge. Some of the salient advantages of incorporating the technologies of developing Consciousness are as follows:

- In higher education teaching and learning will be a joy for the teachers and the students. Governance will not have to be imposed to improve the quality but it will become a 'Self-governed automatic process.
- The quality of teachers and the teaching will be perfect due to the developed level of their Consciousness and students will receive the knowledge from enlivened, alert consciousness being at home with the knowledge.
- To incorporate technology-enabled learning the first thing should be to develop mental potential using the technique of TM, programming the human brain the Cosmic Computer which will help the students to comprehend the ever-growing information in the modern scientific world.
- Individual skill will be easily developed as the Lord Krishna says in Bhagvadgeeta "योगः कर्मसु कौशलम्"। (*Yogah Karmasu Kaushalam*) Yoga brings skill in action.
- The gender and social gaps will not remain as gaps but will become complimentary helping each other to evolve like सहनाववतु। सहनौभुनक्तु। सहवीर्यं करवाव है। (*Sahna Vavatu Sahno Bunaktu Sah Veeryam Karwavahe*).
- When the Universal laws of nature are enlivened in the student's awareness the local or regional disparity will automatically minimize and the spirit of वसुधैव कुटुंबकम् (*Vasudhaiva Kutumbkam*) Whole World is my Family will come to reality.
- Language being dependent on the consciousness of the speaker will automatically create integrating influence because of the purity in the consciousness of people.
- Higher Education will not only be linked to society in various areas through Holistic Vedic Technologies unlike the partially modern scientific technologies but also the group practice of TM and its advanced techniques will radiated harmonizing influence for the whole society through Maharishi Effect from the level of Unified Field.
- The Indian Universities with large numbers of students have the great potential to not only impart Total Knowledge to their students but also through the collective practice of the technologies of consciousness to create an influence of harmony and peace for the nation and the whole world.
- Till now most of the research is more at materialistic manifest level but with the technologies of Consciousness the laws of nature will bloom forth as per the Vedic quote योजागार तम ऋचाकामयन्ते (*Yo Jaagara Tam Richa Kaamyante*) that is the Hymns of the Veda seek the enlivened consciousness which is awake.
- The researchers practicing Transcendental Meditation, and its advanced Technologies and confirming the experiences with ancient Veda and Vedic literature will bring to light more holistic technologies not only for sustainable development but to create a peaceful, harmonious, and happier World.

It is clear from all the above benefits that incorporating Vedic technologies the technologies of Consciousness in their completeness Bharat is going to lead the whole World for living life in sustainable, harmonious, peaceful and progressive manner.

सर्वे भवन्तु सुखिनः । सर्वे सन्तु निरामयाः ।
सर्वे भद्राणि पश्यन्तु । मा कश्चित् दुःख भाग्भवेत्।

❑

Indian Knowledge System: Lessons from Ramayana

Upinder Dhar* and Santosh Dhar**

There has been an unbroken oral tradition with a history of more than 5,000 years in India. The meaning of 'literature' is extended to mean 'composition' to include the works composed and transmitted orally from generation to generation. Chanakya, in his Arthashastra, classified the knowledge into four types: *anviksiki* - encompassing logic and philosophy; *trayi*-traditional knowledge drawn from the Vedas in particular; *vartta* - represented wealth creation (agriculture and commerce); *dandaniti*–referred to represent politics and public administration.

The classical literature of India is usually described as *chaturanga-vidya-thanas* consisting of the four Vedas (namely Rigveda, Yajurveda, Samaveda, Atharvaveda); the 6 Vedangas (namely Shiksa, Kalpa, Vyakarana, Chhandas, Niruktam and Jyotisha); Itihasa (Ramayaṇa and Mahabharata) and Purana (Vishnupurana, Bhagavata etc.); Dharmashstra (Manusmrti, Yajnavalkya-smṛti, Parashara-smṛti etc.); Darshana (Six orthodox and six heterodox systems); Nyaya (Logic and Epistemology). In other places, sometimes the 4 Upavedas, namely *Ayurveda* (health care), *Dhanurveda* (archery), *Gandharva* Veda (dance, music etc.) and *Sthapatyaveda* (architecture) are also added to the list.

Vedas are the oldest surviving literary works in the whole world. The Vedas are also sometimes referred to as *trayi* since there are three types of mantras in the Vedas; namely those that are metrical compositions, those that are in prose form and yet others that are set to music. Our tradition says that Rishi Veda Vyasa compiled the Vedas largely based on these three forms; so that *Ṛigveda* came to be the collection of mantras in metrical form; *Yajurveda* came to be the collection of mantras in prose form; *Samaveda* came to be the collection of mantras set to music; *Atharvaveda* came to be the collection of mantras due to the Rishis Atharva and Angiras.

Each of these Vedas is said to consist of two main parts: *samhita* (also referred to as *mantra*) and Brahmana. Some scholars opine that the Brahmanas are elaborations upon the *samhita*. The experiences of the *Ṛishis* poured out in the form of poetry came to be known as mantras, which make up the content of the Vedas. Each *mantra* is associated with a Ṛishi (who is therefore known as *mantra-drasṭa*, literally seer/discoverer of the *mantra*), *Devata* and *Chhandas*; although there might be exceptions.

The word Veda itself means knowledge; and the Vedas as a body of literature came to be revered as the repository of all knowledge (available at that time). Therefore, it came to be considered very important to preserve this knowledge exactly as it was. Hence, a mechanism, similar to what is today known as "hashing" among computer scientists, was devised back then; in which the Vedas were learnt, recited and transmitted orally in a number of different ways, to ensure that the different methods of recitation acted as a check on the other. The ways of recitation are preserved even to this day and are transmitted orally to those students who learn the Vedas traditionally at a *gurukul*.

All this effort in preserving the Vedas shows how much our ancestors cared for knowledge and strived to preserve every letter of it. In the above scheme, even a single letter cannot go in error, even after several millenia pass. It may so happen that, due to natural disasters (such as earthquakes, tsunamis, famines, floods, draught, volcanoes, meteoric collisions) which affect an entire settlement, one entire part of a Vedic text may be lost; but it can never happen that a single letter may become erroneous. Therefore, due to such a perfect preservation of the Vedic texts, the Vedas may be considered as good as archaeological sources of evidence for conducting research.

In India, Bhaktiyar Khilji ransacked Nalanda and Vikramashila universities and proceeded to burn their libraries; it is said that the library at Nalanda burned for seven days. In the Indian culture, people who were into knowledge production and preservation were exempted from military duties. Since the tradition holds the view that the Vedas are 'revelations' and for the reason that they have been transmitted orally, the Vedas came to be called *'sruti'* (literally, heard).

The allied literature which does not form a part of the *sruti* came to be known as *'smrti'* (literally,

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remembered). The *sruti* represents timeless and eternal values which hold good for all times, while the *smrti* codifies these eternal values into codes or rules based on the needs of the time and place for the society at hand. For example, respecting the opposite gender as thinking and feeling beings, and not exploiting them is an eternal value; while the exact number of wives or husbands one can have can vary with time, place and one's standing in society. Thanks to this *sruti-smrti* demarcation, Indian society has been able to preserve its core values, yet adapting to the ever-changing situations.

In Indian thought, there being no imperative of One Given Truth, a plurality of "truths" is allowed. While allowing for the fact that some truth is always there, the Indian thinkers are sceptical about the possibility of accessing or recognizing it. They allow therefore "several/multiple paths" to truth. Faced with immense variety and multiplicity so characteristic of Indian geographical and social reality, the Indian mind has concluded that the highest form of knowledge is the knowledge of Oneness of all, abheda (of nondifference), of transcending the opposition between the Self and the Other(s). But this *ekatvabuddhi* (synthesizing intellect), is not in opposition to the different points of view.

Further, the goal of knowledge is not promotion of man's material comfort but the enhancement of mental and physical well-being of all, a position finally and decisively articulated by Lord Buddha in seeking nirvana of all the suffering humanity rather than one's own, individual nirvana. Knowledge thus has never been divorced from justice. In fact, it has always been imbricated with ethics, with the dominant ethical value of *dharma*. All disciplines of knowledge, vidya, have this social-ethical imperative.

Ramayana is one of the most widely read scriptures and revered by Hindus everywhere. As per Hindu belief, Ramayana is the true story of Rama - the king of Ayodhya who is considered to be the very incarnation of Lord Vishnu. Great sage poet Valmiki, who wrote the magnum opus *Ramayana,* was a caretaker for Sita, Rama's wife during the turbulent, tail end period of her life.The historic period (or *Yuga*) that Rama lived in was known as *Treta Yuga.* This was during a time when people's righteousness (*dharma*) and moral standards were of a high order. In subsequent yugas (namely *Dwapar Yuga,* when the story of *Mahabharata* took place; and the present day *Kali yuga* that we live in), dharma and morality seem to be steadily declining. Thus, *Ramayana,* whenever read, tends to give us great insight to the very high moral and ethical standards of the past. During times of mental turmoil, we can often find enlightenment from reading *Ramayana.* Rama, an *Avatar* of Vishnu, the Hero of the epic story *Ramayana*. Here are some of the lessons one can learn from reading Ramayana:

Dharma, Artha, Kama and Moksha

Human life is often lost while chasing materialism - known as *Artha,* and sensory pleasures - known as *Kama*. *Ramayana* makes it clear that these two pursuits should never be sought at the cost of righteousness - *Dharma.* The ultimate goal of life is liberation - or *Moksha,* and this can be attained only by relinquishing *Artha* and *Kama* and by strictly following a life of *Dharma*.

One Man being Wedded to Only One Wife

During the *Ramayana* period, practice of polygamy (by men) was quite prevalent and it was quite an acceptable social norm for kings to marry many women. Rama's own father, Dasaratha, was wedded to three wives, and he also had innumerable concubines at his palace. In stark contrast to his father, Rama remained wedded and staunchly loyal to his only wife, Sita. From this practice, he held his head high as the greatest king ever to rule in Bharat, India. He set a good example for future generations of men as to what was considered the gold standard for a respectable man in society.

Adherence to the Need to Honor one's Word

When Rama was a young boy, the love and affection his father Dasarata had for him was immense. He would never want to get separated from his loving son. When Sage Viswamitra visited his palace and asked for help to ward off demons who were disturbing his spiritual practices at his forest hermitage, Dasarata promised to offer whatever help he could give. The Sage asked the king to send young Rama with him to fight the demons at the forest and naturally Dasarata was shocked. Still, though, he agreed to part with Rama, to honor his promise to the Sage. Later on, his third wife Kaikeyi wanted the throne of Ayodhya for her own son Bharata. She also wanted Rama to be exiled to the forest. This was nothing short of a deathly blow to Dasarata, but, still, he never used his authority as king to veto her request. This is because of the promise he had made long ago to Kaikeyi to grant her two boons whenever she chose to ask.

Respecting the promises of his father: On the night before Rama's crowning ceremony, Kaikeyi made use of her boons not only to deny Rama his rightful ascend to the kingdom, but also to send him into exile in the forest. Rama, as a *kshatriya* (a person belonging to a ruler or warrior class), had every right to question such an injustice. He was also not duty-bound to honour his father's unjust promises, either. However, true to his greatness, Rama, with total mental equipoise and without even a trace of disappointment on his face, conceded to both the demands. For him, *pitruvakyaparipalanam* (honouring his father's words) was one of the highest dharmas.

The futility of listening to vicious counselling: Kaikeyi, who was an essentially good-natured woman, meekly allowed her very loyal maidservant Manthara to brainwash her into demanding these two atrocious boons from Dasarata. Though she was not enthusiastic in the beginning, she gradually allowed Manthara's venomous words to poison her mind. Did she gain anything finally? No. In fact, she lost her beloved husband Dasarata who died very soon thereafter, on account of the shock and the pain of separation he experienced from having from his beloved son Rama being sent off. Bharata, Kaikeyi's son, for whom she obtained the very kingdom, reprimanded her for her atrocious act. He never took charge of the kingdom as a King.

Contrast can be seen here whenupon hearing about these developments, Lakshmana, Rama's brother (who was very short-tempered), like a true Kshatriya, got angry. He could not tolerate the injustice done to Rama. He wanted Rama to fight for his rights; he also wanted to proceed and fight with his father and imprison Kaikeyi. However, Rama never heeded his counsel. He pacified Lakshmana with calming words, pointing out the need for adhering to dharma. The effect of Rama's counseling not only pacified Lakshmana, but also gave him a steely resolution to relinquish his own comforts of the palace to accompany Rama to the forest, despite the latter's objections to it.

Not accepting any booty that came in an unjust way: Bharata, Kaikeyi's son, also could not tolerate the very idea of acquiring the throne that rightfully belonged to his elder brother Rama, which was wrongly secured for his sake by his mother. He felt wrath towards his mother on this issue and took her to task for having asked for such a boon. So, he went to the forest in search of his brother and pleaded for his return to the country to rightfully rule it. Rama refused to concede, of course, so he took Rama's khadav (slippers), carried them on his head, and placed them on Ayodhya's throne. He took care of the administration of the country as a representative of Rama till Rama returned from exile.

Divine love transcends all barriers of caste and creed: Lowly fisherman Guha was full of devotion to Rama. He helped Rama, Lakshmana, and Sita cross the Ganges river in a boat. Impressed by his devotion and service, Rama accepted him as his brother. Shabari, an old hunter woman of low caste, became a staunch devotee of Rama, just by hearing about Rama's greatness. When Rama was wandering the forests in search of Sita, he happened to visit Shabari's hut. The old lady, overwhelmed with love for Rama, reportedly offered him fruits after nibbling each a bit to make sure that she did not offer sour fruits to her beloved Rama. Rama treated Shabari as though she was his own mother and showered his grace on her.

Futility of getting swayed by dubious attractions: Sita, who was in the forest, grew madly attracted to a beautiful golden deer. She wanted her husband Rama to catch the deer. She refused to listen to Lakshmana's warning that such a deer was not natural and that it could be a demon in disguise. Because of her incessant pestering to acquire the deer to be her playmate, Rama had to go behind it. Unfortunately, this led to her getting separated from him, and she was forcibly abducted by Ravana, the demon.

Being watchful about one's utterances: Afterwards, Rama killed the demon. Then, Maricha, the demon who was disguised as the golden deer, called out *Ha Lakshmana! Ha Sita!*mimicking Rama's voice, and died. Sita, upon hearing it, urged Lakshmana, who was standing guard next to her, to go and help Rama (who was actually not in any trouble). Lakshmana tried his best to counsel her, but he could not convince her that Rama was fine. In a fit of rage, Sita accused Lakshmana of wanting to have an illicit relationship with her in Rama's absence. Lakshmana, who was shocked from hearing such a disturbing accusation, left immediately, leaving her alone. Ravana then utilized this opportunity to abduct her.Some interpreters of Ramayana say that Sita was forced to prove her chastity by the test of fire by Rama (after she was freed from the clutches of Ravana) only because of her intemperate and terrible accusation against the saintly and devout Lakshmana.

Fighting against atrocity done to a woman: Jatayu, the old and once powerful bird, noticed Ravana abducting Sita forcefully and flying with her in his vehicle towards his country Lanka. Jatayu fought

valiantly with Ravana in an effort to release Sita. Unfortunately, he could not succeed in this effort. The bird sacrificed its very own life in such a noble effort. Before taking his last breath, though, Jatayu managed to convey the news to Rama, who was moved to tears by the old bird's gallantry. Rama performed its last rites and funeral, as though he was the bird's son.

Humility as a great virtue: Hanuman, estranged Vanar King Sugriva's minister, was one of the greatest characters of *Ramayana.* Hanuman was physically very powerful, a great diplomat, very articulate, and very wise. Despite all his great qualities, his humility was still unsurpassed. The moment he met Rama, he was bowled over by Rama's divinity and charm and he committed himself to be Rama's lifelong servant. The great feats he subsequently performed in serving Rama were unparalleled. The humility he displayed despite his greatness was unfathomable.

True friendship: Rama befriended the estranged Vanar King Sugriva with a mutual promise of help. Sugriva's brother Vali had forcefully taken Sugriva's wife. Not only that, but he also denied him his share of the Vanar kingdom. Sugriva and Rama teamed up to eliminate the immensely powerful Vali. Sugriva, in turn, helped Rama in seeking and locating Sita. He also helped Rama to wage war against Ravana to retrieve Sita. Both did a commendable job in honouring their words.

*Showing mercy, even to the enemy:*Ravana's younger brother Vibhishan was an extremely righteous person. He was bold enough to warn and advise Ravana against abducting another person's wife just to satisfy his own carnal desires. When furious Ravana expelled his brother from the Kingdom of Lanka, Vibhishan went to Rama and surrendered to him. Despite reservations from Sugriva and others, Rama accepted Vibhishan into his fold. During the first fiery combat between Rama and Ravana, Rama destroyed all of Ravana's weapons and armor. So, Ravana stood on the battlefield unprotected. Rama, who could have easily killed Ravana at that moment, in one of the greatest acts of graciousness, asked Ravana to retire for the day and return to the battlefield the next day, fully rearmed, as it was against dharma to kill an un-armed person.

Need for the highest standards in a King: After annihilating Ravana and freeing Sita from confinement, Rama performed one of the most controversial and often criticized demands in asking Sita to pass through the fire to prove her chastity. Sita did it, and she came out unscathed. Rama took her into his loving fold once again.Later, when he became King of Ayodhya, he came to know that a washerman who spoke ill words about Rama for having accepted his wife Sita who had stayed in the confinement of his enemy for months. Rama, whose love for Sita was unfathomable, then made the most painful decision in relinquishing her - simply because he had to maintain the order of personal probity as the ruler of Ayodhya.

One can go on discussing many more lessons of morality and *dharma* that can be found from an in-depth reading of *Ramayana.* It is no wonder that *Ramayana* is a wonderful story for both children and elders alike. It's both a remarkable piece of literature and a great source of guidance on righteous living that has stood up to the test of time. It continues to inspire millions of people, breaking through both religion and linguistic barriers across the world.

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Incorporating Spiritual Wisdom: A Paradigm Shift in Management Education Insights from the Bhagavad Gita

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'Conquer yourself and the whole universe is yours'
-Swami Vivekananda

In the contemporary business landscape, there is a growing recognition among leaders about the importance of sustainable management practices and ethical considerations in management education. Leaders are honing their management skills to integrate ethical considerations into decision-making, ensuring that their organizations prioritize sustainability, social responsibility, and ethical business practices (Bentley, 2023).

"The Living Company" authored by Arie de Geus provides insight into a perspective that has been discussed in management literature (Mahadevan, 2008). Geus mentioned that large and successful companies are unhealthy and their average life expectancy is 40-50 years, which reflect that challenges faced by managers and executives in large companies, are still relevant, it indeed underscores the need for ongoing evolution in management education. The observations about struggle, stress, and disconnect between life and work suggest a potential misalignment between traditional management practices and the well-being of individuals within organizations. Drawing inspiration from the Bhagavad Gita that emphasize holistic well-being, ethical leadership, and a balanced approach to life could be valuable for revising management education.

Spirituality encourages a holistic perspective on life (Mahida, 2015). By intertwining the principles of the spirituality with modern management practices, leaders can cultivate a leadership style that is not only effective in navigating the complexities of the business world but is also grounded in timeless wisdom and ethical considerations. This integration can lead to a harmonious and purpose-driven approach to leadership, setting an example for others to emulate.

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The Bhagavad Gita, with its timeless wisdom, offers invaluable lessons that can shape the next generation of effective and conscious leaders. By incorporating these spiritual principles into management education, we can foster a new generation of leaders who not only drive business success but also contribute to a harmonious and sustainable world.

The launch of the National Education Policy–2020 (NEP–2020) by the Government of India marks a visionary step towards nurturing leaders with a holistic approach. By embracing the wisdom of the Bhagavad Gita in management education, NEP–2020 lays the foundation for a transformative journey, where knowledge meets spirituality, shaping leaders who are not only adept in business but also grounded in timeless ethical principles. The article delves into the necessity of cultivating holistic leaders equipped with ethical decision-making skills to navigate the uncertainties of the future. By examining the practical applications of spirituality in business schools and addressing potential challenges, the article also aims to shed light on a promising future for management education—one that embraces a holistic and spiritually inspired approach to mold leaders ready to meet the demands of the evolving business landscape.

Innovations and Insights: The Dynamic Evolution of Management Education

The need for systematic approaches to business management emerged as a response to the challenges posed by the Industrial Revolution. The Wharton School of the University of Pennsylvania was founded, often regarded as the first collegiate school of business in the world (Spender, 2017) After the establishment of the Wharton School marked the beginning of formalized management education, numerous institutions and management theories were developed globally, contributing to the evolution of the field for example Harvard Business School (1908), INSEAD (1957): Stanford Graduate School of Business(1925), London Business School (1964) etc.

Evolution of Management Education in India: A Journey from Independence to Innovation.

The eve of India's Independence in 1947 brought the hopes and dreams of a new nation (Mahajan 2015). The evolution of management education in India is a compelling journey that reflects the nation's economic growth, changing business dynamics, and the globalization of industries. The development can be traced through key stages. The first Indian Institute of Management (IIM) was established in Calcutta in 1961, with the support of the Government of India and collaboration with the Sloan School of Management at MIT, USA. This marked a significant milestone in the history of management education in the country. Following the success of IIM Calcutta, additional IIMs were established in Ahmedabad, Bangalore, and Lucknow in the 1960s and 1970s. These institutes played a crucial role in setting high standards for management education in India. The economic reforms of the 1990s, which liberalized the Indian economy, had a profound impact on the business environment (Menon, 2023). This led to an increased demand for skilled managers who could navigate the challenges of a more open and competitive market.

After 75 years of independence, the gross enrolment in management education in India is not up to the desired level and at the same time if we talk about quality management education it has not reached the desired level except for top Institutions like IIMs, XLRI, SP Jain, DU, MDI, etc. are the only institutions which are placing students at a good job but a large number of them apart from these turn out to be mere degree holders, many not even fit to start their own ventures, maybe even on a very small scale. Leave aside the placement opportunities; the skill baggage remains poor even after the fanciful programmes by government are being administered to students. Here it is important to mention that theoretical and rote learning has made people self-centred (Sharma, 2023). If the educational emphasis leans too heavily on memorization without fostering critical thinking, practical skills, spirituality and holistic development, there could be implications for individual's values, ethics, family management, and stress management. When grappling with these challenges, fresh management graduates not be adequately prepared to thrive in the cutthroat competition of the professional world.

Integrating ethical issues and spirituality into management education helps cultivate values-based leadership. Students can explore the ethical dimensions of decision-making, learn to navigate complex moral issues and understand the impact of their choices on individuals, organizations, and society.

The National Education Policy (NEP) 2020 in India is indeed a comprehensive and visionary framework (NEP, 2020). NEP aimed at transforming the country's education system especially management education which can foster a value-based education system and instill a sense of integrity, responsibility, skill enhancement, spirituality and ethical conduct among students.

Revamping Management Education: Bridging Gaps with National Education Policy–2020.

National Education Policy 2020 can completely change our education system for good because it constructed well according to the requirements of the 21st century **(**kale, 2023).

By aligning management education with the principles outlined in the National Education Policy 2020, institutions can better prepare students to meet the evolving demands of the business world and contribute positively to society.

One of the key features of NEP 2020 related to language is the emphasis on promoting multilingualism and the mother tongue or local language as the medium of instruction (Kumar and Pathak (2020). This involves integrating case studies, examples, and ethical business practices that are relevant to the local culture and business environment, fostering a deeper understanding of management concepts. Proficiency in the national language can be considered a valuable business skill, especially in regions where it is widely used in business communication.

NEP 2020 has taken into consideration the importance of incorporating India's traditional wisdom and values into the modern education system.

Management Education Insights from the Bhagavad Gita

Management is not merely a technical or administrative term; it is deeply intertwined with human psychology, influencing decision-making processes and organizational dynamics. In the context of amanagement program with a focus on

incorporating spiritual principles, the following subjects can be proposed:

Subject: Strategic Management

Relevance: Encourages a strategic approach to work, focusing on the process rather than being solely outcome-driven in various business scenarios.

As quoted in Chapter 18, Verse 11: **नहिदेहभृताशक्यंत्यक्तुंकर्माण्यशेषतः।**

This verse explained that it is not possible for an embodied being to renounce all action. Therefore, one who renounces the fruits of action is said to have truly renounced.

Subject: Leadership and Personal Development

Relevance: Highlights the importance of focusing on individual growth and leadership skills, rather than being overly concerned with immediate outcomes as quoted in Chapter 2, Verse 47:

कर्मण्येवाधिकारस्तेमाफलेषुकदाचन। which means you have a right to perform your prescribed duties, but you are not entitled to the fruits of your actions."

Subject: Organizational Behaviour and Management

Relevance: Emphasizes the significance of proactive engagement in organizational processes and the consequences of neglecting one's responsibilities as quoted in Chapter 3, Verse 16: **एवंप्रवर्तितंचक्रंनानुवर्तयतीहयः।**

Which Means One who does not follow the wheel of creation set rolling in this world, sinful and sensual; he lives in pain."

Subject: Business Ethics and Social Responsibility

Relevance: Promotes the understanding of ethical conduct and the responsibility of businesses to uphold righteous principles in a changing world as quoted in Chapter 4, Verse 7-8: **यदायदाहिधर्मस्यग्लानिर्भवतिभारत।** Which means whenever there is a decline in righteousness and an increase in unrighteousness, at that time I manifest myself on earth."

Subject: Operations Management

Relevance: Highlights the inter connectedness of actions performed by the body, speech, and mind, emphasizing the multifaceted nature of organizational operations as quoted in Chapter 15, Verse 15: **शरीरवाङ्मनोभिर्यत्कर्मप्रारभतेनर**: Which means whatever action a man performs with his body, speech, and mind, whether right (according to scriptural injunctions) or the reverse (opposed to scriptural injunctions), these five are its causes."

Subject: Self-Management

Relevance: Highlights the importance of self-leadership, motivating individuals to uplift themselves and avoid self-degradation as quoted in Chapter 6 verse 5 **उद्धरेदात्मनात्मानंनात्मानमवसादयेत्।** Which means let a man lift himself by his own self alone; let him not degrade himself; for the self alone is the friend of oneself, and the self alone is the enemy of oneself."

Subject: HRM

Relevance to HRM: Encourages HR professionals to impart valuable knowledge and mentorship to employees, fostering a learning culture within the organization as quoted in Chapter 18, Verse 63: **इतितेज्ञानमाख्यातंगुह्याद्गुह्यतरंमया** |

Which means, 'Thus, I have explained to you this knowledge that is more secret than all secrets. Ponder over it deeply, and then do as you wish'.

Subject: - Ethical Finance

Relevance: Encourages ethical financial practices and responsible investing, aligning financial decisions with righteous principles as quoted in Chapter 4, Verse 7-8:

इतितेज्ञानमाख्यातंगुह्याद्गुह्यतरंमया। which means whenever there is a decline in righteousness and an increase in unrighteousness, at that time I manifest myself on earth."

Conclusion

The integration of the Bhagavad Gita's timeless wisdom into the management curriculum offers the potential to contribute positively to achieve United Nations Sustainable Development Goal 4 (SDG), which focuses on ensuring inclusive and equitable quality education for all. As we navigate the complexities of the modern business landscape, the Gita's teachings provide invaluable insights into self-management, ethical decision-making, and the art of effective leadership.

The Bhagavad Gita is deeply rooted in Indian cultural and philosophical traditions. Integrating these cultural elements into management education not only adds cultural richness to the curriculum but also enhances the cultural relevance of education, which is essential for achieving inclusivity and quality education.

By weaving these principles into subjects such as leadership, ethical business practices, strategic management, and more, students can cultivate a well-rounded skill set that extends beyond traditional business education. The Gita's emphasis on self-awareness, resilience, and teamwork equips management aspirants with the tools needed to navigate challenges, foster positive work cultures, and contribute to sustainable and responsible business practices.

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Integration of Indian Knowledge System: A Way to Revive Higher Education

Amrita Maheshwari*

The Indian civilization being one of the oldest in the world has contributed immensely to the indigenous knowledge base which is slowly being recognized the world over. The Indian knowledge system is derived from the various philosophies of Hinduism, Buddhism, Jainism, Sikhism, Islamic, Christianity, Judaism, and Zoroastrianism. Therefore, it is not surprising that down the years a rich repository of knowledge has accumulated in the Indian subcontinent and is manifested in terms of rich traditions and practices. This knowledge system has played a significant role in the advancement of various fields be it Mathematics, Science, Astronomy, Medicine, Philosophy, Education, Cosmology, Architecture, Metallurgy, Visual and Performing art, and Agriculture.

UNESCO has stated more than forty civilizations in the history of the human race. Out of these forty-five civilisations have become the past and are already extinct, still, one civilization lives and has continued through and survived this is the civilization of India. This is a beautiful summary by the noted Sanskrit scholar of the 20th century *Pandit Bhagavat* Shastri ji, "*Bharatiya Gyana Parampara-sanatana Ganga- pravaha*" (i.e. Indian knowledge tradition is a perennial flow of the Ganga). Each word used in this expression depicts the characteristics of India's knowledge tradition; as our civilization is a continuum, not an event or an era, and the true nature of modernity is derived from evolving intellectual and cultural traditions. It is a flow and not a stagnant body of water. It is fresh and flowing - pertinent and living just like a river it has also witnessed its summer and rainy seasons, but it never totally dries up. Ganga in is a symbol of purity and liberation as it descended from heaven to give *moksha* to the sons of Sagara and millions and millions of people in this *yogabhumi* i.e. Bharata. This is the Ganga of *Gyana-Gaga* is perennial and ever flowing.

In our culture, knowledge is the supreme value. In the *Bhagavadgita Srikrishna* himself declares, *na hi jnanena sadrisham pavitramiha vidyate* - Nothing purifies like knowledge (*Bhagavadgita*: 4.38).

The history of Indian civilization is a great continuous journey from darkness to light and from falsehood to truth. This journey is also to defy death and achieve immortality. Knowledge has sustained this great civilization.

Indian knowledge systems are rich sources of evolving knowledge, comprising six main *Darshanas* (philosophies), fourteen *Vidyas (*sources of knowledge) and sixty-four *Kalas* (specialized art and skills). Six sets of *Darshanas* offer various points of view as open knowledge systems for mature propositions and sophisticated logic for understanding and experiencing. Fourteen *Vidyas* include 4 *Vedas*, 4 *Upavedas,* and 6 *Vedangas*. *Kala* means performing art in Sanskrit. Kala also means specialized skills. In ancient India, these skills were considered to be important for the holistic development of a cultured individual. The diversity of *Kala*s is astonishing. Several *Vidyas* and *Kalas* remain very precious in the current context as diverse dimensions of life in the 21st century which is the era of information/knowledge. India is well equipped with a critical outlook to discover its contemporary relevance in the global milieu from its own intellectual and cultural traditions (IKS).

Bhartiya Gyan Parampara: An Exposition

The evolving Indian civilization excels not only in metaphysics but also in science, mathematics, astronomy, pharmacology, numerals, geometry, algebra, trigonometry, and medical sciences. Indian knowledge systems have an evolving legacy from the Indus Valley civilization, Vedic, Buddhist, Jain, and hundreds of local knowledge traditions. Indian civilization was a center of learning in several branches of knowledge for scholars from all over the world especially South East Asia, Middle East, and Europe. The origin of various branches of mathematics, science, art, and philosophy is attributed to this civilization.IKS aspired to know everything that mind can comprehend from tiny atoms to the universe.

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India's knowledge tradition expands from *jijnasa* (desire to know) to *neti neti* (an incessant quest of what is beyond and has not yet been recorded). Such has been the commitment towards knowledge that sustained this grand civilization.

Panini, A Sanskrit Grammarian proposed a comprehensive and logical theory of phonetics, phonology (near 600 BC) which even today is recognized to carry the most unambiguous rules of grammar for machine translation. *Charaka* introduced systemic perspectives for understanding biological change, cause–effect relationships, and an evidence-based approach to medicine, *Sushruta* is the pioneer of surgical tradition all over the world (nearly 400 BC). *Kautilya* was an Indian Teacher, Philosopher, Economist, Jurist, and Royal Advisor whose *Arthashastra* is considered a classic in political economy. Original contributions of master Astronomer and Mathematician, *Aryabhatta* (476 AD) are well recognized. In his classic text, *Aryanbhatiyam*, he describes the process of measuring the motion of planets and eclipses. *Aryabhatta* proclaimed that the Earth is round, that it rotates on its axis, that it orbits the Sun, and that it is suspended in space. Aryabhatta's most significant and well-known contribution is the concept of zero. *Varahamihira* (499–587 AD), in a classic text, *Pancha Siddhanta*, notes that the Moon and the planets \are lustrous, due to sunlight. In the *Brihad Samhita*, he detailed many discoveries in the domains of geography, botany, and animal science. *Nagarjuna* (800 AD), in the classic text, *Rasa Ratnakara*, outlined many interesting experiments in metallurgy, and bio-assailable drugs made from metals and minerals. Another great scholar and Master of Arithmetic and Astronomy was *Bhaskaracharya* (1114–1183 AD). In his classic text, *Surya Siddhanta*, he made a note of the force of gravity. The appreciation of ancient knowledge and scholarship can help us to rediscover our roots by tracing the history and philosophy of Indian medicine as an example. These are merely glimpses indicating the intellectual legacy of Indian civilization.

Ancient Indian Higher Education System

India had the first and foremost universities in the world, more than fifteen ancient universities existed from the period 6th century BC to 1200 AD. *Takshashila* is known to be the oldest. *Nalanda* was established in 5th century and remained the center of excellence till it was destroyed in the 12th century *A.D.* epitome of higher Education include *Vikramshila, Mithila, Valabhi, Pushpagiri, Odantipuri, Somapura* etc. *Darshanas* form the philosophical foundations of the Indian knowledge and education system. During 600 BC the *Ashram* System gradually evolved in several multidisciplinary universities such as *Takshashila, Nalanda, Vikramshila* and many more. *Takshashila* was a centre of learning for several centuries best known because of its unique alumni such as *Kautilya, Panini, Charaka, Vishnu Sharma, Jivaka*.

The Guru Kula system which involves close and highly personalized interaction between *'Guru'* (teacher) and *'Shishyas'* (disciple) is also a worthy tradition of IKS. Ancient Indian University campuses such as *Takshashila* or Nalanda were essentially multidisciplinary hubs with several spokes for specialized studies. The depth, diversity, and rigor of education in ancient Indian universities were exemplary. The blended pedagogy was based on inquisitiveness, inquiry, dialogue, discourses, debates, critical thinking, rationality, and an evidence-based approach. Pedagogies were built on four stages of teaching-learning: *Adidhi* (information and theory), *Bodha* (understanding and analysis), *Acharana* (performance and practice) Pracharana (propagation and preaching).

The universities in ancient India had a unique model that ensured the holistic development of students to make them highly skilled professionals, artisans, thought leaders, warriors, nation builders, responsible citizens and humble human beings. Almost till the 12th century, Indian universities used to attract students from different parts of the world.

The period from 6th century BC to 12th century AD may be considered as the golden period of Indian scholarship and education.

English dominated based on British modelled, first modern university was established in India on 24th January 1857 at Calcutta, and universities were established in India during the British Raj primarily to create a bandwagon of clerks and bureaucrats to serve the English rulers. These universities framed on Macaulay's strategy ensured the erosion of local languages, culture, and Indian knowledge systems. During the colonial period, the British Raj started universities mainly to distort the cultural identity of locals and to develop human resources needed

as a workforce for the rulers. He identified that the education system in India was responsible for the deep attachment of Indians to their tradition, culture, and rituals. He recommended a policy of introducing the English language to dominate our education system. Gradually Indian knowledge systems were sidelined *and completely* replaced with western education systems Due to this development of Sanskrit and regional languages suppressed. The main objective of university education shifted from scholarship, knowledge generation and innovation to the production of graduates who could serve in British colonial establishments more as bandwagon of clerks and *babus*. This was the impact of Macaulayism.

Over time, the Indian HEIs have distanced themselves even from these and started embracing the American pattern.

Measures to Inculcate IKS in Higher Education

Even after more than seven decades of independence, India still has not been able to come out of the influence of Macaulayism. To revive Indian Universities and make them suitable for the future, we have to rediscover their roots, strengths and knowledge sources these philosophical and historical ventures must be carefully considered While adopting these sources we should not become dogmatic by taking a stand that 'we know everything'. We must avoid 'self-pride-past-glory' syndrome. It is important to keep an open mind to welcome new ideas and our quest to add new knowledge must continue. It is worthwhile to draw inspiration from these achievements to demonstrate contemporary relevance and explore future innovations in higher education. The best way that could be pursued is to discard all that is Western and design our material, methods, and processes.

- ***Designing the Higher Education System on the Concept of Swadeshi***

In our universities, all courses, methods of teaching, curriculum, etc. are modeled on Western lines and each time, there is only an unsuccessful attempt to rethink and modify the existing system. This is the most unfortunate for a country like ours, which inherited a treasure trove of knowledge from the past. Unfortunately, even a minimum effort is not put to design Indian education system. The countries of South Asia too have their own patterns, like Singapore, South Korea, Hong Kong, etc. Taking the cue from the Japan, who copied west model in the beginning emerges successful in designing their own system of education and compete with the western countries in every possible field. Even the countries in Europe have many things in common with USA and UK; they still stand apart in many other respects, in the field of education. Though small in size and number, each of them is distinct, a small country like Sweden, remaining an example and being quoted year after year for Nobel Prizes at the Swedish Academy awards. Finland is known throughout the world for the Best Educational Initiatives and the highest spending (about 7 per cent of GDP) on education. Even smaller countries like Luxembourg, Norway achieving almost 100 per cent literacy by following their own system of education.

To get this position, the best way that could be to discard all that is western system and design *Swadeshi* Higher Education System.

We have to create suitable literature based on the classical languages and modern languages as the preferred language for medium of instruction, examination, and evaluation and even for writing scientific papers. We should take a cue from France, Germany.

Serious probe is done into the scientific expedition that were created by our ancestors like *Aryabhatta, Varahamitara, Nagarjuna, Bhahmagupta, Patanjali* and many others. as the iron pillar in Mehrauli, secret of this is yet to be unfolded. The Government of India can take measures to establish a 'Centre for the Study of Ancient Indian Science and Technology' as the establishment of the 'Indian Institute of Heritage and Conservation' under the Ministry of Culture as a deemed University.

- ***The Gurukula System***

Most famous aspect of Indian education is the *Guru-Shishya parampara*. In the *Guru Kula* system, education was about groom the latent capacities and potentialities of the pupils concerned. It was treated as a process of biological development of the student it is not only a mere mechanical process of training. In this *parampara* the transmission of knowledge had taken place one-to-one uninterruptedly. The *Guru* is considered the embodiment of knowledge and the duty of the disciples is to draw from the treasure as much as they can. There was no distrust

or between them. Their relationship was mutual and learning was considered to be for a lifetime. Students had to stay along with the *Guru* and inculcate them with their learning and knowledge. For the *Guru*, all the Students are equal; irrespective of the social and economical backgrounds. The sons of the king cannot avail any special facilities and preferences. The *Guru* had abundant love and affection for the students and treated like their own children. The power of this style could be witnessed by knowing the fact that the Vedas – an unwritten script – were handed over from generation to generation only by the oral reciting and learning them by heart. This could be happening only when there is utmost dedication and the intensity of learning (Mukherji and Mukherji, 1953)

Thousands of students from the Far East and Europe were coming to India for Higher Education. *Nalanda* and *Takshashila* had strength of about 10,000 students and 2000 teachers. The students were taught Vedas, Philosophy, Yoga, Medicine, Grammar and many other Arts. Xuanzang (the Chinese traveler), who visited the Nalanda during 7th Century CE, stated that the university was offering a variety of disciplines, almost the "entire circle of knowledge" were available. He described that the Vice Chancellor of the university – *Shilabhadra* – was the "highest living authority" in Yoga, who was studied '*yogashastra*' in *Nalanda*. *Guru* enjoyed complete autonomy in all aspects from selection of students to that of designing their syllabi. And, when the teacher was satisfied with the performance of the students, the course was concluded.

Teachers must inspire young university students to take education seriously. Teachers have to present themselves as role models who can protect universities and students from antisocial elements. Teachers must tap their potential and channelize their energy for nation building and in promotion of civil society. They need to be the facilitators and mentors as ancient *Guru.*

- ***Issue of Quantity verses Quality***

There is a big discrepancy regarding the number of universities and colleges in India, what is the optimum size of a college or university? There are no fixed caps or standards. National Knowledge Commission (NKC) opined that India needs about 1500 universities (GoI, 2006). The legislative power of establishing universities having being vested with both central and state governments, there does not appear to be any common policy as to how many universities India can contain, whereas the states are being very liberal in founding more number of state universities and also in granting permission for the establishment of private universities. Radhakrishnan Commission feared that proliferation of universities without purpose is actually happening. There must be is a serious discussion on this subject to formulate a policy on this account. In addition, in the pursuit of fulfilling the objective of enhancing access to higher education, HEIs were encouraged to open new programmes suited to current needs as there are universities in some states that are not able to meet the criteria of 12(B) of the UGC Act, 1956.

It is appreciable that in the NEP 2020, there is proposed categorization of HEIs into three types:

- Research Universities with equal focus on research and teaching; numbering between 150-300;
- Teaching Universities numbering between 1000-2000, with focus on high quality teaching (with targeted enrolments between 5000 and 25,000;
- College which focus on the Undergraduate Courses, enjoying autonomous status (numbering 5000-10,000) with enrolments varying between 2000 and 5000. In effect, the NEP is putting the number of universities at around 2300 and the colleges at 10,000. In the case of universities, the number proposed by the NEP is much higher than what was proposed by the NKC.

NEP 2020 is in favor of downsizing the number in respect of colleges. As a matter of fact, there are about 40,000 colleges now under the affiliation of various universities in the states. This shall come down to about one-fourth. There must be a clear-cut policy on the number of HEI.

As all good institutions provide the facility of a sabbatical to their staff and allow them to upgrade their knowledge and experience in the best possible manner as they deem fit. The same concept is to be applied to the students and hoped that the degree one receives after a "gap" year would be much more meaningful as it gives the time to the student to pursue other passions, gain field experience, which help the students to know his/ her strengths and weaknesses better; one can evaluate the utility of her/his course/study and will have the opportunity to redesign their career.

- ***Redesigning of University System***

As we are following the British model, only general universities have come into existence in India and they were not contributed much to the development of the nation. University needs to be based on a trans-disciplinary approach having academic excellence, flexibility, professionalism, and self-reliance through integrating traditional and modern knowledge because universities need to break out of the stranglehold of a single cultural and intellectual tradition. Now we must redesign about 80 percent of the existing universities as skill-based universities, and the remaining 20 per cent to be multi-faculty general universities to teach all kinds of Arts, Humanities, Social Sciences and those related to the human enlightenment. As country required the people with requisite skills that can carry out the jobs with great precision. It is for this reason; a Master of Arts' degree holder is not able to earn more, than a mason, plumber or even unskilled labor. This pathetic situation is the result of our present education system. Therefore, something radical needs to be thought of and implemented. Education is intertwined with practice from the beginning but in our present day setting, there is little emphasis on the practice part. This must change. As a solution, the existing universities must be converted to skill universities, focusing on certain kinds of skills. The NEP has proposed Research Universities and Teaching Universities (GoI, 2019)

Therefore, the entire skill-based education should be brought to the 'Centre Stage' and not be pursued as an 'adjunct activity'. One more contrasting issue of Higher Education must be resolved, As a measure of competing with the world, a practice is chosen to create certain 'islands of excellence'. By policy, governments have started favoring the establishment of these institutions, and are named 'Institutes of National Importance'. The institutions thus created include IITs, IITs, NITs, and IISERs and many others. In the same manner, Central Universities are deemed to be exclusive. Now, the UGC has taken measures to recognize a few HEIs as Institutions of Eminence (IoE) and issued relevant regulations in 2017. The idea is said to be providing a regulatory structure that enables these institutions to emerge as world-class teaching and research institutions. While this idea is not faulty, this leads to starving a vast majority of the institutions. There is a striking imbalance in the allocation of funds between Central Universities and State Universities. While almost about 80 per cent of the total funding is received by about 50 Central Universities, the remaining 20 per cent fund is handed down to the large number of about 400 State Universities. This lopsided treatment only makes the people of India feel that the so-called State Universities as worthless institutions. This will in due course amount to such a situation of "calling it mad and then killing it". Therefore, either to prohibit the State Governments to establish universities without adequate funds; or elevate them at least to the status of Central Universities, one thing that needs to be noted clearly is that the colossus of Indian Higher Education is resting on the edifice of State Universities alone. Therefore, equity is a must in the higher education sector in India. It is time now that India must re-design its current Higher Education on the foundations of Indian knowledge systems and integrate advanced science, technology, social science, contemporary art and humanities.

We have to shed the colonial mindset and understand our own history and glorious heritage. Respect our own value systems, culture, and languages without losing sight of the value of English at the global level. Embrace technology-led innovation with sustainability principles. Revive and recognize diverse artisan skills as part of education. Mainstreaming agriculture and involving business, industry, governments, voluntary organizations, and society in the teaching-learning process. Blue-collar and white-collar divide must be ended by ensuring equal weightage to skill mastery and degree education to innovate new India-centric University, integrating ancient and modern approaches. Merely increasing the Gross Enrollment Ratio (GER) will be disastrous for a country like India if the glorification of hollow degrees produced by existing university factories producing unemployable graduates on the assembly line continues. The existing model of Higher education must be changed before it is too late.

Summing Up

A University is considered as an institutional space where the community of teachers and scholars is engaged in higher education and research. Universities award academic degrees in various academic disciplines. Universities are temples of knowledge where ideas, innovations and skills are nurtured. Redesigning Higher Education does not

mean discarding the Western approach or replacing current practices. The integration of Indian knowledge systems in education should not be done blindly in a dogmatic manner or by taking a stand that 'we know everything'. We must avoid 'self-pride-past-glory' syndrome. The Indian knowledge systems may not be studied only to know our glorious history and to feel proud. It is crucial to discover their contemporary relevance and potential for future innovations through serious academic study and rigorous trans-disciplinary research. It is important to keep an open mind to welcome new ideas and our quest to add new knowledge must continue. This will require a complete overhaul to prepare our higher education system future ready.

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Fostering a Thriving Research and Innovation Ecosystem in India

Prakash Mahanwar*

The importance of a strong research and innovation ecosystem in the search of sustainable growth and worldwide competitiveness cannot be emphasized. In India, promoting an environment that values innovation, creativity, and technical growth is not only a goal but also a need. This essay explores the necessary elements needed to support a robust research and innovation ecosystem in India, as well as the possible advantages it could have for the nation.

Investment in Research Infrastructure

A major investment in cutting-edge research infrastructure is a prerequisite for creating a thriving research and innovation environment. To draw and keep world-class researchers, facilities with cutting-edge technology, collaborative workspaces, and well-equipped labs are crucial. In order to guarantee the availability of state-of-the-art facilities across a range of scientific and technological fields, public-private collaborations might be extremely important.

Strengthening Academic and Research Institutions

The foundation of India's research ecosystem is its academic institutions. It is critical to provide these universities with sufficient funding, faculty development initiatives, and a supportive environment for research. Innovative ideas can result from promoting multidisciplinary research and cultivating a collaborative culture both within and across institutions.

Fostering Industry-Academia Collaboration

Research must be translated into practical innovations through the active cooperation of academia and industry. Research institutions and enterprises should be encouraged to form cooperation through the establishment of incentives and frameworks. Together with increasing the research's relevance, this partnership opens up opportunities for commercialization, which boosts economic growth.

Helping Startups and Entrepreneurs

Disruptive inventions are frequently sparked by startups. Research discoveries can be turned into financially sustainable goods and services more quickly by establishing an ecosystem that encourages entrepreneurship, offers finance, and allows for mentorship. To support the startup scene, initiatives such as venture capital funds, incubators, and accelerators should be carefully implemented.

Promoting an Innovative Culture

Innovation requires a culture that fosters curiosity, taking calculated risks, and lifelong learning. When combined with awareness-raising initiatives that emphasize the value of innovation, educational changes that place a high priority on creativity and critical thinking can help to develop a mindset that is advantageous for research and development.

Government Policies and Incentives

The environment for research and innovation is greatly influenced by government policies. Research and development investments from both domestic and foreign sources can be attracted with the use of financial incentives, streamlined regulatory frameworks, and clear and supportive policies. Innovation is also boosted by a calculated approach to patenting and intellectual property rights.

International Collaboration

By collaborating and forming relationships with other countries, one can connect with the world's research community and have access to a variety of viewpoints and knowledge exchanges. Participation in international conferences, collaboration on research initiatives, and academic exchanges all help to raise the benchmark for research in India.

Conclusion

In conclusion, building a strong ecosystem for research and innovation is an investment in the resilience, competitiveness, and international standing of the country as well as in the future. India can position itself as a hub for innovative discoveries and technical developments, contributing to both national growth and the global knowledge economy, by creating an atmosphere that values collaboration, supports research, and stimulates innovation. ❑

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Interdisciplinary Research in Universities: The Need and Strategies

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Leading institutions claim that many of the complex problems society is currently facing (e.g. in the area of health care, mobility, communication, or the environment) demand innovative solutions that combine knowledge from different scientific disciplines (National Academies, 2005) (1). These combinations can be achieved by conducting interdisciplinary research. Interdisciplinary research leads 'researchers in different disciplines to meet at the interfaces and frontiers of those disciplines and even to cross frontiers to form new disciplines (National Academies, 2005, p.16) (1).' A variety of scholars have argued that interdisciplinary science has a positive influence on knowledge production and innovation. Today, interdisciplinarity is stimulated by a variety of funding instruments, on the university level, the national level, and on the international level. The goal of many of these programmes is to stimulate collaboration among individual researchers as a means to promote interdisciplinarity. However, these programmes operate mainly at an institutional level and there are serious doubts concerning their effectiveness. For example, when using citation patterns as an indicator of interdisciplinarity, only a modest increase is found over time.

Scientifically, much has been written about interdisciplinary research collaborations. Still, relatively little is known about the characteristics of individual researchers that increase the likelihood of engaging in interdisciplinary research. Understanding these individual characteristics is important because it is the individual researcher who has to engage in the research collaborations and who has to produce the scientific result that contributes to the solution of the societal problem.

While single-discipline research will likely remain an important standard of knowledge creation, many benefits have also been attributed to interdisciplinary research, such as its potential for fostering innovation, facilitating creativity, and supporting research impact, among others. According to one popular perspective, knowledge arising from interdisciplinary research is required for addressing real-world social and policy problems, which are themselves inherently interdisciplinary. It may not be surprising, then, that interdisciplinary collaboration is often seen by university leaders as desirable, and consequently, they are actively promoting and encouraging inter-disciplinarity at research institutions around the world.

The characteristics and advantages of 'Interdisciplinary Research' are:

- Interdisciplinary Collaboration opens your mind to new possibilities.
- A Cross-Functional team can give you a more holistic view of your Research.
- Working with People from Different Backgrounds exposes you to new skills and perspectives.
- Your Research Team will work better with interdisciplinary teams.
- Interdisciplinary Collaboration encourages creativity and innovation.
- Interdisciplinary Collaboration can take you out of your comfort zone.
- Collaboration Is the key to innovation.

The Context

It may be prudent to understand the relevant recommendation of the National Education Policy-2020 of the Government of India as important guidance in developing and implementing interdisciplinary education and multidisciplinary research in higher education institutions. The following are the relevant clauses of NEP-2020.

Clause 11.2.

Assessment of educational approaches in undergraduate education that integrate the humanities and arts with Science, Technology, Engineering and Mathematics (STEM) have consistently shown positive learning outcomes, including increased creativity and innovation, critical thinking and higher-order thinking capabilities, problem-solving abilities, teamwork,

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communication skills, more in-depth learning and mastery of curricula across fields, increases in social and moral awareness, etc., besides general engagement and enjoyment of learning. Research is also improved and enhanced through a holistic and multidisciplinary education approach.

Clause17.2

A robust ecosystem of research is perhaps more important than ever with the rapid changes occurring in the world today, e.g., in the realm of climate change, population dynamics, and management, biotechnology, an expanding digital marketplace, and the rise of machine learning and artificial intelligence. If India is to become a leader in these disparate areas, and truly achieve the potential of its vast talent pool to again become a leading knowledge society in the coming years and decades, the nation will require a significant expansion of its research capabilities and output across disciplines. Today, the criticality of research is more important than ever before, and for the economic, intellectual, societal, environmental, and technological health and progress of a nation.

Collaborative Research in India: Academic Institution v/s Industry

The term 'collaboration' is used to depict all forms of agreement between academic institutions, corporations, universities, and any combination of such two or more parties who share the commitment to reach a common goal by using their resources available. Collaboration in the Research and Development (R&D) sector has been a broadly used phenomenon for many years in India. In collaborative research, significant factors like time & cost are reduced to a large extent because of the sharing of the resources by the parties. Collaborative research contributes to the technological and economic development of the country. Collaboration also avoids duplication in research. There can be lots of questions that may arise in collaboration: what is the actual meaning of collaborative research? Why do industries collaborate with academic institutions? What goes on in the collaborative research? What are the effects of collaborative research? Which type of policy do they have? and simultaneously there are lots of issues - involved in collaborative research like intellectual property rights, technology licensing, confidential agreements, etc. How can all these issues be resolved before or during collaboration, so that a healthy relationship may be established for the future benefits of all the parties involved? The institutions need to throw light on the solutions available to all these questions and the issues that arise between the parties involved in the collaborative research program.

Factors Associated with Disciplinary and Interdisciplinary Research Collaboration

Frank J. van Rijnsoever , Laurens K. Hessels (2) investigated what characteristics of researchers are associated with disciplinary and interdisciplinary research collaborations and what collaborations are most rewarding in different scientific disciplines.

Research highlights are**: (**i) study characteristics of researchers related to (inter) disciplinary research collaboration. (ii) Female scientists are more engaged in interdisciplinary research collaboration. (iii) Years of research experience are positively related to both types of collaboration. (iv) Work experience in firms or government increases interdisciplinary collaboration and (v) Disciplinary collaborations contribute more to a career while interdisciplinary collaborations provide solutions to social and societal problems.

Multidisciplinary research is based upon mutual collaboration through the departments/schools while disciplinary research is person-oriented disconnected research ideas. While solutions of societal and economic value are the outcome of Multidisciplinary research, fragmented academic publications with good citations are the only outcome in single-discipline research.

Case Study : Phyllanthus Story

Translational medicine is a rapidly emerging interdisciplinary discipline focused on bridging technologies and discoveries in the laboratory with clinical research and practice. The same principles apply in academic, biotechnology and pharmaceutical environments. "To improve human health, scientific discoveries must be translated into practical applications. Such discoveries typically begin at the bench' with basic research in which scientists study disease at a molecular or cellular level then progress to the clinical level, or the patient's bedside', thus terming translational medicine as 'bench to bedside research'. Here, an example of such research successfully translated into an antiviral drug for Hepatitis-B and Hepatitis-C is provided and is termed, "Phyllanthus Story".

Phyllanthus amarus is an Indian Medicinal Plant, belonging to the family Euphorbiaciae, traditionally used in Ayurvedha and Siddha Systems of Medicine for the treatment of clinical jaundice. Our research group at the Post-graduate Institute of Basic Medical Sciences, University of Madras, between 1982 to 2003 in collaboration with several clinical and research investigators in India, USA, UK and Australia evaluated the antiviral, immune-modulatory, hepato-protective and toxicological properties as per internationally accepted study design and methodologies. After conducting the statutory requirement of safety studies, we have conducted seven clinical trials, including a double-blind clinical trial to validate the clinical efficacy of *Phyllanthus amarus* treatment in both acute hepatitis and chronic hepatitis B.

Based on the knowledge drawn from Ayurvedic and Siddha literature, wherein it is documented that the efficacy of medicinal plants would depend on the soil in which they are grown and the season during which the plants are used for the preparation of traditional medicines, it was hypothesized that the non-reproducibility of uniform treatment efficacy of the drug preparations of P. amarus and other species was due to the absence of one or more of the under mentioned antiviral and biological properties in the P.amarus extract which are essentially required for the efficient treatment of (acute and chronic) Hepatitis B.

(i) HBsAg binding property facilitating the inactivation of the virus in circulation ultimately leading to viral clearance.

(ii) HBV-DNA polymerase enzyme inhibiting potential, thus acting as anti-viral preventing the multiplication of HBV.

(iii) Reverse transcriptase enzyme inhibition is also required for the initiation of HBV replication.

(iv) Inhibition of HBsAg secretion from HBV transinfected liver cells thus possessing activity against virus-infected chronic liver disease conditions.

(v) Hepatoprotective and antihepatotoxic properties against the liver cell toxicity brought about by all hepatitis viruses (A,B,C,D & E) and other hepatotoxic agents.

(vi) Immunomodulating property to potentiate the immune system of HBV infected patients towards virus clearance and protective antibody (anti HBs) responses.

To address the above scientific requirement, Thyagarajan et al[73] developed an agro technology-based standard operating procedure to cultivate the specified biovar of P. *amarus* from the seeds of the wild-grown P. amarus from certain regions of Tamil Nadu which showed optimum in vitro activity profile of the above six properties.

The drug preparation from this cultivated biovar of P. amarus was standardized by a chemo-biological fingerprinting methodology through a process that produced an extract with all the above biological properties. Using this "University of Madras P. *amarus* preparation", five clinical trials were conducted on a total of 153 chronic HBV carriers (3 in Chennai (Madras), 1 at Vellore, Tamil Nadu and 1 at Glasgow, UK[74]).

In summary, these trials have shown a mean HBsAg-complete Hepatitis B virus clearance rate of 25.6% and a mean HBeAg seroconversion rate (virus infectivity loss) of 55.3% in pre determined chronic HBV carriers. It was finally decided to recommend a schedule of 500 mg P. amarus standardised preparation in capsules given orally three times daily for six months. The overall results from the clinical trials gave a positive suggestion that *Phyllanthus amarus* treatment not only clears the virus but also induces cell-mediated immunity response which might assist in HBV clearance/suppression in chronically infected HBV patients.

All the above research and drug development work led to the award of the following patents on the name of 'University of Madras' with Thyagarajan as inventor:

(i) Indian patent: 405/MAS/99 – 12.4.1999[73]

(ii) USA patent: 09/719, 486 – 12.12.2000[75]

(iii) North Korea patent: 00 – 1180 – 11.12.2000[76]

(iv) South Africa patent: 20010148 – 05.01.2001[77]

A drug under the brand name, 'VIROHEP' was also marketed in India by M/s. Rallis India Pharmaceuticals and M/s. Shreya life Sciences in the year, 2002.

This case study on Phyllanthus Story is a scientific evidence to prove that 'interdisciplinary and multidisciplinary research' alone as depicted in

Fig 1: Drug from *Phyllanthus amarus* for the Treatment of Hepatitis B



the above self-explanatory Fig 1 will solve lingering health problems of the society.

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Nurturing Innovations and Ecosystem

Priya Rao* and Nitin M Rane**

Innovation is the cornerstone of progress, driving economic growth, social development, and technological advancement. However, innovation does not occur in isolation, it grows within dynamic networks known as innovation ecosystems. These ecosystems are vibrant communities of interconnected actors, including businesses, start-ups, universities, research institutions, investors, and policymakers, who work to collaborate to foster creativity, experimentation, and knowledge exchange. Innovation ecosystems have gained increasingly wider recognition in recent years as societies recognize the importance of creating environments conducive to innovation and entrepreneurship. From Silicon Valley to Tel Aviv, from Bangalore to Shenzhen, successful innovation ecosystems have become engines of growth, attracting talent, investment, and different ideas from around the world.

This article investigates the complexity of nurturing innovations and ecosystems, by exploring the key components, strategies, challenges, and opportunities associated with fostering dynamic innovation ecosystems. It examines the important elements that contribute to the success of innovation ecosystems, such as strong entrepreneurial culture, access to capital and talent, supportive regulatory environments, and collaborative networks. Real-world examples highlight the diverse approaches to nurturing innovation ecosystems and analyse the factors that underpin their success. From established tech hubs to new evolving innovation hotspots, it uncovers the secrets behind building thriving ecosystems that drive sustainable growth and social impact.

Innovation and Entrepreneurial Ecosystems

Introducing the Concept of Ecosystem

The term "ecosystem" originates from biology, referring to a community of living organisms interacting with their environment. In this context, "eco" implies the environment, while "system" implies a set of interrelated parts functioning as a unit. J. Moore (1993) has expanded the ecosystem metaphor into management, drawing parallels between biological systems and businesses. He likened companies to organisms in nature and highlighted their interactions within a business environment. Since then, the concept of ecosystems has gained more popularity in academia, business, management, and policy.

Different research streams have newly evolved, including business ecosystems, innovation ecosystems, entrepreneurial ecosystems, and knowledge ecosystems. These variations depend on the types of actors involved and the nature of the value proposition. In business and management, an ecosystem collects various yet complementary organizations that collaborate to generate ecosystem-level outputs. This concept extends beyond the outputs and activities of individual participants, emphasizing collaboration with the nature of ecosystem dynamics.

Entrepreneurial Ecosystem

The concept of the entrepreneurial ecosystem has two key aspects: the first one is the ecosystem that is described earlier and the second one is an entrepreneurial process. Entrepreneurship involves the creation of value by benefits from a unique combination of resources to exploit an opportunity. The evolution of entrepreneurial ecosystems reflects changing perspectives on entrepreneurship. Initially, studies focused on individual personalities but later on they shifted towards examining the broader social and economic environments where enterprises operate. This broader focus acknowledges the significance of external factors in shaping entrepreneurial activity.

Entrepreneurial ecosystems provide a more holistic and realistic understanding of entrepreneurship by considering the diverse and varied factors that affect or shape entrepreneurial activities and outcomes. By emphasizing the interconnectedness of various elements within an ecosystem, such as institutions, networks, resources, and support mechanisms, entrepreneurial ecosystems highlight the complex dynamics that drive entrepreneurial activities and outcomes. The essential components of entrepreneurial ecosystems often overlap or share similarities, highlighting their interconnected nature. Key elements such as culture, markets, infrastructure, government support, and others are mutually interdependent and co-evolve, collectively shaping the environment for entrepreneurial activities (Fig-1).

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Expanding this, it can identify several important components that contribute to the success of an entrepreneurial ecosystem. Drawing from E. Stam's model and supplementing it with additional relevant factors, some important components were newly evolved: education, training, and innovation.

There is a focus on some main components as follows:

Infrastructure

It plays a critical role in supporting entrepreneurial activities by providing essential services and facilitating business operations. Entrepreneurs depend on various components of infrastructure to establish and grow their ventures effectively. Different aspects of infrastructure contribute to entrepreneurial success, such as physical entrepreneur, transportation, energy, telecommunication and support services.

Markets and Demand

Markets and demand are fundamental drivers of entrepreneurship, providing the essential context and opportunities for businesses to thrive. It provides opportunities for idea generation, customer engagement, market validation, scalability, and competitive advantage. Entrepreneurs who understand and effectively navigate market dynamics are better positioned to capitalize on emerging opportunities and build successful ventures that meet the evolving needs of their customers.

Human Capital

It consists of the skills, knowledge, and expertise of individuals, and is indeed a crucial component of the entrepreneurial ecosystem. Access to skilled labour is important for the success of businesses, particularly in the modern knowledge economy, where innovation and expertise are important.

Education and Training

Education and training are essential components of the entrepreneurial ecosystem, primarily facilitated by higher educational institutions such as universities. Universities serve as hubs for knowledge creation and distribution, providing students with access to cutting-edge research, theories, and practices across various disciplines. Through formal education programmes , universities provide individuals with foundational knowledge and skills essential for entrepreneurship, fostering a culture of learning and innovation. Higher educational institutions offer specialized training programmes , courses, and workshops designed to develop practical skills and competition relevant to entrepreneurship. These initiatives inspire entrepreneurs to acquire business acumen, leadership abilities, and technical expertise necessary for launching and managing successful ventures.

Finance

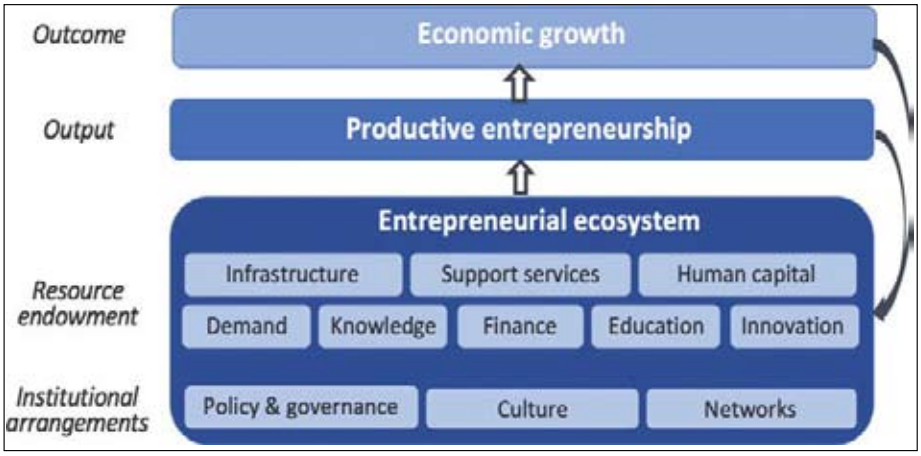
Access to finance is a fundamental need of entrepreneurship and ecosystem development. It empowers entrepreneurs to pursue their dreams, create value, and make meaningful contributions to the economy and society. Therefore, contributing to an environment that facilitates access to finance is essential for nurturing a thriving and dynamic entrepreneurial ecosystem.

Network

Networks of entrepreneurs play a crucial role in facilitating the flow of information, knowledge, labour, and capital within the entrepreneurial ecosystem.

Entrepreneurial networks serve as platforms for the exchange of valuable information and intuitive understanding among entrepreneurs. Through networking events, conferences, and online communities, entrepreneurs can share experiences, best practices, and market intelligence, enabling

Fig 1: Key Elements, Outputs, and Outcomes of the Entrepreneurial Ecosystem (Alina Ianioglom, 2022)



entrepreneurs to make more informed decisions and navigate challenges more effectively.

Policy and Governance

Policy and governance play a pivotal role in shaping the entrepreneurial ecosystem, as they create the regulatory framework and institutional support that is necessary for entrepreneurship to grow rapidly in their business. Entrepreneurship grows in environments with clear, transparent, and business-friendly regulations. Policies that streamline business registration, licensing procedures, and tax compliance can reduce barriers to entry for entrepreneurs and encourage start-up formation. It is excessively difficult that regulations or bureaucratic red tape can discourage entrepreneurship and stifle innovation.

Support Services

Support services encompass various organizations and intermediaries that offer assistance and resources to businesses, entrepreneurs, and start-ups. These services are essential for fostering growth, innovation, and sustainability within the entrepreneurial ecosystem.

Some examples of services such as:

- *Professional Services*

  These include legal, accounting, insurance, consulting, and technical experts who offer specialized expertise and guidance to businesses. Associations and networks: These associations may organize events, seminars, and conferences),

- *Cluster and Innovation Hub*

Geographic clusters and innovation hubs bring together businesses, research institutions, government agencies, and support organizations within a specific industry or region. Business incubators and accelerators: They offer access to workspace, funding, mentorship programmes , and connections to investors, customers, and partners.

Culture

Culture contains the values, beliefs, norms, and attitudes prevalent within a society or community, that significantly influences the attitudes towards entrepreneurship. A culture that celebrates innovation, risk-taking, and entrepreneurial success can serve as a powerful catalyst for encouraging entrepreneurial activities. Conversely, a culture that stigmatizes failure, lacks support for entrepreneurship or prioritizes stability over innovation may deter individuals from pursuing entrepreneurial ventures.

Knowledge

Knowledge refers to the understanding, skills, and information gained through experience, education, learning, and discovery. Here are some various forms of knowledge:

- ***Theoretical Foundations:*** These are the fundamental principles, concepts, and theories that support a particular field of study or domain of knowledge. They provide the framework for understanding and interpreting events.
- ***Tacit Knowledge:*** This type of knowledge is difficult to express explicitly. It is often acquired through practical experience and is deeply established in individuals' subconscious. Tacit knowledge contains insights, intuitions, and "know-how" that are not easily codified.
- ***Specialized Knowledge:*** Specialized knowledge, needs expertise and proficiency in a specific area or discipline. It may involve specialized terminology, techniques, methodologies, or tools that are unique to a particular field or industry.
- ***Formal Knowledge:*** This includes information that is systematically organized and codified, which is taught through formal education or documented in textbooks, research papers, manuals, and other academic or professional resources.
- ***Informal Knowledge:*** Informal knowledge contains practical wisdom, lessons learned through trial and error, anecdotes, folk wisdom, and everyday experiences. It is shared through informal channels such as conversations, storytelling, and observation.

Innovation

Innovation is the main force in entrepreneurial activity, enabling individuals and organizations to identify and capitalize on opportunities. Here's how innovation plays a crucial role:

- ***Identifying Opportunities:*** Innovation involves recognizing gaps, inefficiencies, or unmet needs in the market. Entrepreneurs are often adept at identifying these opportunities and developing creative solutions to address them.
- ***Creating Value:*** Entrepreneurs innovate by introducing new products, services, or business

models that offer unique value propositions to customers. Innovation allows them to differentiate themselves from competitors and attract customers through high quality, greater importance and better performance offerings.

- ***Improving Efficiency:*** Innovation is not just about creating new products or services, it also involves finding more efficient ways to produce, deliver, or distribute existing offers. Entrepreneurs influence or power innovation to streamline processes, reduce costs, and enhance productivity.
- ***Adapting to Change:*** Markets are constantly evolving, driven by changes in technology, consumer preferences, regulations, and other factors. Innovation enables entrepreneurs to adapt to these changes quickly, staying ahead of the curve and remaining competitive in dynamic environments.
- ***Fostering Growth:*** Innovation fuels growth by opening up new markets, expanding product lines, or entering into strategic partnerships. Entrepreneurs who continually innovate are better positioned to scale their businesses and capture a larger share of the market.
- ***Solving Problems:*** Entrepreneurial innovation arises from a desire to solve pressing problems or address societal challenges. By developing innovative solutions to these problems, entrepreneurs can create a positive social impact while also generating financial returns.
- ***Staying Relevant:*** In today's rapidly growing world, some businesses that fail to take new risks do not stay for longer. Entrepreneurs must continually create new ideas or products to stay relevant, anticipate future trends, and meet evolving customer demands.

Some actors such as entrepreneurs, the public sector, service providers (marketing, legal, etc.), financial institutions, academia, investors, non-government organisations, and media etc. form a dynamic ecosystem that supports entrepreneurship by providing resources, networks, and opportunities for innovation and growth. Collaboration and coordination among these actors are essential to creating a conducive environment for entrepreneurial activity and fostering economic development.

Embracing the Culture of Innovation - Small and Medium Enterprises (SMEs)

According to Rita McGrath, a best-selling writer and innovative thought leader, in the book "The End of Competitive Advantage, we are living in an era of ephemeral benefits. Opportunities are usually fleeting as well as insufficient to support long-term planning. Businesses must be agile in order to respond to these swift modifications while offering faster-to-market, although imperfect, remedies to client concerns.

Innovation is not merely popular; its survival is essential for businesses (Fig-2). SMEs are the foundation of economies around the world (although not so much in India, according to government policy), so they have to evolve and expand in a time of perpetual shifts. Yet, innovation is not restricted to a particular process or programme; it has to be embedded throughout an organization's various cultures.

Embracing innovation as a culture is crucial for small and medium-sized enterprises (SMEs) for several reasons:

- ***Adaptation to Change:*** In today's rapidly growing business landscape, SMEs must be agile and adaptable to remain competitive. Embracing innovation as a culture allows SMEs to proactively respond to market shifts, technological advancements, and changing customer preferences.

Fig 2: Innovation - The Key to the Development of SMEs



- ***Differentiation and Competitive Advantage:*** Innovation enables SMEs to differentiate themselves from competitors by offering unique products, services, or solutions that meet the evolving needs of customers. By cultivating an innovative culture, SMEs can establish a competitive edge and capture market share.
- ***Enhanced Efficiency and Productivity:*** Innovation often leads to the development of more efficient processes, technologies, and workflows. By nurturing an environment that encourages creative problem-solving and continuous improvement, SMEs can be effective in their operations and enhance productivity.
- ***Customer-Centric Solutions:*** Embracing innovation allows SMEs to better understand and address customer needs and their problems. By involving customers in the innovation process and searching for feedback, SMEs can develop solutions that connect with their target audience, leading to increased customer satisfaction and loyalty.
- ***Expansion and Growth Opportunities:*** Innovation opens up new growth opportunities and expands new markets or industries. By exploring innovative ideas, products and business models, SMEs can unlock what has not yet been fully utilized potential and position themselves for long-term success.

Overcoming Challenges in Innovations

There are some overcoming challenges in Innovations in Small and Medium-sized enterprises (SMEs). Some of these are mentioned below:

- ***Resource limits:*** SMEs have inadequate resources like large companies. Prioritising invention may need transferring budgets or searching for external funding and partnerships.
- ***Resistance to Revolution:*** Employees may oppose change because they believe it will disrupt their habits. Effective frameworks of change management, like SFO or balanced scorecards, are required to address or combat the difficulty. It has employed a variety of strategies to assist both large and small businesses in dealing with these difficulties.
- ***Measuring Effect:*** Computing the influence of an innovative culture can be tricky. Define explicit key performance indicators (KPIs) and evaluate progress on a regular basis.
- ***Sustainability:*** It can be difficult to maintain an innovative culture over time. Leadership must remain committed, and the culture must adapt to shifting market dynamics.

Real-World Instances from Emerging Economies

Fostering a culture of innovation is critical in emerging economies including India. Here are a few practical instances of businesses which have effectively implemented an innovation culture.

Zoho, a Chennai-based software company, has established itself as a leader in nurturing an innovation culture within its organization. This culture encourages employees to explore new ideas and take ownership of projects, driving the development of innovative cloud-based business software solutions. Increasing competition among global giants, Zoho has successfully developed and marketed a wide range of applications that provide products or services to various business needs, from customer relationship management (CRM) to finance management.

Infosys has developed a culture of innovation through its "Zero Distance" initiative. This program encourages employees to actively engage with clients to understand their needs and challenges, thereby nurturing a collaborative environment for innovation and problem-solving. The "Zero Distance" approach empowers employees to innovate directly at the client's location, minimizing barriers and rapidly increasing the development of solutions tailored to client requirements.

M-Pesa, a mobile-based money transfer and payment service, represents an important milestone in financial innovation, particularly in Kenya and other developing economies. Launched through a collaboration between Vodafone and Safaricom, M-Pesa revolutionized the accessibility of banking services, particularly for the unbanked and underbanked populations.

IrokoTV is a Nigerian online streaming platform that specializes in offering African content to its audience. Through its innovative approach, IrokoTV has effectively targeted a niche market and has shown a commitment to expanding its content library to meet the demands of its users. As a result, it has emerged as the largest digital distributor of Nollywood films,

capitalizing on the growing global interest in African entertainment.

Grameen Bank, established by Nobel Peace Prize laureate Muhammad Yunus, played an important role in introducing the concept of microfinance. This innovative approach involved providing small loans to poverty individuals, particularly women, who lacked access to traditional banking services. By extending financial support to those marginalized by conventional banking systems, Grameen Bank empowered millions of people in Bangladesh and other developing nations to break free from the cycle of poverty and enhance their livelihoods through entrepreneurship.

Souq.com, an e-commerce platform based in the United Arab Emirates (UAE), has given a commitment to innovation by introducing various initiatives to enhance its services and offers. One of its key innovations was the introduction of "Fulfilled by Souq," a program aimed at streamlining logistics and improving the customer experience by handling warehousing, packaging, and shipping for third-party sellers. By offering a huge range of products and implementing initiatives like "Fulfilled by Souq," Souq.com positioned itself as a leading player in the e-commerce industry in the Middle East. It mainly focuses on innovation and customer satisfaction and caught the attention of global e-commerce giant Amazon, leading to its acquisition by Amazon in 2017. The acquisition of Souq.com by Amazon represented an important milestone in Amazon's expansion strategy, as it strengthened Amazon's presence in the Middle East and allowed it to utilize the region's growing e-commerce market. Souq.com's innovative approach and established market presence complemented Amazon's expertise and resources, enabling both companies to better serve customers in the region.

Netflix started as a DVD rental service but included innovation by transitioning to a streaming platform. By investing in original content, personalized recommendations, and user-friendly interfaces, Netflix transformed the way people consume entertainment and interrupt the traditional television industry.

Tesla transforming the automotive industry by embracing innovation in electric vehicle technology and sustainable energy solutions. Through its innovative approach to design, manufacturing, and distribution, Tesla has become a leader in the electric vehicle market and has inspired widespread adoption of renewable energy technologies.

Innovation culture is no single approach or strategy that applies universally to all situations or contexts, and it may be displayed differently in each SME. However, its importance cannot be extended. SMEs embracing innovation as a culture are probably to flourish in a energetic commercial atmosphere.

According to M Muneer (2023), nurturing an innovation culture might be greatest and powerful competitive benefit. It is about remaining pertinent as well as leading, establishing new standards, besides future creation where you flourish. As Steve Jobs says, "Innovation differentiates between a leader and a devotee." Hold invention as an ethnic imperious, and lead SME to an upcoming of constant progress and achievement.

Conclusion

In conclusion, fostering innovation requires nurturing a conducive ecosystem where creativity can flourish. By promoting collaboration, providing resources, and cultivating a culture of experimentation, organizations can empower individuals to think outside the box and explore new ideas. Embracing diversity of thought and encouraging risk-taking are crucial elements in driving innovation forward. Additionally, establishing supportive networks and partnerships within and beyond the organization can amplify the impact of innovative initiatives. Ultimately, by investing in innovation and nurturing an ecosystem that values creativity and problem-solving, businesses can stay competitive, adapt to change, and contribute to positive societal transformation.

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NAAC: A Promising Centre for Research on Higher Education

H A Ranganath*

Better data leads to better policymaking. For any decision-making, the most important prerequisite is the evidence-based 'data' on the subject or the issue under discussion, as it would lead to evidence-based policymaking. The data can be on existing issues or can even provide information on historical development. As such, the challenge is creating systems to gather unbiased empirical data on issues relating to higher education and institutions.

In a project mode, such data has to be analysed by raising questions relating to policy-making and implementation. Such an exercise has to be duly supported by appropriate statistical models. The focus here is on the need for utilising the voluminous data available with NAAC relating to Higher Educational Institutions (HEIs) to come up with perspective planning and policy decisions.

The National Education Policy (NEP) drafted in 2020 is the third in the series of National Education Policy documents (1968 and 1986/92). Currently, there are more than 1200+ university-level institutions and 40,000+ colleges in addition to many standalone institutions in the country. Not even a day passes without referring to one or the other dimensions of NEP- 2020 concerning Higher education.

One of the recommendations 1986/92 policy, which is also discussed in NEP 2020 is the 'Accreditation' of institutions. To assess and accredit institutions of higher education, in 1994, a new terminology was introduced to the vocabulary of higher education. It was 'Accreditation'. The UGC established an autonomous institution, the National Assessment and Accreditation Council (NAAC). The NAAC as a learning and evolving organisation, has periodically reviewed the methodology and the grading system of assessment and accreditation.

Since the beginning, the NAAC has always stressed that accreditation is equivalent to the 'health checkup' of institutions. Views in that sense, the role of NAAC is that of a 'diagnostic center'. As we know, NAAC has evolved a set of diagnostic parameters over the years to assess and accredit institutions on a set of criteria that is comparable to the clinical and pharmacological parameters of diagnostic centers for testing patients. A few of the diagnostic criteria that have evolved and are evolving even now are : (1) curriculum (2) teaching, learning, and evaluation, (3) Research, Innovation, and Extension, (4) Infrastructure and learning resources, (5) Student support and Progression, (6) Governance, Leadership and Management, and (7) Institutional Values and Best Practices. Each of the above-mentioned criteria also has quality indicators. These criteria along with indicators are good enough to capture an overview of the institution. NAAC receives a Self Study Report (SSR) from the HEI which will have qualitative as well as quantitative data on these parameters mentioned above. A team of experts, the 'Peer team', constituted by NAAC visited the institution. The Peer team not only validates the contents of the SSR of the institution but also interacts with different stakeholders. The peer team submits a comprehensive report to the NAAC. The NAAC through its 'experts' only takes a diagnostic approach - assesses the performance of the institutions besides exploring the reasons for their accomplishments and limitations.

India is known for diversity and the nature of higher education reflects it. NAAC has assessed and accredited almost all types of institutions., such as State Universities (Public and Private), Deemed to be Universities (Public & Private), Central Universities, Institutions of National Importance, and Institutions of Eminence, etc., Similarly, among colleges, constituent, affiliated, autonomous, private aided, private unaided colleges have taken accreditation from NAAC. It includes Monofaculty and Multidisciplinary Institutions, HEIs of Teacher Education, Physical Education, Law, Engineering, Health Sciences Medical Universities, & colleges, Nursing, Pharmacy, Dental, etc. Over and above these, there exists a strong rural and urban divide in the ecosystem of higher education. A comparative study of the information furnished by different institutions for every quality indicator of each of the seven Criteria is worthy of

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deeper anályis. The outcome of such projects may lead to arriving at robust decisions for perspective planning.

So far, NAAC has conducted 16,743 accreditations of universities, and colleges (Table 1). Since, NAAC continues to accredit HEIs, the number also increases in due course. It means that as many validated and reviewed SSRs of institutions along with Peer team reports are available at NAAC! Excellent empirical information is available at NAAC for further data-mining and analysis.

NAAC has believed that Quality is just not responding to the standards only at the time of accreditation/audit process. After accreditation, as per the guidelines of NAAC, each accredited institution has to constitute an Internal Quality Assurance Cell (IQAC) and has to submit Annual Reports to NAAC for monitoring and feedback. The IQAC is expected to facilitate the Quality Assurance (QA), Quality Sustenance (QS) & Quality Enhancement (QE) of institutions. In my opinion, the concept of IQAC is one of the best strategies envisioned by NAAC. The annual reports of IQACs' of Accredited HEIs provide yet another window for data analysis. Also, NAAC has published quite a few 'Meta-analyses of data on Assessment and Accreditation of HEIs. NAAC has an excellent information resource center.

Table 1: Total Number of Accreditation as on 21.8.2023

	First Cycle	Second Cycle	Third Cycle	Fourth Cycle	Fifth Cycle	Number of Accreditations
Universities	441	250	122	40		853
Colleges	9413	4330	1794	350	3	15890
Total	9854	4580	1961	390	3	16743

Source: NAAC Website.

By way of summing up, it needs to be emphasised that the empirical data available at NAAC can act as valuable source material for various projects on higher education. It can be utilized as inputs for policy making, for formulating new "models" and for pilot studies to conceive new prescriptions & strategies for qualitative improvement of higher education. Without any hesitation, I conclude that by adopting appropriate technology and artificial intelligence (AI), in addition to its existing functions, NAAC can transform itself into a promising institution for promoting authenticated data for research on Higher Education.

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Designing Micro-credentials in Indian Universities

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The Indian higher education system is growing exponentially. From 676 universities in 2013-2014 (MHRD, 2015), it has now 1,168 university-level institutions (MoE 2024). Student enrollment in higher education has increased from 34.2 million in 2014-2015 to 43.3 million. The gross enrollment ratio (GER) now stands at 28.4 (MOE, 2024). The National Education Policy (NEP) 2020 aspires to increase the GER to 50% by 2035 (MHRD, 2020). The NEP 2020 emphasized provision for high-quality education that is based on the principles of equity and inclusion. It also stated that "flexible curricular structures will enable creative combinations of disciplines for study, and would offer multiple entry and exit points, thus, removing currently prevalent rigid boundaries and creating new possibilities for life-long learning" (p. 37). Towards these goals, the NEP also articulated the Academic Bank of Credit (ABC) as well as a credit-based framework for mobility between academic and vocational education. After the policy announcement, the National Credit Framework (NCrF) was released as a comprehensive enabling guideline to assist institutions design courses and programmes at all levels of education and training (Kalsi, 2022).

India's Graduate Skills Index 2023 shows that only 45% of graduates demonstrate the readiness to meet the industry requirements (Mercer, 2023). Another report supported by the Association of Indian Universities (AIU) presents that graduate employability is at 50.3% (WheeBox, 2023). Recently in an OpEd, the esteemed Chairman of the University Grants Commission (UGC) said, "Higher education institutions (HEIs) in India must play a much more active role in ensuring that students become employable by connecting them with the careers and job opportunities of tomorrow" (Kumar, 2024). He further urged the HEIs to adopt a micro-credentials route to offering short courses to support the skills gap and lifelong learning needs. This paper is inspired by the write-up of Prof. Kumar and explores what, why and how Indian universities may start micro-credential courses and programmes within the NCrF.

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Concept of Micro-credential

Generally, micro-credentials are short courses as opposed to macro-courses that we often find in universities and colleges. However, a common definition of the term is difficult to find. UNESCO (2022) through a consultation process defined micro-credential:

- "Is a record of focused learning achievement verifying what the learner knows, understands or can do.
- Includes assessment based on clearly defined standards and is awarded by a trusted provider.
- Has standalone value and may also contribute to or complement other micro-credentials or macro-credentials, including through recognition of prior learning.
- Meets the standards required by relevant quality assurance." (p.6)

While this definition was broadly agreed upon, there was divergent thinking on whether to include prior learning, who is competent to provide or offer micro-credentials, and who and how to measure the quality of micro-credentials. As such, UNESCO clarified that the above definition is not intended to replace any national or regional definition. The European Commission Consultation Group on the subject defined micro-credential as "a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards" (European Union, 2020, p.10). While there is a lack of common understanding about what constitutes a micro-credential, it is believed that a credit earned through micro-credential can be counted towards a higher qualification (Kato et al., 2020).

Countries like Australia and New Zealand have developed national micro-credential frameworks to streamline the nature of the education and training opportunities provided by a range of providers including the industry. The Canadian province of British Columbia has a micro-credential framework, which specifically defines a micro-credential as a short course that is less than a certificate and below

288 hours (Ministry of Advanced Education and Skills Training, 2021). The Australian framework (DESE, 2021) defines micro-credential as "a minimum volume of learning of one hour and less than an AQF award qualification, that is additional, alternate, complementary to or a part of an AQF award qualification" (p.3). New Zealand Qualifications Authority has developed a comprehensive framework for the approval and delivery of micro-credentials along with a national registry of such courses (NZQA, n.d.).

In the Indian context, it is important to define micro-credential based on international experiences. The UNESCO's proposed definition provides a starting point. The definition of micro-credential must also fit into the NCrF in terms of the workload. While we may like to provide credits to every training programme organized in the country and bring these into the fold of micro-credential, it would be challenging to manage such a system to ensure quality and offer mobility of credentials offered. Therefore, a micro-credential may be at least of one notional credit value (30 hours of learning time) offered in any mode of teaching and learning, designed to help learners achieve specific learning outcomes, certified by a recognized education and training provider, and quality-assured and recognized for listing on a national registry.

This broad definition will help create an enabling and inclusive framework for public-private participation in the offering of micro-credentials relevant to skilling and re-skilling in the country.

Rationale for Micro-credentials

There is a 'common sense' perception that micro-credentials can be offered in small chunks, prepare individuals for the labour market, and build on the needs of graduate attributes and employability skills within the scope of higher education, which is to prepare skills needed for the work environment (Wheelahan, & Moodie, 2021). However, there are others (Ralston, 2021) who emphasize that micro-credential is a betrayal of higher education's higher purpose turning higher education into vocational training.

Brown et al. (2023) present micro-credential as a strategic change agent for higher education institutions. Some of the reasons why universities may like to consider micro-credentials are related to the knowledge economy and reducing skills gap, increasing employability, preparing future workforce, providing continuing professional development opportunities, enabling lifelong learning, and of course exploring new revenue sources.

According to HolonIQ (2021), the global market for online learning and micro-credential is 117 billion US dollars by 2025. It is important to note that higher education institutions have experienced growth in enrollments and increased revenues through online courses, such as massive open online courses (MOOCs) offered via platforms like EdX, Coursera and others. India too has MOOC platform – Study Webs of Active–Learning for Young Aspiring Minds (SWAYAM) – which is freely accessible to all and may be leveraged by the universities to offer micro-credentials.

In the fast-changing fields, employees need to be upgraded regularly to maintain excellence. The Future of Jobs report 2023 indicates that in the next five years, 44% of employee skills will be disrupted due to technological innovations. While 60% of workers will require training by 2027 only 50% have adequate access to training opportunities (WEF, 2023). New ways of credentialing are required to meet the changing needs of work environments. In essence, the Indian education system may also take cues from developments around the world and posit micro-credentials to address the following issues:

(a) Skills mismatch to jobs: Micro-credentials will support the learning needs of the industry and prepare learners who are job-ready.

(b) Supporting lifelong learning: It will create an enabling environment for just-in-time learning and help become a better learning society.

(c) Addressing equity: By offering short bite-sized courses and making these affordable as well as online, universities can reach diverse groups of learners (women, persons with disabilities and those who are remotely located) to help them gain relevant education and training.

(d) Improve quality: By offering short courses that are multi-disciplinary in nature, the overall teaching and learning will improve its quality.

(e) Explore new revenue potentials: Universities will have a new way to generate additional revenue by offering specialized as well as courses that are needed by many learners.

Broadly, universities must remember their social purpose while developing micro-credentials. While addressing the needs of their student population should be a priority, universities must also attend to the needs of society by offering relevant courses to foster equity and social justice.

Designing Micro-credentials

A good micro-credential should have standalone value and may also contribute to or complement other micro-credentials or macro-credentials. To do so, the micro-credential must follow the NCrF. While the UGC must develop regulations to define, structure and assure the quality of micro-credentials within the framework of NCrF, there will also be a need for a national registry of micro-credentials to make these discoverable more transparently. As indicated by Kumar (2024), 'fostering trust is a key step' and transparency will be the necessary means to bring in that trust.

The first and foremost issue to be considered is who should offer micro-credentials and how these will be quality assured. While the context of this paper is universities, and universities are empowered to offer credentials, it is important to involve the private sector and industry to develop relevant courses. However, the key question is to define the nature of this involvement in such a way that the quality of the micro-credentials is not compromised, and the courses remain affordable. It may be noted that in many other countries, the private sector is also permitted to offer micro-credentials. Irrespective of who is offering the micro-credential, it is important that these courses follow certain quality standards to ensure credit transfer within the NCrF.

For designing micro-credentials, apart from the curricular content, it is important to think about the micro-credential course (as opposed to the traditional course or paper and programme offered in universities) and its minimum required elements. The key aspects of designing a micro-credential are presented below:

- ***Title of the micro-credential***: This is the name of the full name of the course. Ideally, the national registry may also provide a unique ID for the course to be identified.
- ***Target group***: Identify who will benefit from the course.
- ***Pre-requisites***: Are there any prerequisites to study the micro-credential?
- ***Awarding body****:* This is the university offering the course. Indicate if there is any collaboration or joint certification to offer the course.
- ***Stackability***: Is the course stackable? Can this be accumulated to get credit for any other course, certificate or degree? Not all micro-credentials need to lead to acquiring another course. It may be stand-alone too.
- ***Learning Outcomes***: Specify the learning outcomes for the course aligned with the NCrF at the right level.
- ***Mode of Delivery***: The courses could be offered face-to-face, online or blended mode. Sometimes the same course could be offered in different modalities. However, it is important to have unique ID for different modalities, as the assessment may vary according to modalities. Most of the time a blended mode is preferred to make learning more aligned to the practical requirements on the job.
- ***Level of the Course***: Indicate the academic or vocational level of the course as per NCrF. This is important to calculate the credit points earned.
- ***Notional Workload***: Indicate the learning hours or credits required to achieve the learning outcomes. As per NCrF, 30 notional study hours are counted as one credit. Based on the level of the course, the credit points can be calculated. For example, an advanced level 3 credit course at PhD level will earn 24 credit points. Similarly, a vocational course at level 5 with the same credit will earn 15 credit points.
- ***Duration of the Course***: While it is important to know the credit load of the course, advance announcements of the course duration and when the course is offered help the learners plan their study to earn credit for accumulation.
- ***Type of Assessment***: The types of assessment could include a range of assessments, including quizzes, assignments, term papers, practicals, project work, portfolios, and final tests, etc. These could be conducted in proctorial as well as online environments. It may be noted that assessment is key in micro-credential to ensure the 'trust'. It is important to provide detailed information on the criteria of assessment or the 'rubrics of assessment' to help transparency in

helping record the achievement of the learners. Sometimes universities also accept assessments of prior learning to assess and certify learners based on the rubrics.

- ***Identity Verification***: The university may specify the need for offline and/or online verification of the learner identity for classes as well as the assessment.
- ***Quality Assurance***: Indicate who the course has been quality assured. For example, a course may have national or international accreditation, or a micro-credential could be part of an accredited course.
- ***Awards***: How the assessment will be graded? What types of badges or certificates will be issued? While in Indian condition, all the credits should be available on the ABC. Is there validity or expiry of the credit earned? Can the certificate be shared on social media such as LinkedIn?
- ***Fees Related Information***: What is the fee for the course? How are payments received to ensure a seat on the course?

Way Forward

The paper has not discussed the instructional design requirements of the micro-credential. Any course development will require sound pedagogical design. The universities will also require several structural adjustments to design and offer micro-credentials, as offering such courses will require the teamwork of teachers, instructional designers, and media experts. The key issue before the leaders will be to democratically engage teachers and academics in their institutions to discuss and make ethical decisions concerning micro-credentials. According to the theory of innovation (Rogers, 1962), mainstreaming any innovation would require focusing on the 'early majority', who would normally need evidence that micro-credential has worked elsewhere. The offer of micro-credential may take four possible routes (Brown et al., 2023): (i) integration into normal faculty roles; (ii) part of the central online and/or distance education support (if available), (iii) establishing a professional and continuing education centre, and (iv) creating a separate commercial unit. While all the options may not be suitable in the Indian context, leaders will need to decide how micro-credential production and delivery would be situated in their institution.

The heartening part is that expertise and facilities for offering micro-credentials are already available in some Indian universities, and such universities can take leadership roles in the Indian micro-credential movement. These universities may also come together in cooperative mode to develop joint courses using their t facilities and expertise. However, for universities to offer micro-credentials, significant efforts would be required in attitudinal change from education leaders and administrators to rethink the courses and programmes in a granular manner and make the micro-credential stand-alone as well as stackable. The availability of a public digital platform (i.e., SWAYAM) is an asset for the Indian higher education system to start effectively offering micro-credential. To actualize the ideals of equitable, flexible, digital, and lifelong learning proffered in the NEP 2020, a regulation on micro-credential will help the universities to develop and offer the courses to all.

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UNIVERSITY NEWS

(A Weekly Journal of Higher Education published by Association of Indian Universities)

(Published on every Monday)

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Digital Transformation in Higher Education: Physical to Cyber Spaces and Beyond

Som Nath Sachdeva* and Manjula Choudhary**

The global education landscape has continually changed over time albeit the pace of change varied at different times. Educators have always attempted to maintain the efficacy of education in altered actualities by assessing the purpose, methods, and scope of education. It led to the development of contextual models of education in different parts of the world. UNESCO as a leading global body has looked at evolvement and future of education in a wider milieu and has been guiding governments the world over through its concept documents such as, learning to Be-the World of education today and Tomorrow, 1972; Learning: the treasure within, 1996; Digital Transformation in Education, 2020; and Reimagining our futures together, 2022 and many more. All these documents discuss prevailing environmental changes, the expected future of education and action plans. Perhaps no other force has changed the world of education as much as digitization. It is almost a revolution that is recasting almost everything around the human world.

Digitization has unsettled the existing models of education in hitherto unimaginable ways, forcing education administrators and educators to take note and begin the change. The education ecosystem is witnessing a multitude of new developments in all its dimensions including teaching, learning, skilling, and research. The digitization of education began during the Industrial Age (IA) 3.0 when computers came on the scene, but IA 4.0 took it to an entirely different realm of the cyber world. IA 4.0 is a progression of IA 3.0 but is a giant leap that is hugely altering the very fundamentals of the 'ways of work' of human societies in a churn of technologies, strategies, processes, and systems (Christina, 2022; McKinsey and Company, 2022). The necessities of COVID-19 provided fertile ground for the development and adoption of many new digital technologies that found easy application education. The digital experiences of education during COVID-19 have transformed the behaviour of the new generation of learners and their expectations from education. This generation is challenging the existing notions of education and is pushing for synchronization of education with the current industrial age and society.

This whole process of synchronization presents unique challenges and opportunities in diverse and prismatic India. Digitization of education in India is offering enormous prospects to curate the most defining phase in the development of Indian education. The need of the hour is to grasp the dynamics of the current age where almost every cog in the wheel of education is under a state of flux that includes learners, educators, learning systems, education systems, and education administration.

Changes Galore-Education in Cyber-Physical Spaces

Technology has always changed societies but no parallel can be drawn with digitalization in terms of speed and far-reaching impacts of change. The evolution of Cyber-physical spaces has altered the meaning of physical presence and distance; human-to-human and human-to-machine interfaces; and the ability of machines to enter human domains. The onset of Industrial Age 4.0 was with the fourth Industrial Revolution which was made popular by Schwab (2017) but undercurrents of change were visible earlier and were initially influencing manufacturing systems. Later, the other sectors were impacted, including education systems. Global responses of the education sector to these changes ranged from acceptance to resistance. Indian Higher Education system was slow to respond and mostly remained established in old patterns though the larger learning environment in the country outside the structured system of higher education was far more responsive and many global and Indian Edtech companies entered this space with huge valuations of their businesses. The number of learners on these new platforms exploded in a short period indicating the utility and receptivity of new formats. Coursera, a leading player in this segment started operations in 2012 and positioned itself as a learning aggregator having more than 275 leading universities and companies as partners to bring flexible, affordable, job-relevant online learning

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to individuals and organizations worldwide. It had enrolled 92 million learners worldwide by 2023 which includes second second-highest share from India with 13.6 million learners (*www.coursera.org;* Wood, 2022).

Other players such as EdX, Unacademy and many more entered the market around the same time and offered huge bouquets of micro, short, and full courses/ programmes with new models of education and pricing. Here learners can sample courses, access many free-of-cost audit and credit courses, and choose to pay for certification only. These open-access online learning models had a differential and competitive edge compared to formal education in the country that was initially restrictive and not open to online education. It was in 2018 that online education was allowed to Higher Educational Institutions (HEIs) through the University Grants Commission (Online Courses or Programmes) Regulations, 2018 (UGC, 2018). National Education Policy (NEP) 2020 was the first official acknowledgment of digital transformation and the need for realigning education. It specifically mentions the areas of Artificial Intelligence, 3-D machining, big data analysis, and machine learning, genomic studies, biotechnology, nanotechnology, and neuroscience in which education shall be imparted (NEP, 2020).

The government in India was concerned about the far-reaching impacts of digital learning and started including it as an 'Add' learning method through its NPTEL portal in 2003 and SWAYAM platform began in 2017 (Swayam – NPTEL). Digital education has grown in scope with the possibility of using up to 40 percent of courses from SWAYAM for credit to regular programmes . The educational space of SWAYAM grew quickly and in April 2023, there were a total of 9353 online courses and 33613819 learners/students on this Platform with 8517 credit courses and 837 non-credit courses including self-paced courses (Kulsari, 2022).

The above developments in education in cyberspace are just the beginnings of technology-integrated digital learning that will be witness to many new formats with the advancement of technologies of artificial, augmented, and virtual realities.

The Digital Learner- Millennials and Alpha Generation

The higher education seekers in today's time belong to the Millennials and Alpha generation who are born in the digital age and have peculiar traits. Millennials fervor for technology, (and ability to) use it as a 'sixth sense,' distinguishes them from their predecessors (Gen X), who were immigrants to technology (Akorede, 2017). "Gen Alphas have grown up surrounded by technology and are the most "digitally native" generation yet. They are permanently connected online and use college and social media as a space for opportunities and follow the right people on Instagram for quick and consumable nuggets of wisdom" **(**Warikoo, 2022).

The preference of these learners to spend a lot of time on social media and consume online content has made them more receptive to educational content available in a similar format. The digital medium has also altered their attention span (Mark, 2023; World Economic Forum, 2017). This means that the one-hour lecture format of old times needs to be changed to a newer short module format. Even the world-famous TED talks share ideas in 15-20 minutes or shorter versions. Alignment of education to the lifestyles of current generations is critical to keep it relevant. Educational content format, presentation, and style are all set to undergo change.

Age of Liquid Modernity, Liquid Learning, and Liquid Education

Bauman (2000) gave the concept of liquid modernity to describe the condition of constant mobility and change in society and it is an apt description of the digital world. Liquid modernity, where the traditional certainties have become fluid and blurred, presents a major challenge for education (Bauman, 2000). Liquid modernity is a powerful and adequate metaphor to conceptualize the current society marked by fluidity, speed, instantaneity, instability, and the certainty that everything is changeable, characterize the way we interact and relate (Meirinhos & de Jesus Portela, 2023). Liquid learning is the compatible concept of learning in current times and is based on the assumption that educational spaces create knowledge (Seddon, 2023). Liquid education is the education philosophy of liquid modernity that dismantles previous higher learning and pursues temporary, unauthorized bits of helpful competencies (Bauman, 2005). It conceives education as the sum of all types of learning at all times and can include classrooms, society, workspaces, etc.

Oxenham (2013) noted that learning and education were created in a world that was expected

to become disadvantaged in a volatile and erratic world and flexible learning such as liquid learning is needed in liquid modernity. This age of liquid modernity compared to an earlier phase of solid modernity shifts the education towards creation of multiple educational spaces for lifelong education. Acknowledging the importance of liquid education, Das (2012) emphasized the blend of liquid and solid education for creativity in education. Education experts emphasized the change in pedagogy and use of liquid curricula; one that is open and flexible (Steils, et. al., 2015).

Digital Age Knowledge—New Programmes and Courses

The openness and access to learning opportunities in the digital age influences the behavior of learners who choose to pursue courses related to employability and their interests. They drop out of a course midway if it fails to meet their aspirations rather than sticking to the course till completion. Digitization-related content will see integration with most subject areas and will push the future progression of different subjects. Artificial Intelligence will be pervasive in the academic world for its diverse and wide applications. The current debate of 'use or not to use AI-based platforms such as ChatGPT' will lead to the conscious, effective, and ethical use of such supportive systems. Programmes and courses on Blockchain, Machine language and Data analytics will find a place in the bucket of almost every educational institute. The courses linked to the sociological and psychological impact of technology dependence are likely to get equal space. A listing of the most popular online courses to date in terms of several enrolled learners also suggests the same with CS50's Introduction to Computer Science from *Harvard University* as the top course followed by The Science of Well-Being from *Yale University* and Learning How to Learn: Powerful mental tools to help you master tough subjects from *Deep Teaching Solutions* (Shah, 2023).

Digital Age Pedagogy—Virtual-Physical Blend

The Online world has more footfalls than the offline world. As of January 2024, there were 5.35 billion internet users worldwide, which amounted to 66.2 percent of the global population. Of this total, 5.04 billion, or 62.3 percent of the world's population, were social media users (Statista, 2024). The number of social media users grows exponentially as these use multiple platforms at the same time (Dean, 2024). This behavior is likely to transmit to the consumption of educational content with the use of both offline and online spaces via multiple modes. The flexibility and convenience of a borderless digital world would expand its reach and penetration towards a very competitive education landscape and the existing models of education will change way beyond then suggested by NEP–2020. The programmes in the future will be a lot more flexible, providing for the integration of courses available worldwide wherein teachers can play a central point by curating and branding the courses. Market forces will decide the demand for courses and the restrictive system of a fixed bouquet of courses will not be able to survive. This will also free learners to follow their passion and occupations along with higher education.

New Age Institutions—Ever Evolving Ecosystem

The current boundaries between regular, open and distance learning and online education will blur. Learning will be the key irrespective of the mode of education. Technology will reach a stage where all modes will be equally immersive and this will lead to changes in the complete ecosystem of HEI's and will directly bear on the important areas of physical infrastructure, competencies of manpower, etc. Imagine a scenario where a student gets to choose to attend class either offline or online from its institute or a renowned expert on an open accredited platform. Students will also have options to select the evaluation method from a variety of options open book exam, pen-paper exam, digital exam, or any other mode. Digital technologies have freed education and evaluation from a fixed format of classroom education and physical examinations. This will also end the demeaning construct of 'failure' in a course or programme as learning and evaluation will no longer be restricted to a few chances only. Learning will continue as lifelong and so will be evaluation. Currently, all countries are amending their education systems to keep pace with the new environmental developments, however resistance as a natural force is also on for the protection of existing turf. The higher education in India is opening slowly to globalization through the mechanism of dual and joint degrees which will be much more competitive than the existing geographically restricted learning.

New Age Educator

The social impacts of digitization will be

felt by all sections of the society, but none would be more impacted than the teacher itself. The old mindset of 'teacher centric teaching as equivalent to learning' must go. In the digital age knowledge and learning are beyond teacher and teaching. Learners of the future will come to teachers with data gathered from various sources and will be looking for expertise and perspective to enable them to sift through data and make sense out of it. Any information imparted by the teacher is immediately verifiable so teachers would need to reimagine and rebuild innovative student engagement formats and get into the roles of mentor, leader, and educator than simply a lecture deliverer. A teacher would be able to play these multiple roles only with the help of digital technology. The lecture delivery format needs to evolve and adapt to the pace of learners with in-built flexibility by using live, recorded versions along with discussions and use of group learning in the class. The new educator will also be part of a learning society with lifelong learning in the role of a teacher.

Digitization is the VUCA of Education

Digitization has created a Volatile, Uncertain, Complex and Ambiguous (VUCA) world of education. It is a world of constantly shifting realities in education with no predictable patterns. Its big impact in India was felt during the COVID period when classes were taken online mode to meet the exigencies of the situation, but this experience has changed the attitudes of a lot many stakeholders about education. The mindset of 'why Online' has shifted to 'why not online'. Blended mode of education is here to stay, and the only challenge is to ensure high-quality learning and learner experiences irrespective of the mode of education.

Globally universities have started allotting teaching work of some courses to AI. The top-selling online course CS50 from Harvard University has plans to use AI to personalize interaction and support teaching assistants (Mark, 2024). Predictions are already being made that part of the work of teachers can be performed by robots and AI and that would help achieve the goal of 'education for all' world over. In a VUCA world predicting future is very difficult. The possibility of expanding the role of AI to take over the other roles of a teacher cannot be ruled out. The constant and rapid movements in the environmental forces will push dependency on AI for making predictions leading to the heavy adaptation of an addictive support system.

Pain Points in Digital Transformation of Higher Education

The sweeping strides of digital technology in education have many pain points that will need to be addressed consciously and purportedly. The biggest challenge in India is to connect vast remote geographical areas with Internet highways. The learners in these parts are also the most deprived of learning opportunities due to a lack of physical and digital infrastructure. The social challenge of training learners to use the digital medium judiciously for education without getting lost in the sea of information is going to be an important task. Changing the mindset of the current generation of educators who do not belong to the millennials and alpha generation of learners will possibly be the biggest bottleneck. These educators are responsible for the last mile implementation of any new policy but their biases towards their own non-digital learning experiences make them skeptical about digital education. A study in Sweden found the ambivalence of teachers in higher education towards digital technologies who are positive and hesitant at the same time (Sjöberg et al., 2019). Their existing competencies are being challenged, work profiles are getting a makeover, perhaps too fast and too much for a non-digital generation (Wallace et al., 2023). Their doubts need to be handled at both logical and psychological levels to create a receptive ground for the adoption of digital education (Wohlfart & Wagner, 2023). Artificial Intelligence in Education is creating new learning spaces, less semantic learner modeling processes, and newer trends at a rapid rate (Dillenbourg, 2016). All educators need to be supported with a strategy and user-friendly educational technology for the effective digital transformation of education (Mohamed Hashim, et. al., 2022).

Culmination—Education 4.0 to 5.0

The launch of Swayam Plus is an indication of acknowledgment of liquid modernity as industry-designed courses are available to learners, and these include micro-credits and credit-based courses. The focus of digitization at current times is to provide ample educational support to the learners who can choose their bundle. Education 4.0 emerged in response to Industry 4.0 and is viewed as a future design and vision of education with features of

smartness, connectivity, and real-time and is expected to achieve much more than formal education (Mukul and Büyüközkan, 2023).

However, the world is advancing to 5.0 versions of existing models such as Industry 5.0, Society 5.0, Education 5.0, and University 5.0. Industry 5.0 is a renewed human-centric industrial paradigm in society 5.0 that seeks human centric design solutions and where university 5.0 will play its role by using creative ways to combine and integrate different principles of knowledge production and knowledge application (Carayannis and Morawska, 2023). Digitization and related technologies such as Artificial Intelligence and Machine Learning will be used to create conveniences for society and education shall follow the same. Every learner will choose education for the maximization of potential and add value to society. Echoing the same, the World Economic Forum (2022) stresses inclusiveness in the application of IA technologies in developing countries.

The task of continually carrying forward new developments in education in ever-changing times rests on the shoulders of teachers to create and leave a legacy.

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Uplifting the Scope of Digital Transformation in Higher Education Institutions

P S Pandey*

Present article is an attempt for shedding light on the prospects of Digital Transformation (DT) in Higher Education Institutions (HEIs). It not only advocates the need of DT in the realm of structural transformation but also substantiates the claim of sustainability in the long run. Stakeholder's digital readiness, competency development, pedagogical advancements, upliftment of digital skills, secure and effective data repository would be the key components while realizing the vision of robust digital transformation in higher education. DT in HEIs in selected countries including India has also discussed to realize the best global practices. Amidst institutional development under New Education Policy (NEP)-2020, many initiatives can be seen. With special attention to agriculture, the article covers the ongoing initiatives and way ahead for digital transformation in higher education under agricultural institutions. Further, strategic framework for impactful digital education policy ecosystem is also discussed. The digital transformation in higher education presents both opportunities and challenges. By embracing innovative technologies while being mindful of potential risks, institutions can create a more dynamic and inclusive learning environment that prepares persons concerned as change makers for success in the digital age.

During the past decade, evolution of digital means has become an integral component of modern society and has a multiplier effect on various sectors including education (Kaputa, et. al., 2022). Further, quality education has become one of the Sustainable Development Goals of the United Nations which advocates covering vulnerable or marginalized groups. Despite the alarming estimates by United Nations about the lack of basic literacy skills in 300 million children and youth worldwide, modern times are upholding the use of digital transformation. However, the dream of achieving global digital learning from 2021-2030, would incur a cost of about US$1.4 trillion (UNICEF, policy brief 2021). The use of technology for reviving the education system can invite mixed views from the experts however, during the challenging COVID-19 pandemic period, technology was one of the saviors for facilitating education among the millions in one way or the other (O'Connor, Et. al., 2023). This was the time when many countries across the globe recognized the need of investing in digital means of education for better outcomes (Farias-Gaytan, 2023). Tricking down the vision, many higher education institutions have started adopting digital technologies say AI, AR-VR, IoT, advanced robotics, machine learning writing tools such as Chat GPT among others have found their place (Raja, M., and Lakshmi, 2022). This transformation has come across to all the stakeholders involved be it students, faculty, staff, curriculum, pedagogy, learning outcome. However, it should not be limited to these stakeholders but also will apply to the organizational capability to change, back office, operating model among others. So, one needs to prepare from all the dimensions rather than just going with the flow. Today, while an assignment is provided to the students, they hardly follow books, and would like to draw inspiration from YouTube video or may simply ask ChatGPT to write their answers. Isn't it the digitization which everyone is after but one must remember the cascading effect of such practices in the long run learning approach. For a particular topic, there are multiple (authenticated/ unauthenticated) channels over the internet per say at YouTube so the preciseness of such content towards imparting knowledge must be examined or with this race of digital world, we would lose the basics. So, it is highly important to address the digital readiness in higher Education Institutions with a vision of sustainable education futures (Marín and Castaneda, 2023). In this scenario, the use of technology must be supporting the core aim of the education, involvement of local and national context, leaving no one behind, and keeping an evaluation mechanism for better returns.

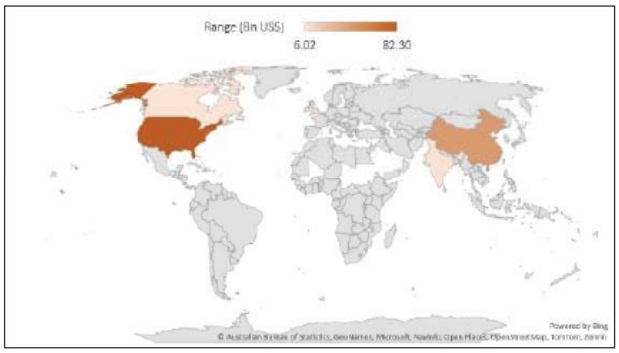
Often in past by adopting conventional means of learning, institutions have faced difficulty towards meeting the learners' requirements, therefore, the UNECSO's 2030, Education Framework for Action calls for the use of online/distance learning, use of ICT tools, and access to better technology with adequate infrastructure. Higher Education Institutions must be strategic to meet the evolving requirements of environment and society so that they can equip

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students with the requisite skills and knowledge. This is where tinkering of technology comes into the play for accompanying the needs of changing world. There are various useful examples across the countries which emphasizes the importance of digital intervention in education systems, such as, National Digital Library in India, Ethiopia, Teacher's portal in Bangladesh. China has also seen remarkable results of recorded learning videos delivered to about 100 million rural youth (Global Education Monitoring Report, 2023).

Regarding the prospects of online education, it is rapidly growing especially after the structural changes due to the pandemic. The revenue for the online education market is growing rapidly and as on present year, its value is estimated to be about US$185.20bn. USA, China, UK, India, and Canada have emerged out to be leading countries who are getting higher revenue in the global online education market (Chart-1).

Chart 1: Top Country's Revenue in Online Education Market (Bn US$)



Source: Statista Market Insights, 2023

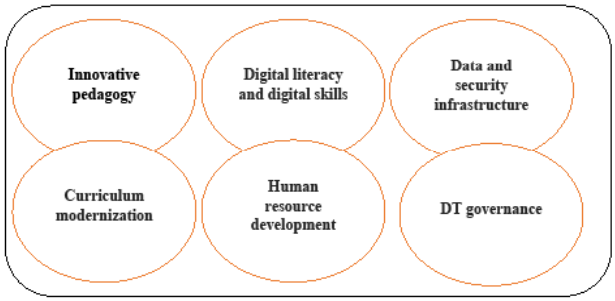
The advocators for the digital transformation of education in higher education often justifies its capability on account of personalized learning but it is also true that no screen can replace the learning environment maintained by the humanity of a teacher. So, we must think of complementing both rather than substituting. Another point of concern is with the digital divide. Till date the access to high-speed internet is limited in many parts of world and increasing risk of excessive screen time is also there. Further, the privacy of education data amidst in the digital age is the key concern and it depends on the intervention of government to keep checks on that.

Education and technology are deeply interlinked as ideas can lead to digital transformation which can make structural changes in the education systems. Considering the same, it is highly important to safeguard the interest of society, learners, teachers, along with fair equitable and sustainable means of educational technologies for a better world.

The Vision of Digital Ready Higher Education

A vision for digitized higher education encompasses accessibility, inclusion, individuality, sustainability, and teaching quality. By embracing these characteristics and harnessing digital technologies, HEIs can adapt to evolving educational needs and foster innovation. Further, various dimensions of DT in HEIs have provided as per figure 1 which focuses on pedagogical &curriculum advancements, sharpening digital literacy and skills, emphasizing on HRD, governance dimensions and at the same time being conscious about the data and security infrastructure.

Figure 1: Dimension of Digital Technologies in Higher Education Institutions



Source: Author's compilation

Approaches and Models

The primary goal of digital transformation in higher education is to modernize educational services and optimize operational processes. To achieve these objectives, three different approaches are utilized.

Operation-Priority Digital Transformations

The primary objective is to modernize services using advanced digital methods, with a focus on student admission, registration, examination systems, and faculty employment. Recognizing shifts in students' learning methods and technology usage, digital transformation is deemed vital for advancement. Equally important is the response of academics to changing conditions and their willingness to adopt new teaching techniques.

Service-Priority Digital Transformations

This strategy is in line with universities' educational goals, focusing on creating new educational programmes and modernizing existing

ones. Distance learning platforms, notably MOOCs, are enriched with novel approaches, capitalizing on improved internet access and a variety of teaching resources. The importance of video content has grown significantly, prompting a move towards hybrid education that combines traditional in-person teaching with online learning.

Service and Operation-Priority Digital Transformations

The service-operation-priority transformation aligns enhancements in operational processes and learning methods, representing a significant advancement in modern academia. Considering students' familiarity with digital technology, adapting to digital methods becomes crucial, prompting changes in teaching methods. This shift towards active learning involves using various teaching resources, with instructors playing a more supportive role, requiring them to creatively use technology and keep up with current educational practices.

Digital Transformation in Higher Education Across Various Nations

Compilation of the initiatives on digital transformation in higher education among various countries is as represented below:

S.N.	Country	Initiatives of digital transformation in higher education
1	**Australia**	The Australian vision of digital higher education lies with "Digital Economy Strategy-2030". Emphasis is provided for decentralization among the territories who are further working on their region-specific plan while taking a refence from the national document.
2	**Canada**	One of the famous initiatives is 'Digital charter a plan by the Canadians for the Canadians'. Country is working on Decentralization mode of strategy implementation among its provinces for better outcome.
3	**France**	With its unique approach of covering the stakeholders involved in the ecosystem of digital higher education, the country has set a vision for 2027 to design effective digital systems.
4	**Japan**	In addition to the strategy for uplifting digital education, country has also taken initiatives for forming digital society which would strengthen the digital skills.
5	**Sweden**	National Agency of Education is taking up the task and already document is working phase aiming for growth of digital education in the coming years.
6	**United Kingdom**	Strategy document released during 2019 aiming for strengthening digital education technology initiatives.
7	**USA**	There is ongoing 'National Education Technology Plan' which is reviewed on regular basis to promote digital intake in educational development. Country is also promoting various EdTech to derive more innovation in this aspect.

Source: Author's compilation from various sources

Digital Transformation in Higher Education: India Perspective

Digital transformation is reshaping education in India especially under the light of New Education Policy (NEP)-2020. Higher education institutions are adopting digital technologies to improve operations and enhance student experience. Streamlining administrative processes have led to resource optimization and efficiency. Among various initiatives, SWAYAM, National Academic Depository, SWAYAM Prabha, National Digital Library, Diksha, e-Yantra, FOSSEE (Free/Libre and Open-Source Software in Education) are most prominent ones in lieu of strengthening digital education in India. So far, online platforms have improved accessibility to educational resources.

Incorporating advanced technologies like AI and VR has enhanced learning experiences especially for the students in higher education institutions. Adoption of digital tools and strategies has helped to create better learning experiences and enhance efficiency. Application of digital technologies to improve administrative processes in higher education is in implementation phase with many institutions successfully executed. Various challenges like infrastructure limitations, digital divide, digital readiness are still there but it

is also providing opportunities such as streamlined processes, transparency, and data-driven decision-making.

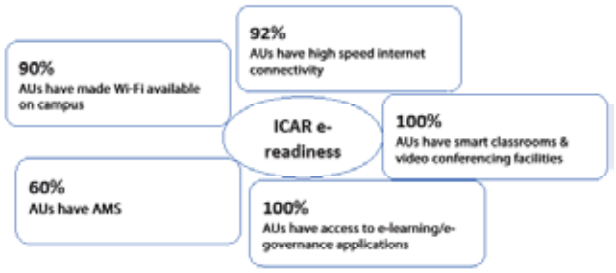
Institutions such as Dr. Rajendra Prasad Central Agricultural University (RPCAU), Pusa, Bihar have started embracing e-governance initiatives (e-office among others) for better efficiency and service improvement. Further emphasis is towards data security, stakeholder engagement, and monitoring mechanisms. Adoption of emerging technologies like AI and blockchain has also become frequent. Implementation of data analytics for evidence-based decision-making has also encouraged across the institutions.

Digital Transformation in Agricultural Higher Education

In comparison to other countries around the globe, digital transformation in agricultural higher education in India is progressing but still has room for advancement. While Indian agricultural universities and research institutes offer online courses and webinars, like counterparts abroad, the scale and variety of online offerings are still evolving. There is growing emphasis on data analytics and precision agriculture, but further integration of advanced technologies and hands-on training is needed.

Digital India program, and the New Education Policy (NEP) 2020 have accelerated efforts to modernize the education system, including agricultural education. There is a focus on transforming agricultural universities into multidisciplinary research-intensive institutions, improving pedagogy, and restructuring academic programmes to align with NEP 2020 goals, such as increasing Gross Enrollment Ratio (GER) in higher education and ensuring quality education. India's rich history of agricultural education, exemplified by institutions like the Dr. Rajendra Prasad Central Agricultural University in Pusa, Bihar, underscores the importance of evolving educational systems to meet contemporary challenges. Digital initiatives, including online learning platforms, digital content repositories, and capacity-building programmes , are being implemented to enhance agricultural education. These efforts aim to address emerging issues such as climate change, resource depletion, and socio-economic crises, while also promoting sustainable development goals and inclusive education. Collaboration between government, industry, and academia is crucial for the success of digital transformation in agricultural education, ensuring alignment with broader national initiatives like Digital India and Skill India. By leveraging technology and fostering partnerships, India can lead the way in developing innovative pedagogical approaches and realizing the vision of a digitally empowered agricultural education system.

Further, a glance on the e-readiness of ICAR can be seen as under:



Source: icble2023.krishimegh.in

Various other initiatives in line with DT in HEIs in context to Agriculture are as;

Online Learning Platforms

Institutions like the Indian Agricultural Research Institute (IARI) and the Tamil Nadu Agricultural University (TNAU) among others offer online courses and webinars on various agricultural topics. These platforms provide access to quality education for students across the country, regardless of their location.

Data Analytics and Precision Agriculture

The Indian Institute of Technology Kharagpur (IIT Kharagpur) offers courses on data analytics for agriculture, where students learn to analyze agricultural data to optimize farming practices. Additionally, the use of precision agriculture techniques is being taught at institutions like Punjab Agricultural University (PAU) to improve crop yields and resource efficiency Agriculture.

Remote Sensing and GIS

Institutes like the Indian Institute of Remote Sensing (IIRS) and the National Institute of Agricultural Extension Management (MANAGE) incorporate remote sensing and GIS into their agricultural education programmes to train students in land use mapping, crop monitoring, and natural resource management.

Agri-Tech Entrepreneurship Programmes

The Centre for Agri Innovation at the Indian Institute of Technology Delhi (IIT Delhi) supports agri-tech startups and offers programmes to nurture

entrepreneurship in the agricultural sector. Students are encouraged to develop innovative solutions for agricultural challenges, such as water management and crop protection.

Collaborative Research Platforms

The Indian Council of Agricultural Research (ICAR) has established digital platforms like the Krishi Vigyan Kendra (KVK) portal among other initiatives, which facilitates collaboration between researchers, farmers, and students to share knowledge and best practices in agriculture.

Virtual Labs and Simulation Tools

Institutes like the University of Agricultural Sciences Bangalore (UAS Bangalore) have virtual labs and simulation tools for practical training in areas like crop management and soil science. These tools provide hands-on experience to students, even when physical labs are not accessible.

Augmented and Virtual Reality

- The Indian Institute of Technology Bombay (IIT Bombay) among others has developed virtual reality simulations for agricultural training, allowing students to experience farm operations and equipment handling in a virtual environment before practical implementation.

Blockchain in Agribusiness

- Organizations like Agri Chain use blockchain technology to create transparent and traceable supply chains for agricultural products. Students at institutions like the Indian Institute of Management Ahmedabad (IIM Ahmedabad) learn about blockchain applications in agribusiness through case studies and workshops.

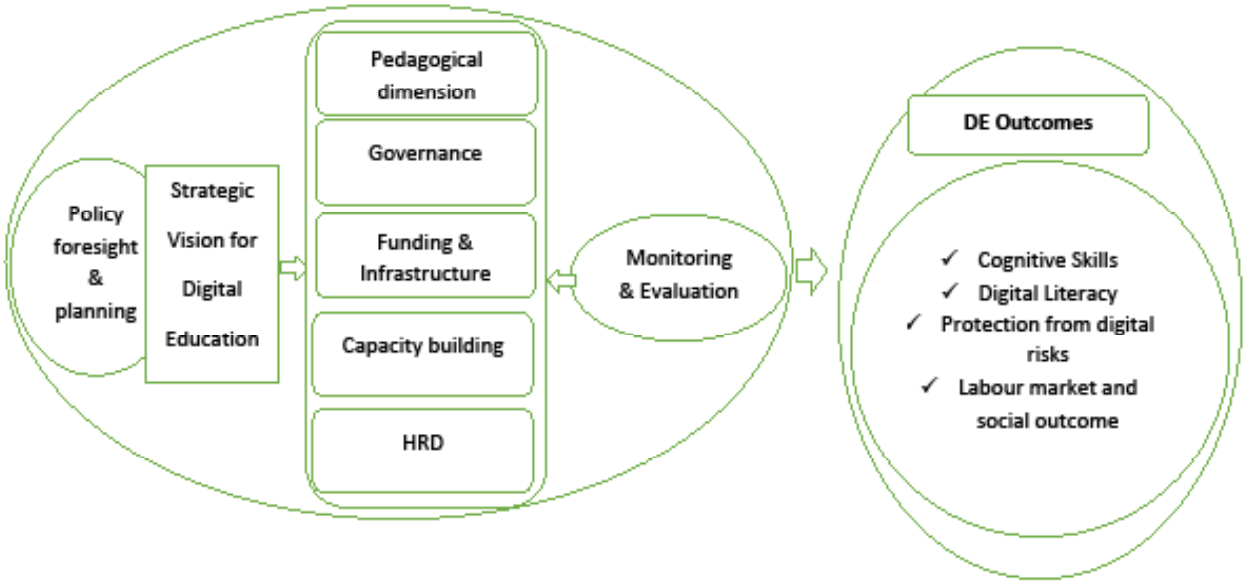
Continuous Learning and Professional Development

- Platforms like the National Programme on Technology Enhanced Learning (NPTEL) offer online courses and certification programmes on agricultural subjects, enabling professionals to upskill and stay updated with the latest advancements in the field.

Strategic Framework for Impactful Digital Education Policy Ecosystem

Educational systems under the digital transformation must follow a holistic approach. Successful digital education model can follow the recommendation of OECD's analytical framework in this regard. It advocates for suitable intervention at various levels of digital education along with stakeholder integration. As per the figure 2, it can be observed that proper strategic planning for impactful strategic vision of digital education would be the key which further connects the dimensions of digital education among institutions. These dimensions range from pedagogy, curriculum development, good governance, sustainable funding and investment for necessary infrastructure and more importantly capacity building of the related stakeholders which will ultimately lead to human resource development in order to achieve this dream.

Figure 2: Strategic Framework for Impactful Digital Education Policy Ecosystem



Like, any strategic model, continuous monitoring and evaluation is the key. Finally, there would be sustainable outcomes for implementing digital education which would comprise the dimensions of access, equity, and efficiency. Suitable digital education outcome would be development of cognitive skills, digital literacy, protection from the digital risks and favourable labour market and social outcome.

Conclusion

The digitalization of education brings about changes in the conception of education management systems and the assessment of learners' competencies, but it also makes pedagogical innovation and more flexible and personalized learning processes and paths possible. However, there are significant hazards and worries about learner wellness, the growing digital gap (due to unequal access to technology and connectivity), and data privacy and protection. The shift towards digital transformation in higher education is not just about adopting new technologies but involves a comprehensive revamp of educational services and processes. This transformation is driven by the need to adapt to rapidly changing environments and to better meet the needs of stakeholders. Different approaches to digital transformation, focusing on operations, services, or a combination of both, aim to improve services and operational efficiency simultaneously.

Additionally, communication and collaboration technologies, along with teacher education networks, play vital roles in fostering innovation and enriching the learning experience. These tools facilitate collaboration among students and educators, creating more interactive and engaging learning environments. Real-world learning experiences, like those found in digital asset management education, provide students with practical skills and industry insights essential for their future careers.

However, while digital education offers numerous benefits such as increased engagement and access to resources, it also poses challenges. Concerns include the potential loss of traditional writing skills, overreliance on gadgets, decreased social interaction, and negative impacts on health. It's important for educational institutions to address these challenges through careful planning, training, and ongoing evaluation of digital education initiatives.

The future of higher education is likely to involve a blended learning approach, combining traditional face-to-face instruction with online modalities. The pandemic has accelerated the adoption of digital technologies in education, underscoring the importance of innovation and adaptability in navigating the evolving educational landscape. By embracing technological advancements and addressing digital inequality, higher education institutions can better prepare for the challenges and opportunities that lie ahead.

In summary, the digital transformation of higher education presents both opportunities and challenges. By embracing innovative technologies while being mindful of potential risks, institutions can create a more dynamic and inclusive learning environment that prepares students as change makers for success in the digital age.

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Digital Transformation of HEIs in India: Opportunities, Challenges and Key Strategies for Success

Santosh Kumar Tripathy*

India in its *Amit Kaal* is embarking on its journey towards becoming a *Viswaguru* undergoing a transformative period in India's history, marking its resurgence as a global leader and beacon of enlightenment. India's higher education landscape, teeming with a colossal student population and aspirations for global prominence, demands urgent reform and modernization. This article delves into the unique opportunities and challenges presented by digital transformation in the Indian context, exploring its impact on various stakeholders and outlining key strategies for successful implementation.

Higher education serves as a cornerstone in fostering the holistic growth and advancement of individuals and nations alike. It stands as a vital instrument for empowerment, enabling individuals to actively participate in societal engagement and pursue gainful employment opportunities. Recognized as indispensable for personal and collective progress, the significance of higher education resonates deeply within both individuals and nations. India, boasting a population of 1.4 billion, proudly ranks among the globe's largest higher education ecosystems, further underscoring the crucial role it plays in shaping the nation's socio-economic landscape. According to the 2021–22 AISHE report (AISHE, 2022), which was released on January 25, 2024, the landscape of higher education in India reveals significant trends. The report highlights a surge in enrolment, with the current count standing at 4.33 crore students, up from 4.14 crore in the previous academic year. Particularly noteworthy is the rise in female enrolment, which has seen an increase to 2.07 crore in 2021-22 from 2.01 crore in 2020-21. Undergraduate programmes remain the most sought-after, constituting 78.9% of all enrolments. Despite these advancements, the Gross Enrolment Ratio (GER) in higher education sits at 28.4% percent, with a disparity between male and female students, registering at 28.3 percent and 28.5%, respectively. The report also indicates a significant presence of educational institutions (registered with AISHE), with 1,168 universities, 45,473 colleges, and 12,002 Stand Alone Institutions. These statistics underscore the evolving landscape of higher education in India, reflecting both progress and areas for continued focus and improvement.

The current era is witnessing a profound metamorphosis in higher education, propelled by the relentless march of digital transformation. This ongoing evolution holds immense promise, poised to fundamentally reshape the educational landscape in India. As digital tools and platforms become increasingly integrated into the fabric of higher learning, they present a myriad of opportunities for both students and educators. These initiatives not only democratize access to education but also redefine the traditional roles of teachers, fostering a dynamic and interactive learning environment. By embracing these technological advancements, institutions can effectively address the evolving needs of today's youth, ensuring that education remains relevant and impactful in an ever-changing world. However, the successful implementation of these digital initiatives necessitates a strategic approach and significant investment in Information and Communication Technology (ICT) infrastructure at all levels of academia. It is imperative to establish robust mechanisms that harness the full potential of digitalization, driving sustainable progress and innovation in higher education.

Furthermore, the digital transformation holds the key to bridging existing gaps and democratizing access to knowledge on an unprecedented scale. Through strategic implementation of digital initiatives, there lies a tremendous opportunity to not only increase enrolment but also enhance the overall quality of education. These initiatives mark a significant milestone in the pursuit of broader educational objectives, offering a pathway towards inclusive and equitable learning opportunities for all. However, realizing the full potential of digitalization requires a concerted effort to develop

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comprehensive strategies tailored to the unique needs of higher education institutions.

Opportunities and Benefits of Digital Transformation

Democratizing Access and Fostering Equity

The rapid evolution and increasing accessibility of technology have spurred Higher Education Institutions (HEIs) in India to integrate digital tools and platforms into their operations. Online learning platforms offering MOOCs, are transcending geographical limitations. Today students in remote areas like Ladakh or Mizoram can access high-quality educational resources previously unavailable. This aligns with NEP 2020's "inclusive and equitable quality education" goal, fostering inclusion and reducing regional disparities (National Education Policy, 2020).

Platforms like SWAYAM democratize access to education in India by offering free, high-quality online courses from top universities and institutions across the country. This breaks down geographical barriers, allowing students in remote areas to learn from esteemed faculty. Additionally, SWAYAM caters to diverse socio-economic backgrounds by offering affordable or even free courses, reducing financial barriers to education. This fosters equity and inclusion in the Indian higher education landscape.

Digital tools can help break socio-economic barriers to education. The Government of India's Digital India initiative is promoting digital literacy and providing access to affordable digital devices and internet connectivity. By promoting affordable and accessible education, digital transformation can contribute to social mobility and improve equity in higher education.

Learn Local, Think Global

The National Education Policy (NEP) 2020 recommends that the medium of instruction in schools should be the mother tongue, local language, or regional language. It's a myth that, technical courses cannot be taught in regional language. E-Kumbh is an initiative by the All-India Council for Technical Education (AICTE) that has broken this myth. AICTE is now providing freely available e-textbooks for technical education in India in English and 12 other Indian languages (AICTE e-Kumbh, 2022).In embracing local languages for education, we pave the way for a more inclusive and globally connected learning environment.

Centralizing Platform for Students' Data

APAAR (Automated Permanent Academic Account Registry) is an Indian government initiative launched under the National Education Policy (NEP) 2020. APAAR assigns a unique identification number to every student in India, from pre-primary education all the way up to higher education which serves as a lifelong ID and to be used for academic record tracking(APAAR, 2024). It also acts as a gateway to Digilocker, a platform for secure storage of important documents like certificates and exam results. It aims to streamline the education system in India by creating a centralized platform for student data and making transfers between institutions smoother.

Process Automation

Many HEIs have automated the processes of running the institutions. Samarth eGovSuite is an existing initiative by the Ministry of Education (MoE) in India. It's an e-governance platform designed for universities and HEIs. Many states have started adopting it. The Government of Odisha's Student Academic Management System (SAMS) is an integrated portal which provides a common platform for admission into various courses across the State through e-Admission and also several e-Services to students at institution level through e-Administration facilitating tasks like admissions and enrolment to fee payment and communication. Through the adoption of process automation tools, HEIs are revolutionizing administrative operations, facilitating seamless tasks from admissions to fee payments, thereby enhancing efficiency and accessibility for students and staff.

ICT Enabled Classrooms

Integration of technology makes our classrooms leverage Information and Communication Technology (ICT) tools to enhance the learning experience. Interactive whiteboards, projectors, tablets, and digital learning platforms create a dynamic and engaging environment. Tools like online simulations, educational games, and virtual labs provide students with interactive and immersive learning experiences that go beyond traditional textbooks and lectures. ICT-enabled classrooms can

promote accessibility for students with disabilities through features like screen readers, text-to-speech software, and closed captioning. Additionally, online learning platforms can offer transcripts of lectures and recordings of classes, allowing students to revisit concepts at their own pace.ICT tools facilitate real-time collaboration between students and faculty. Online polling systems gather instant feedback, while collaborative platforms like Google Docs allow students to work together on projects and assignments. This fosters a more interactive and participative learning environment compared to traditional lecture-based formats.

Flipped Classrooms

Flipped classrooms invert the traditional model of learning. Students access pre-recorded lectures, video tutorials, and other online resources outside of class time. This frees up valuable classroom time for interactive activities, discussions, problem-solving exercises, and personalized learning support. The COVID-19 pandemic in India catalysed the proliferation of the flipped classroom model, where traditional lecture-based instruction shifted online, allowing students to engage with course materials remotely before attending interactive sessions virtually, ensuring continuity of education amidst widespread disruptions caused by lockdowns and social distancing measures. The flipped classroom approach encourages active learning, where students engage with the material in a more active way than passively listening to lectures. This can involve activities like analysing case studies, working on group projects, and applying learned concepts to real-world scenarios. Flipped classrooms also cater to diverse learning styles by offering students the flexibility to learn at their own pace. Students can revisit pre-recorded lectures as needed, allowing for better comprehension and mastery of the material.

Blended Learning

Blended learning combines traditional face-to-face classroom instruction with online learning activities and resources. This allows institutions to leverage the strengths of both approaches to create a comprehensive and effective learning experience. It offers great flexibility for students, allowing them to access online materials at their own pace and convenience. This can be particularly beneficial for students with work or family commitments. Additionally, online components can be personalized to cater to individual student needs and learning styles. Blended learning allows institutions to scale up their course offerings without requiring significant increases in physical classroom space or faculty resources. Additionally, online learning platforms can reduce printing costs associated with traditional course materials.

Challenges for Digital Transformation in India

Bridging the Digital Divide

Lack of access to technology and broadband infrastructure, particularly in rural areas, exacerbates the "digital divide." However, some good news is coming from the rural India itself. According to the Internet in India 2022 report published by IAMAI and Kantar (IAMAI & Kantar, 2022) pointed out that out of 759 million active internet users in India for 2022, 399 million are from rural India, while 360 million are from urban India, indicating that the rural India is driving the growth of the internet in the country.

Fostering the growth of Digital India in rural areas has consistently remained a paramount objective for Prime Minister Shri Narendra Modi. In his words, "Digital India is our dream for the nation. When I say 'Digital India' it is not meant for the rich but for those who are poor." The Pradhan Mantri Gramin Digital Saksharta Abhiyan by GoI, offering digital literacy training in rural areas, aims to equip individuals with basic digital skills(Ministry of Electronics and Information Technology [India], 2023). Universities can also offer digital literacy workshops and support programmes for students and faculty.

Ensuring Data Privacy and Security

Concerns about data privacy and security of student information on online platforms must be addressed through robust policies, ethical frameworks, and compliance with data protection regulations like the Digital Personal Data Protection Act (DPDPA) passed by the parliament in August 2023. The DPDPA regulates how companies handle digital personal data, giving individuals rights to control their information. It's a significant step towards data privacy protections in India. Institutions should implement data encryption, access control measures, and regular security audits to safeguard student data. Additionally, ensuring informed consent from students regarding data

collection and usage is crucial in building trust and transparency.\

Mitigating Cybersecurity Threats

Institutions need to invest in robust cybersecurity measures to protect against cyberattacks and data breaches. Regular security awareness training for faculty and staff, employing ethical hackers to identify vulnerabilities, and using multi-factor authentication are essential steps in ensuring cybersecurity. Collaborative efforts between institutions, technology providers, and cybersecurity experts can further strengthen defences against cyber threats.

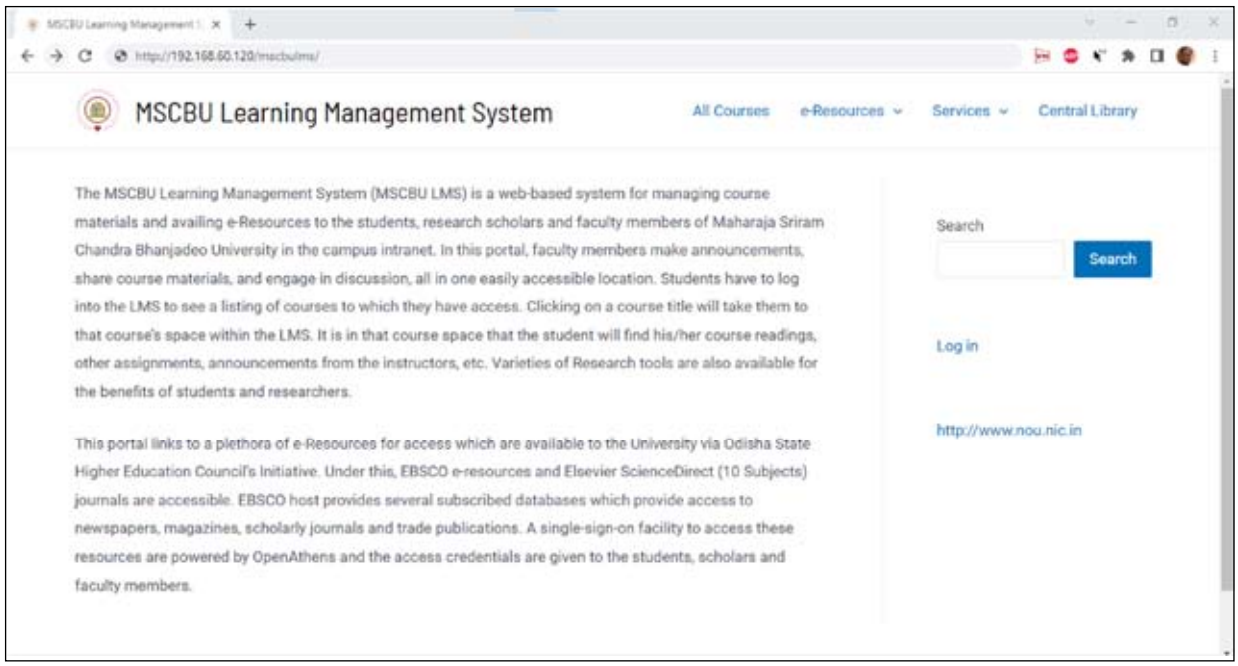
Equipping Faculty with Digital Skills

Upskilling faculty in new pedagogical approaches to effectively utilize technology in teaching is crucial. Training programmes focusing on blended learning, online assessment, and active learning methodologies are essential. Addressing faculty concerns about workload, digital skills development, and recognition for technology adoption is vital to ensure their active participation in digital transformation. Creating incentives for technology adoption, providing dedicated time for familiarization and experimentation, and recognizing their contributions through faculty awards and professional development opportunities can motivate faculty engagement.

Cost and Sustainability

Implementing and sustaining digital transformation initiatives requires significant financial resources for technology infrastructure, faculty training, and content development. Exploring public-private partnerships, blended funding models, and philanthropic contributions can bridge the resource gap. Choosing open-source technologies, promoting resource sharing between institutions, and leveraging government funding schemes can contribute to sustainable implementation of digital transformation. Open-source LMS platforms like Moodle or locally developed systems like the Learning Management System (LMS) by Maharaja Sriram Chandra Bhanja Deo University (Figure 1) can be explored to reduce costs and maintain control over data. Additionally, leveraging government initiatives like the Digital India programme can provide access to discounted cloud-based resources and services. Furthermore, encouraging responsible e-waste management practices can ensure the sustainable disposal of outdated technology and minimize environmental impact.

Figure 1: A Screenshot of the Learning Management System (LMS) of Maharaja Sriram Chandra Bhanja Deo University



Key Strategies for Success

Developing a National Digital Education Framework

A national framework should articulate clear goals, policies, and standards for digital transformation in higher education. It should align with NEP 2020, address regional and institutional variations, and be regularly reviewed and updated. This framework should consider ethical considerations like data privacy, accessibility, and equity. It must be developed through a collaborative process involving policymakers, educators, technology experts, student representatives, and civil society organizations which will ensure stakeholder buy-in and ownership.

Strong Leadership

Strong leadership from institutional heads, with a clear vision, commitment, and strategic plan for digital transformation, is critical. Dedication to faculty development, infrastructure investment, and pedagogical innovation is essential. Leaders should champion innovative teaching practices, provide resources and support for faculty integration of technology, and foster a culture of experimentation and continuous improvement. Addressing faculty concerns and ensuring their active participation in the transformation process is crucial. Creating incentives for technology adoption, providing ongoing support, and recognizing their contributions through faculty awards, promotions, and opportunities for leadership in digital initiatives can motivate faculty engagement. Additionally, establishing faculty communities of practice or online forums can foster collaboration, knowledge sharing, and peer support.

Targeted Investment in Infrastructure and Technology

Prioritizing government and private investments in expanding reliable broadband infrastructure, particularly in rural areas, is essential for bridging the digital divide and ensuring widespread access to online learning. Making technology and digital learning platforms affordable for students and faculty is crucial. Subsidies, loan programmes, and device donation initiatives can be explored. Under the Biju Yuva Sashaktikaran Yojana, the Government of Odisha is distributing laptops to students. It targets meritorious students studying in class 12th of any Odisha government school. Students who score 70% or more in the final exams are eligible for a free laptop or financial assistance towards purchasing one. Universities can also offer subsidized laptops or tablets to students and provide technology access centres equipped with computers and internet connectivity.

Faculty Training and Development

Designing and implementing comprehensive training programmes for faculty on various aspects of digital pedagogy, technology integration, and online assessment tools is vital. Collaborations with universities, technology companies, and educational technology (EdTech) startups can further strengthen training initiatives. Programmes should be tailored to faculty needs and preferences, offering different delivery formats like workshops, online courses, and mentoring programmes. Providing ongoing support and mentorship to faculty throughout the transformation process is crucial. Peer learning networks, online communities of practice, dedicated support teams, and mentorship programmes pairing experienced faculty with newer faculty members can assist faculty in adapting to new technologies and teaching practices.

Collaboration and Partnerships

Collaboration between institutions can foster knowledge sharing, resource pooling, and joint development of digital learning platforms and content. Partnerships with universities in other countries can enable international collaboration on research, curriculum development, and student exchange programmes, promoting global perspectives and cultural understanding. Partnering with technology companies can leverage their expertise in developing innovative learning solutions, providing internship and placement opportunities for students, and contributing to faculty training programmes. Collaborations with EdTech startups can bring valuable resources and expertise to the table.

Policymaker-Stakeholder Engagement

Regular dialogue and collaboration between policymakers, educators, technology providers, student representatives, and civil society organizations are crucial for crafting effective policies and regulations that support digital transformation. Stakeholder consultations, roundtable discussions,

and public-private partnerships can ensure diverse perspectives are considered in policy development and implementation.

Research and Development

Investing in research and development of innovative educational technologies tailored to the specific needs and context of Indian higher education is essential. Collaborations with research institutions, technology startups, and EdTech accelerators can drive these innovations. Research can focus on developing culturally relevant educational content, creating adaptive learning platforms for diverse learning styles, and exploring emerging technologies like virtual reality and augmented reality for immersive learning experiences. Promoting open-source development of educational technologies can ensure affordability, accessibility, and constant improvement through collaborative efforts.

Fostering a culture of community-driven innovation can harness the collective creativity and expertise of stakeholders in the higher education system. Crowdsourcing platforms for ideas and solutions, hackathons focused on specific challenges, and open innovation competitions can encourage active participation and generate diverse solutions. Building online communities of practice where educators, learners, and technology developers can connect, share ideas, and collaborate can further promote collaborative innovation and knowledge exchange.

Conclusion

Digital transformation presents a unique opportunity to revolutionize higher education in India. By harnessing its potential, addressing existing challenges, and implementing the outlined strategies, we can create a more accessible, equitable, effective, and globally relevant learning ecosystem. This ecosystem will empower students, faculty, and institutions to thrive in the digital age, propelling India's higher education system towards international prominence. This transformation requires a collaborative effort, involving all stakeholders, driven by a shared vision for a future where technology serves as a powerful tool for enriching the learning experience and transforming the educational landscape of India.

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Digital Education Initiatives : A Guide to Transformative Pedagogical Practices

S Prabu Shankar* and S Jebah Suganthi**

As the slogan 'Education is for all', in the present context, *'Digital Education for All'* is the call and focus that stands as a priority in the developmental aspects focused by the Indian Government. *'No one is left behind'* in terms of accessibility and adaptation of digital facilities is the vital objective of digital education policies of the government. The recent G-20 framework for systems of Digital Public Infrastructure aims at developing a shared set of digital systems to drive digital development, digital innovation, inclusion, trust, competition and respect towards human rights and fundamental freedoms; it may be perceived that this ultimatum can be achieved through Education. Digitalizing education is the way forward by which all the developments are made possible.

Focus on digital education, devising the development of digital infrastructure, digital content development, use of digital tools for capacity building to address educational needs at all levels, ensuring equitable use of technology, and developing skills and competencies aiming at revolutionizing education is the focus of enhancing the quality of education and transforming the present educational system. National Education Policy—2020 (NEP—2020) envisages a thorough adaptation of digitalization aiming at fostering the unique capabilities of every student. The policy aims at using technology extensively in the teaching-learning process to remove language, accessibility and adaptability divides not only for the mainstream students but also for the physically challenged (Divyang) students by the use of enabling technologies, namely use of assistive, immersive technologies (Augmented Reality, Mixed Reality, Virtual Reality, Extended Reality, Haptic technology, Blockchain, Cloud computing, Machine learning, Fully immersive VR, Simulation, Digital twin technology), NEP —2020 envisages to transform education scenario into a robust system that is comprehensive and adaptive of both digital and non-digital versions of the technology.

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Digital Initiatives

Central government's major flagship initiative Digital India campaign and its focus on transforming society into a digitally empowered knowledge society with its primary aim of improving internet connectivity and infrastructure for 5G connectivity that is ensured by 'Digital India' project. The Nine Pillars of Digital India programme is a pioneering initiative by the Department of Electronics and Information Technology (DietY) that concentrates on improving digitalization aiming at national development, opening up new venues at all levels of education. DeitY digital programme initiative Common Service Centers (CSC 3.0) aims at enabling access to government e-services across rural areas and about education at the schools. Universities are brought under the National Knowledge Network (NKN) which is facilitated with upgraded Wi-Fi, improved accessibility, developed digital infrastructure, creation of digital tools, etc.

NEP—2020 initiates the use of digital platforms, e-teaching, and learning resources and also encourages a digital-oriented curriculum from the primary to higher education level. National Educational Alliance for Technology (NEAT) an initiative of the National Educational Technology Forum (NETF) is aimed at bridging the gap between Education and Educational Technology companies (ED Tech) that develops online content, Learning Management Systems (LMS), and Blended Teaching Learning solutions. Another significant initiative of NETF is the National Digital Education Architecture (NDEAR) Ministry of Electronics and Information Technology (MeitY) launched 'Digital India' programme aiming at transforming society into a digitally empowered and knowledge-based economy by guaranteeing Access, Inclusion, and Empowerment to digital resources and to bridge the digital divide. National Academic Depository (NAD) and the National Internship Portal of AICTE are to be brought under NETF. Already there seems a substantial change in the adaptation of ICT-based teaching-learning and Learning Management Software are widely being adopted in the educational system by institutions at large and by individuals at all levels. Still affordability, and equitable access in adopting technology-based education given the

rural-urban divide, economic, socio-cultural divide, and accessibility divide pose a major networking challenge in fullest adaptation.

Present Scenario of Digitalizing Education

In the present scenario, the technology that is being adopted has to support the goals of equitable educational opportunities that support sustainable development; founded on the values of equality, social and economic justice, and human rights. Intriguing instances of technology in the previous decades aimed at expanding access to knowledge and information, enhancing educational procedures, and enhancing learning outcomes that made educational developments possible through Information and Communication Technology. However, these instances of development in education are not often sufficient and enough in terms of the development happening in related domains. There are growing indications that the digital revolution of education comes with unacknowledged difficulties possibly with new avenues in line with the technology revolution happening across education systems.

In addition to increasing distinct ways of students learning, enlarging and transforming educational experiences, blending teaching and learning, undermining teacher autonomy, adverse environmental impacts, infringing on autonomy and assurance, and integrating authority and influence outside of public scrutiny are just a few of the numerous ways that technology can worsen learning inequality, as observed by policymakers, educators and stakeholders. Under the aegis of PM e-Vidya, the Ministry of Education offers high-quality educational programmes through DTH channels and web platforms, especially for the benefit of rural, tribal, and remote areas. DIKSHA the digital infrastructure for providing quality e-content for school education has clocked more than 524 crore learning sessions with 3,17,496 pieces of e-contents (as of July 2023). Swayam Prabha channels in higher education are functional with 22 channels. Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM), the national MOOC Platform aims at providing quality study courses across the streams with the provision of credit transfer to Universities, for higher education courses.

Technology Adoption

There are numerous benefits to open-source digital educational platforms that are globally attainable, such as websites, gadgets, and applications. They may provide students, instructors, parents, and other education stakeholders with rich and interesting information that enhances and supplements classroom instruction. Additionally, they can guarantee that education will not be interrupted and increase the number of educational opportunities available to students who face obstacles because of intellectual impairment, controversy, hardship, cultural background, race, or other considerations. Public digital platforms could empower educators and parents in addition to students, and they can encourage more engaging, dynamic, and cooperative approaches to teaching and learning inside and outside of the classroom. Though there are complexities in the implementation of digital education across the educational system the prospects seem viable with multimodal initiatives by the Central and State Governments in transforming the educational process.

Optimizing Digital Education

Digital education is primarily referred to technology-enhanced learning, that happens through the adaptation of technology and innovative use of technology-enabled tools, digital platforms, systems and resources, applications that involve adaptive learning using social media tools, online resources, automated learning software, and learning management systems that create learning opportunities beyond the traditional classrooms; thus innovating and transforming the means, mode and process of learning. The significant features of digital learning are Content, Capacity, and Connectivity (UN Transforming Education Summit Report, 2022).

- ***Content*** : All students, instructors, and facilitators must have access to high-quality, curriculum-relevant digital instructional and learning resources employing digital learning platforms.
- ***Capacity:*** To guarantee that instructors, students, and other education stakeholders have the expertise and understanding required to utilize digital tools for learning based on research practices, the capacity to use digital technology to improve learning must be increased.
- ***Connectivity:*** The implementation of digital accessibility implies that all educational institutions and individuals could benefit from the benefits of high-speed internet connections and related educational advantages.

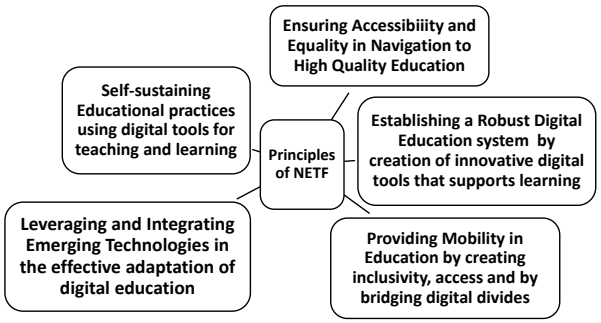
National Education Policy (2020): Digital Education Perspectives

A plan for reforming the use of technology and its integration, online and digital education Indian educational system has been outlined in Part III, chapters 23 and 24 of National Education Policy (NEP) 2020, with an emphasis on technological integration, experiential learning, and holistic development. The NEP 2020 acknowledges the value of digital education and highlights the necessity of incorporating it within the academic programme.

The New Education Policy-2020 emphasizes the place of technology and its impact on education and the changes that are visible in the present-day context. The rapidity of digitalization and its impact on education is attributed to the development of technology in all the domains of education. The policy continues by stating that technology integration and utilisation to enhance a variety of educational goals shall be encouraged and accepted, provided that these interventions be thoroughly and openly assessed in pertinent settings before being expanded.

The National Education Policy 2020 endorses the emergence of the National Educational Technology Forum (NETF), an independent organisation that serves as a forum for the open sharing of ideas on how to use technology to improve teaching, learning, evaluation, planning, administration, and other areas in both higher education and the classroom. The NETF will act to bridge the divide between educational institutions, governmental organizations, and the stakeholders; thus providing the basis for recent knowledge, and innovations in the field of education, research, and development. NETF will create avenues for consultation and extension by sharing knowledge on the vital components of digital developments, and the best practices in technology-based education. The NETF will carry out the following duties: provide impartial, fact-based guidance on interventions based on technology to State and national government bodies; to develop institutional and intellectual capabilities in the field of education technology; to provide guidelines for pedagogy, technology, and content for digital and online teaching and learning. States, Boards, Schools, Higher educational institutions, and others will be able to create e-learning guidelines with the use of these standards. To determine which technological interventions can be used to improve the teaching-learning and evaluation process, aid in the professional development of teachers, increase educational access and optimize planning, leadership, and administration of education, including the admissions, attendance, and assessment processes. The four principles of NETF that act as a guideline for the adoption of digital technologies are presented in Fig.1.

Fig.1 Principles of National Educational Technology Forum



Digital Learning: Empowering Learners

A key factor in the effective integration of modern technology into educational programmes is the availability of excellent, pertinent, and suitable material; platforms and solutions that organize and distribute that information; and Open Educational Resources (OERs). Education and connection need to be used for more than just putting classrooms online. They should empower students and assist them in gaining the self-control and accountability needed to advance in life as well as the fortitude and self-assurance needed to overcome obstacles. Empowering learners is about providing learning solutions on top of connection; once connectivity is established, it's about making peers, resources, and technical assistance more accessible so that learners have more opportunities, choices, and access to knowledge.

Along with ensuring inclusivity, supporting regional responsibility and decision-making, facilitating the integration of digital innovations for high-quality learning in classrooms and through remote instruction, and creating value for the nations creating and implementing these solutions; the notion of empowering learners also aims to assist governments in identifying, evaluating, and supporting these solutions. In addition, school association needs to empower students who use the internet by giving them access to excellent, meaningful, inclusive, and

timely information that is presented via revolutionary instructional methods and secure, safe platforms. Principles for localization, inclusivity, transparency, safety, and security must be taken into consideration while creating high-quality, relevant, and inclusive content. For students to have an orientation towards digital education and the various digital tools the digital infrastructure, accessibility and resource availability should be made possible and necessary skills on how to integrate these tools and make use of them should be provided to them.

Technology-Enabled School Model

UNESCO has been working on creating a framework of guidelines for using technology in schools to guarantee continuity and high standards of instruction for all students. The goals of the UNESCO model for technology-enabled education are as follows:

- Provide comprehensive guidance on how to design technology-enabled, crisis-resilient educational systems that enable students to access school curricula across several connected learning environments, thereby preventing emergencies or crises from impairing their right to an education.
- Provide strategies for mobilizing resources and support to strengthen the capacities of educational organizations as well as stakeholders in enhancing the readiness towards a more crisis-responsive educational system. Educate the requisite technology, content, and personnel infrastructure and constitute aspects of the technology-enabled crisis-resilient school systems.
- To advance inclusiveness, equity, gender equality, and the excellence of learning in the context of attaining SDG 4 by 2030, direct the use of technology in a variety of learning settings. Additionally, promote the professional growth of educational professionals and other pedagogical facilitators.

SDG 4 – Quality Education and Artificial Intelligence

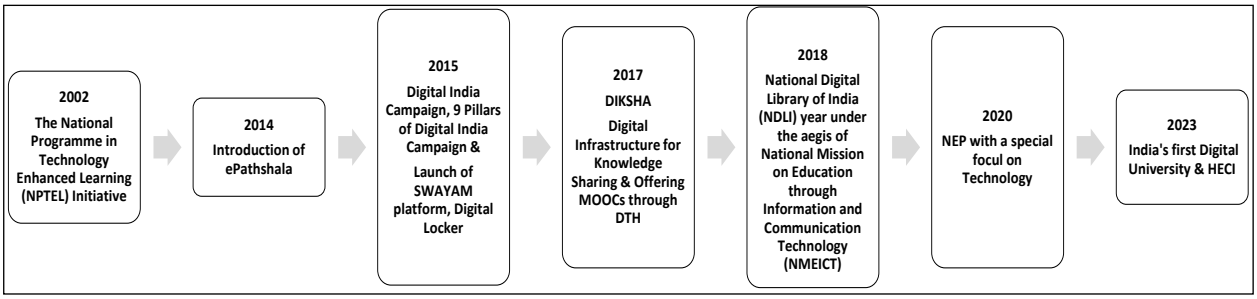
Using 'Artificial Intelligence' to accomplish Quality Education (SDG 4) presents a number of unique hurdles, despite the technology's potential in education. Beyond these more general challenges, humanity needs to overcome AI's potential, minimize its drawbacks, and create education systems that are prepared for the future. First, it is unclear how artificial intelligence will affect educators, learners, and society at large. This covers inquiries into the effectiveness of AI interventions, the pedagogies selected for Artificial Intelligence tools, the privacy of students, the roles of instructors, and the subjects that ought to be taught at colleges and universities.

The core of contemporary approaches to artificial intelligence presents several difficult questions about data analysis and privacy, possession, and protection. In the opinion of Jobin, *et. al*. (2019), there has been a lot of attention paid to these ethical challenges. Comparably, a lot of studies have also been done on the ethics of educational data which has brought up additional concerns about informed permission, data management, and perspectives (e.g., institutional vs. individual) on data. Any use of artificial intelligence in educational settings has to appropriately handle these numerous data-related concerns as well as other challenges unique to education, such as pedagogy selection.

Adaptation of AI-based Digital Tools for Pedagogical Practices

Multidisciplinary planning and cross-sectorial governance; policies on fair, inclusive, and moral Artificial intelligence use; Create a master plan for integrating Artificial intelligence into education management, instruction, learning, and assessment; Pilot testing, tracking, and assessment, as well as accumulating evidence; Supporting regional Artificial intelligence innovations for education.

Fig.2 Digital Education Development in India in the last two decades



- Set and track quantifiable goals to guarantee equity, diversity, and inclusion in instruction and AI service development
- Examine ways that Artificial Intelligence (AI) may enhance educational Management Information Systems (EMIS).
- Permit EMIS to undergo a comprehensive change and to be integrated with Learning Management Systems (LMS).
- Enable educators, supervisors, and students to encourage the use of AI-powered LMSs and EMIS.
- Place a strong emphasis on the social and agency needs of students when incorporating AI-based technologies.
- Examine and modify curriculum to take into account changes in evaluation and pedagogy brought about by the growing use of AI in education:
- Evaluate and implement AI technology to facilitate the evaluation of many aspects of competences and results.
- Examine and evaluate the responsibilities that educators play in promoting human values, higher-order thinking, human contact, and information transmission.
- Describe the skill sets needed for educators to look for and use AI technologies in the planning and structuring of educational activities as well as in their own professional growth.
- Consistently search for and encourage the application of AI to assist a variety of teaching pedagogies and lifelong learning approaches.
- Create AI systems and tools to track credentials and learning outcomes across academic levels and locations. Provide training and ongoing support to teachers so they can become proficient in using AI. Include AI-related skills in school curricula and vocational and technical education and training credentials.

Challenges of Incorporating Digital Technology in Teacher Education

One of the settings where innovation and change in digital education may be most strongly influenced is teacher education. This means that firstly teacher education programmes must take into account the societal trends and change-causing factors that have been recognised. The way digital technologies are increasingly influencing how people communicate and how work and leisure are organised in society is one of the major challenges that come with the way the world is and will continue to change. There are certain obstacles and challenges in the way of making use of digital technology in education. This implies that from the outset of student-teacher training, teacher-educators should figure out how to include digital technology into their teaching practices.

The implementation of digital technologies in education appears to face challenges and obstacles on the way to becoming more natural. As with the chalkboard in the early 20th century, teacher-educators look to make it more likely that instructor's practices would use digital technology. Thus, from the very beginning of student-teacher training, teacher-educators should figure out how to include digital technology into their teaching practises. The mediating roles of the curriculum and syllabus, the school community of teachers and parents, the agreements and implicit regulations that influence teacher's preferences and assessments, etc., must all be acknowledged. We need to think about the internal inconsistencies that offer opportunities for learning and research strategies for using them, especially for student-teachers. By viewing the action via a systemic framework, one can get insight into the planning and behavior of the student-teacher.

To ensure an easy transition for prospective educators from training to practice, thorough and systematic methods for technology implementation including all stakeholders must be developed. To motivate students to take initiative and get fully involved in the activity, teachers must carefully examine the dialectic relationship between their goals and the objects they mobilise. Recognising the teacher as a professional and equipping them for the unpredictability and difficulty of teaching students requires taking into account the tasks and frameworks in which they work.

Elements of Digital Education Skills

Ribble (2021) highlights the significant aspects of digital skills that would promote learning in a sustained way while using digital tools. Digital learning requires primary skills that its usage are classified under the self, others and caring both the

one who uses and applies it and the receiver part of it.

- Digital etiquette (demonstrating proper conduct and behaviour)
- Digital access (having the knowledge to access to required digital technology)
- Digital law (keeping oneself informed on and by digital laws and rules)
- Digital communication (understanding the parameters of exchanging digital information)
- Digital literacy (Being capable of selecting and utilise a wide range of digital technologies)
- Digital commerce (purchasing products and services online)
- Digital rights and responsibilities (taking responsibility for protecting our rights and those of others)
- Safety (taking necessary precautions to protect personal information)
- Digital health and wellness (knowing the threats and hurdles associated with digital technology)

Exponential Applications of Social Networking Sites (SNS)

Collaboration, Information processing, Communication, Integration of resources, and Content interdependence are a few of the significant factors of social networking sites that contribute to digital education. Social networking sites offer a range of platforms for individual to interact with the students beyond the classroom as well as for them to interact with the instructional content. The SNSs that our students are familiar and accessible to might be suitable places for developing interactive learning experiences related to the course material and learning objectives. Instructors must constantly acquire the skills necessary to carry out the required tasks and be able to provide their pupils with detailed instructions. Based on the extent to which social networking sites contribute to student learning, educators should assess the benefits of utilising them and offer a careful framework for considering how social networking sites (SNS) are selected, included in programmes , and utilised throughout the teaching process.

When exploring a certain social networking site the learners come across a new set of tools that will develop their learning skills. The learning management system that the learner uses might easily support many of the features that one may find on SNSs such as interactive discussion boards, sharing finished assignments with classmates for peer review, publishing videos, announcements, and updates. The benefit is that students are learning a new, organised, and intentional approach to utilise SNSs in addition to doing their assigned chores.

Digital Education: Highlights of Learning Management System

- ***Provide Intriguing Subject Matter***: By incorporating technology into the classroom, the instructor can keep students curious. Learners may find the course more interesting if relevant videos and presentations are included in the content repository.
- ***Adapting to the Criteria of Learning Styles***: There is an array of kinaesthetic, visual, and auditory learners in every class. The instructor can prioritise various modes of instruction by using the LMS strategically. While audio recordings and instructor lectures meet the demands of auditory learners, depicts and presentations will support visual learners. Students with aesthetic impairments will benefit from planned hands-on exercises to enhance their learning.
- ***Personalised Learning*** allows students to progress through their educational process at different prevalence. A teacher can design many activities for the same learning objective using Learning management system and also the teachers can easily develop graded assignments by using the question bank that is accessible within the Learning management system in which an individual's learning becomes personalized and self-paced.
- ***Blended Learning and Flipped Classrooms***: Learning management system offers an approach to execute these educational strategies into practice. Within a scheduled period, teachers can assign students to carefully observe the video or read information on the Learning management system. Following a stipulation duration fixed, the instructor may conduct offline or online classes in order to improve the student's conceptual knowledge of concepts discussed.
- ***Peer Participation*****:** Collaboration with peers: Teachers teaching the identical curriculum and grade level can work together in a school to create

lesson plans that they can then share via an LMS. Teachers can discuss or distribute the appropriate subject matter contents with the other educators. This type of cooperation makes sure that all pupils at a school, regardless of the instructors, achieve

- ***Activity Tracking*:** Through the LMS platform, an instructor may keep track of a student's activities. An LMS keeps track of every activity a student takes, including completing assignments, reading prescribed material, and communicating inquiries or observations. A student's performance on an assessment determines how the student's learning outcome is automatically generated by the LMS.

Digitalized Education System: The Way Forward

NEP (2020) policies aimed at conducting pilot studies for online education through National agencies have come into effect and already proving to be a success, especially with the online degree, certificate, and skill development programmes offered by IITs, NITs, CIET etc., National Educational Technology Forum (NETF) a functioning authority to enhance e-education division works to boost the digital content development, it is infrastructure and capacity building. Now that the pilot study has been a success and full-fledged Certificate, Diploma and Degree courses are offered by National Institutes. Based on NEP (2020) vision of developing digital infrastructure, rapid development has taken place and the systematic implementation across schooling from middle school to higher education AI, VR, Machine learning and learning modes in the manner with collaborative learning, blended learning, flipped classroom, use of AI tools for learning have been successfully incorporated and had become common practices in learning which is a major achievement on the part of digital initiatives. A further role of assistive tools and Learning Management Systems (LMS) have been adopted by the teachers and learners which has resulted in sweeping changes in the day-to-day educational activities.

Conclusion

Three years since the implementation of NEP (2020) visible developments and academic practices are already happening of the digital initiatives in the Indian Education scenario at all levels. National Digital University under the aegis of Higher Education of India is a major initiative aimed at modernizing the Indian higher education system. Like never before digital tools are being widely used by students across all levels of education. Digital tools and applications, and mobile learning platforms have opened up global accessibility for students ensuring access to educational resources, optimization of ICT resources through training across the education sector by National Institutes has resulted in holistic adaptation of digital resources both by the teacher and the taught; further digital initiatives have opened by possibilities of involvement of India EdTech Consortium (IEC) and Internet and Mobile Association of India (IAMAI) consortiums in making educational opportunities possible beyond barriers.

Digital Assessment practices through online modes have witnessed a revolution in the assessment process that is already in vogue and can be seen across the national examinations conducted through online across the nation. Digital initiatives have far-fetched results in achieving the digital revolution in a short-span of time. National progress is visible with the digital transcendence, creation, and adoption of newer digital tools for education; in the present day context, the progress is prompt and instant with the initiatives of the central and state governments.

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Globalization and Internationalization of Higher Education in India

Alok Kumar Chakrawal*

In today's interconnected world, the landscape of higher education is experiencing a profound transformation, propelled by the forces of globalization and internationalization. Nowhere is this evolution more evident than in India, where these processes have deeply influenced the higher education sector, shaping its trajectory in the twenty-first century. Internationalization occurs within the confines of universities, whereas globalization extends beyond their boundaries. Globalization has become an intrinsic aspect of contemporary life, permeating both economic and academic spheres. This phenomenon underscores a reality where interconnectedness and interdependence define global trends, reshaping societies and institutions worldwide. In the context of higher education, globalization manifests as the internationalization of academic endeavors, marked by the integration of global perspectives, collaborations, and mobility opportunities into educational offerings. This article explores the impact of globalization and internationalization on higher education in India, highlighting the transformative effects on academic discourse, interdisciplinary collaboration, and scientific innovation. From the increasing exchange of students and faculty across borders to the emergence of global knowledge networks, the dynamics of globalization are reshaping the educational landscape, both within Indian universities and beyond.

Globalization and Higher Education

In the contemporary era marked by privatization, globalization, and liberalization, India finds itself interconnected with the world across various domains. Viewed through the lens of social process transformation, globalization is fundamentally reshaping the core functions of higher education institutions. As a result of increased social interaction on a global scale, these institutions are adopting a consumerist mindset, where education is treated as a commodity exchangeable in an open market (Yang, 2006). This represents a departure from traditional perspectives, which valued education as a pursuit of knowledge and personal development, instead framing it as a transactional exchange within a marketplace of ideas.

The Paradox of Globalization in Transforming Higher Education

Globalization's impact on higher education institutions is multi-dimensional. Modern advancements in technology, particularly the internet and communication technologies, have significantly intensified globalization within the scientific community. This is further propelled by increased mobility among students and highly educated researchers worldwide. Additionally, substantial investments in scientific research and development, along with heightened patent activities, contribute to the prominent role of globalization in today's scientific landscape (Dougals and Yildiz, 2012). This globalization is characterized by seamless communication, cross-cultural collaboration, and the internationalization of research and development efforts, shaping the trajectory of scientific progress in the contemporary era. It has instigated the adoption of consumerist attitudes and practices, thereby transforming education into a market-oriented enterprise (Slaughter and Rhoades, 2009). This shift poses significant questions about the purpose and values of higher education, promoting educators and policymakers to reconcile the pursuit of knowledge with the demands of an increasingly globalized economy.

Globalization has facilitated greater mobility and accessibility to educational opportunities, blurring the lines between local and global educational markets. This heightened competition among institutions has necessitated the adoption of marketing strategies typically associated with commercial enterprises, including branding, advertising, and prioritizing customer satisfaction to remain competitive. Moreover, globalization has led to the commodification of education, where its value is often measured in terms of marketability and return on investment. Consequently, there is a growing emphasis on professional skills and employability, sometimes overshadowing the cultivation of critical thinking, creativity, and intellectual exploration.

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The educational landscape in India stands at a critical juncture, undergoing a profound transformation from its longstanding liberal and secular character. Over the past seventy years, these foundational values have been carefully nurtured amidst various challenges. However, contemporary trends in global education are now exerting significant influence, reshaping the quality and direction of Indian education. One notable trend is the dilution and trivialization of educational aims, where the core objectives of education are increasingly watered down, leading to a shallower learning experience. This is accompanied by a growing fragmentation and compartmentalization of education, resulting in a disjointed approach to learning that fails to foster holistic development.

Additionally, there is a concerning alienation of knowledge from societal ethos, where educational content becomes disconnected from real-world applicability and relevance. Moreover, access to quality education is becoming increasingly restricted due to the commercialization, privatization, and competitive screening processes prevalent in the education sector. This has led to disparities in educational opportunities, further exacerbated by the parallelization and hierarchical layering of school systems, which perpetuates inequality.

The Evolving Perspective on Internationalization

Higher Education Institutions (HEIs) are being increasingly tasked with the responsibility of educating young individuals for global labour markets and multicultural societies. Consequently, many HEIs have embraced the integration of international and intercultural perspectives into their practices, a phenomenon commonly termed internationalization. (Knight, 2004)

The evolving perspective on internationalization in higher education reflects a significant shift in priorities and strategies among academic institutions worldwide. Initially, internationalization was primarily focused on attracting international students and establishing exchange programmes . However, contemporary perspectives emphasize a more comprehensive approach that encompasses not only student mobility but also curriculum internationalization, research collaboration, and institutional partnerships. Today, universities have acquired a newfound capacity to redefine their identity and operational dynamics through the research conducted within university and adult education centres. While globalization encompasses the widespread exchange of ideas, resources, individuals, economies, values, cultures, knowledge, goods, services, and technologies across the globe, internationalization in higher education delves into the integration of international, intercultural, and global aspects and objectives within the educational, learning, research, and service frameworks of universities and higher education systems. The distinction between the concepts of global circulation and the interactions between nations is profound. Internationalization highlights the relationships among nations, peoples, cultures, institutions, and systems, whereas globalization emphasizes the notions of global economic, ideological, and cultural exchanges (Strielkowski, et. al., 2021).

One key aspect of this evolving perspective is the recognition of the importance of diversity and inclusivity in higher education. Institutions now prioritize creating multicultural learning environments that foster cross-cultural understanding and global citizenship among students and faculty. This involves not only admitting students from diverse backgrounds but also integrating global perspectives into the curriculum and promoting intercultural dialogue both inside and outside the classroom.

Moreover, internationalization in higher education has increasingly become intertwined with the pursuit of academic excellence and innovation. Institutions seek to enhance their research capabilities and global reputation by collaborating with international partners, participating in multinational research projects, and facilitating knowledge exchange across borders. This collaborative approach not only enriches the academic experience but also contributes to addressing global challenges through interdisciplinary and cross-cultural research initiatives.

Another important aspect of the evolving perspective on internationalization is the emphasis on preparing students for the interconnected and rapidly changing global landscape. Institutions are expanding their efforts to provide students with opportunities for international experience, such as study abroad programmes , internships, and service-learning projects, to develop intercultural competence, language skills, and global awareness. This prepares

graduates to thrive in diverse cultural and professional environments and to contribute positively to the global community. The evolving perspective on internationalization in higher education reflects a paradigm shift towards a more comprehensive, inclusive, and collaborative approach.

Apart from the merits, there is also the need to look at the flaws of Internationalization. The rise of internationalism in higher education is reshaping labour-management dynamics, leading to a swift departure from traditional permanent, full-time employment models towards more flexible arrangements characterized by contingent, intermittent, and task-based contracts that are not bound to specific work sites. Advancements in managerial technologies enable the supervision of outcomes rather than micromanaging task performance, allowing for the utilization of workers only for the duration required to accomplish designated tasks. This shift reflects a broader trend towards agile and adaptable workforce structures, where the focus is on efficiency and outcome-driven performance rather than rigid adherence to traditional employment norms(E. and Yeldiz,2012). Internationalization is often based on its potential for generating revenue in the global market for educational credentials. International students are frequently seen as a lucrative source of income, particularly considering the widespread dominance of English. Anglophone nations, leveraging their advantage as English-speaking environments, are well-positioned to attract international students seeking educational opportunities. This ability to capitalize on the global demand for studying in English-speaking countries contributes significantly to their efforts in recruiting international students, thereby bolstering their revenue streams (Buckner, 2019).

Globalization and Internationalization of Higher Education in India

In a world where people are becoming more interconnected, the forces of internationalization and globalization have become essential change agents in the dynamic field of higher education (Altbach, 2012). This shift is best exemplified by India, a country with a strong educational legacy and a growing desire for global quality. Within globalization, higher educational institutions are no longer restricted by physical limits; rather they are part of a huge, interconnected network of information exchange and cooperation. Although, Globalization has made its humble beginning in 1944 through the Bretton Woods system, it was with the Uruguay Round in 1995, the (General Agreements on Trade and Tariffs) GATT came into being and education and its globalization assumed top priority (WTO, 1995). As a result of this, (General Agreements on Trade and Services) GATS came into being in 1996 covering 161 activities falling within 12 services including education. GATS covers the commercial educational services of all countries and WTO being the sole institution of international trade and global rules that have governed higher education in the world (WTO, 2023). India being the largest populated country in the world runs the largest pool of higher education system in the world with total enrolled student population of 26.5 crore in primary education, 4.1 crore in the higher education in the world is governed by the rules and trade practices of WTO with India's signing of GATS in 2005 (PIB, 2023). Although Indian students have been a lucrative option for foreign universities with approximately 13 laks students going abroad every year for foreign education India's valiant effort in recent years under the formidable leadership of our Prime Minister Shri Narendra Modi to internationalize higher education in India is yielding results (The Hindu, 2023). If we look at, number of Indian Institutes of Technology (IITs) and Indian Institute of Management (IIMs), respectively stand at 23 and 20 in 2022 against 16 and 13 in 2014. The strength of Indian Institutes of Information Technology (IIITs) is 25 in 2022 against 9 in 2014. The total enrolment in higher education has increased to nearly 4.1 crore in FY21 from 3.9 crore in FY20. Since FY15, there has been an increase of around 72 lakh in enrolment (21 per cent). The female enrolment has increased to 2.0 crore in FY21 from 1.9 crore in FY20. The enrolment in Distance Education is 45.7 lakh (with 20.9 lakh females), an increase of around 7 percent since FY20 and 20 per cent since FY15. The GER in higher education, based on 2011 population projections (revised), was recorded at 27.3 per cent in FY21, which is an improvement from 25.6 in FY20. The total number of faculty/teachers in Higher Education is 15,51,070 and growing by manifolds (PIB, 2023). The latest Sikhsa Samagam held at Bharat Mandpam in 2023 India has hosted nearly 1000 universities to deliberate on NEP 2020 and its way forward after successful implementation (MoE, 2023). With Hon'ble Prime Minister leading from the front with a vision to make India the educational hub of world education, India as of now is growing by leaps and

bounds and successfully meeting all the challenges including developing infrastructure and imbibing quality education throughout.

Needless to say, higher education is undeniably important for economic development of India like any other country. Globalization and the emergence of new players in the world economy certainly have intensified the competition. Many countries are turning their production towards high-value added, knowledge–intensive products and services. India's capacity to compete in the global knowledge economy definitely will increasingly depend on whether its higher education system can meet the fast-growing demand for high-level skills. This in turn, will hinge on India's universities' abilities and capacities to provide quality education that is adapted to the needs of society and industry. NEP-2020's vision of transforming education through participatory and experiential learning by building infrastructures and creating thousands universities and lakh more colleges and schools, India is in the right direction to emerge as "Vishwa Guru" of higher education sooner than later.

Simultaneously, internationalization and globalization have emerged as strategic priority for higher education institutions seeking to increase their global competitiveness with relevance (Prahalladappa, 2014). Universities are expanding their influence and improving students' and faculty's educational experiences through initiatives such as international student exchange programmes , cross-border research collaborations, and the development of offshore campuses as part of their internationalization efforts for global interconnectedness and a shared world. The effects of internationalization and globalization on higher education are wide-ranging and significant when considering India, a nation known for its intellectual capital and cultural variety (Shivalik, 2013). In the midst of globalization, Indian institutions have been given extraordinary possibilities to connect with the global academic community, gain access to cutting-edge research, and recruit international talent. The presence of international students and professors has improved academic discourse by encouraging cross-cultural understanding and collaboration. Similarly, worldwide alliances and partnerships have promoted knowledge and expertise transfer, resulting in innovation and quality in research and education. Despite these opportunities, difficulties occur and Globalization has accelerated university competitiveness, necessitating a rethinking of established higher education delivery paradigms (Tilak and Panchamukhi, 2001).

Indian educational establishments have to contend with matters like guaranteeing quality control, advocating for inclusiveness, and catering to the requirements of heterogeneous student bodies. Furthermore, the brain drain phenomenon, compounded by the attractiveness of chances abroad, poses a serious challenge to India's efforts to retain its best minds and create an innovation and entrepreneurial culture (Tilak, 2002).

International Collaborations and Partnerships

Within India's higher education system, international partnerships and collaborations are essential to increasing access to global knowledge. Indian higher education institutions benefit from strategic alliances with foreign universities, research institutions, and industry stakeholders, providing access to a vast reservoir of knowledge, expertise, and resources that enrich academic programmes, improve research capabilities, and foster innovation (Shivalik, 2013).

Firstly, international collaborations promote information exchange through joint research projects, collaborative publications, and academic conferences. By harnessing the complementing strengths of partner universities, Indian researchers may address challenging global challenges, make ground breaking discoveries, and expand knowledge in domains spanning from science and technology to humanities and social sciences (Patel and Jain, 2022).

Secondly, collaborations with worldwide universities enable Indian students and professors to take part in exchange programmes , study-abroad opportunities, and foreign conferences (Prahalladappa, 2014). Their intellectual horizons are expanded, and they are nurtured with the global competencies necessary for success in today's interconnected world. These experiences also expose students to a variety of perspectives, cultural immersion, and interdisciplinary learning environments (Agarwal, 2009).

Additionally, through supporting faculty development programmes , training seminars, and skill-building efforts, international collaborations aid in the development of capacity. Indian educators

and others stakeholders learn about innovative pedagogical approaches, emerging research methodologies, and best practices in higher education through collaborative teaching and mentorship, which improves their efficacy as educators and researchers in higher educational institutions (Mishra, 2013).

Collaboration between industry and academics, technology transfer, and entrepreneurship development are further advantages of relationships with global industry leaders. Indian universities can integrating their research outputs into real-world applications, stimulate innovation-driven entrepreneurship, and contribute to economic growth and social development by collaborating with global firms and start-ups (AISHE, 2022).

Fig.-1 Country-wise Foreign Students in India

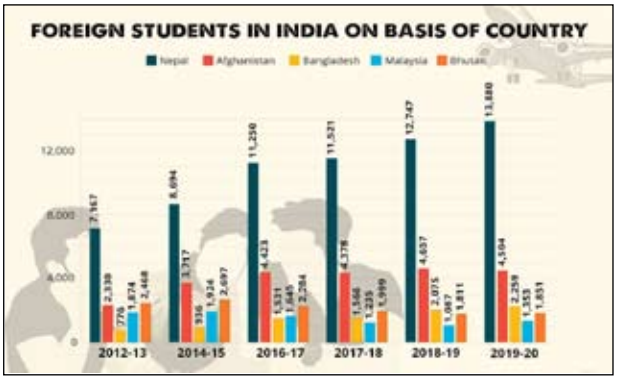
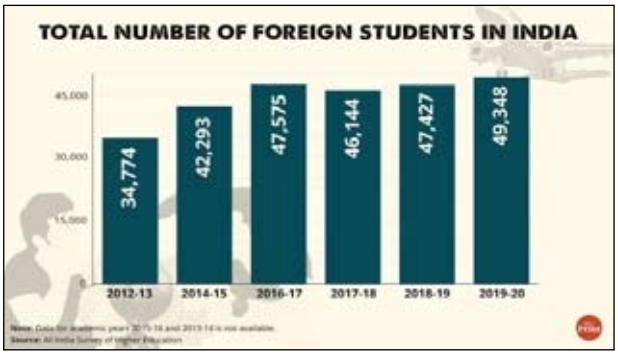


Fig.-2 Number of Foreign Students in India



Overall, foreign collaborations and partnerships act as catalysts for improving access to global knowledge in India's higher education sector, enabling institutions, students, and faculty to prosper in an increasingly interconnected and competitive global information economy.

International Student Enrolment

The burgeoning trend of international student enrolment in India can be attributed to multiple factors, such as the nation's increasing standing as a centre of higher education, the proliferation of scholarship programmes, and governmental endeavours to encourage the export of higher education (Sharma and Tyagi, 2022) (Fig.-1 and Fig-2). Furthermore, the breadth of academic programmes , the availability of English-medium instruction, and education's comparatively inexpensive cost in comparison to Western countries have all contributed to this tendency.

The All India Survey on Higher Education (AISHE) conducted by the Union Education Ministry surveyed a total of 1,162 universities, 42,825 colleges and 10,576 stand-alone institutions. Among the foreign nationals that are enrolled, the majority of students are from Nepal, followed by Afghanistan (HT, 2024). Table-1 depicts the details of the top 5 country-wise enrollment of foreign students in India.

Table-1: Top 5 country-wise Enrollment of Foreign Students in India

Country	Number of students enrolled
Nepal	13126
Afghanistan	3151
USA	2893
Bangladesh	2606
UAE	2287

(HT (2024). AISHE report: 46k foreign students enrolled in India, majority in UG courses. Hindustan Times. January 26. Retrieved from: *https://www.hindustantimes.com/education/news/aishe-report-46k-foreign-students-enrolled-in-india-majority-in-ug-courses-101706263981928.html.)*

According to the AISHE 2021-22 report, a total of 46,878 foreign nationals/students from 170 nations across the world are enrolled in various courses in India (AISHE, 2022).

As per 2021 statistics India attracted foreign students from almost more than 170 countries in the last decade, although most of the students are from nearby countries. There are a fruitfull number of students migrated to India through study Visa. Foreign students from over 175 countries flock to India's colleges to pursue their preferred courses, with a notable concentration from neighboring nations such as Bangladesh, Nepal, Sri Lanka, Bhutan, Afghanistan, Nigeria, Sudan, Tanzania, Malaysia, Maldives, Myanmar, Yemen, Zimbabwe, Ethiopia, Pakistan, and Iran. However, recent years have witnessed a remarkable surge in students from China,

the US, and other developed countries, underscoring India's ascent as the educational nucleus within the SAARC region (Britanica Overseas, 2023).

This spike in international student enrolment has far-reaching consequences for diversity and cultural interchange. Primarily, it enhances the cultural composition of Indian universities by cultivating a dynamic and multicultural atmosphere. A numbers of viewpoints, experiences, and customs that international students bring to the classroom help to promote tolerance and respect between students and faculty as well as cross-cultural understanding (EFAII, 2023).

International and domestic student contacts also foster intercultural communication and facilitate the sharing of beliefs, expertise, and ideas. Students increase their cross-cultural communication skills, cultivating themselves within a global mentality, and form lifelong relationships with classmates from around the world through collaborative learning experiences, cultural immersion programmes, and extracurricular activities. figure-3 show the data where students inbound to Indian educational institutions.

Government Policies and Initiatives

The government develops broad policies and frameworks to provide direction and support for higher education internationalization efforts. In order to improve global participation, encourage academic collaboration, and advance cultural exchange, these policies set forth goals, tactics, and procedures (Kumar and Mishra, 2023). Following are some examples of these regards;

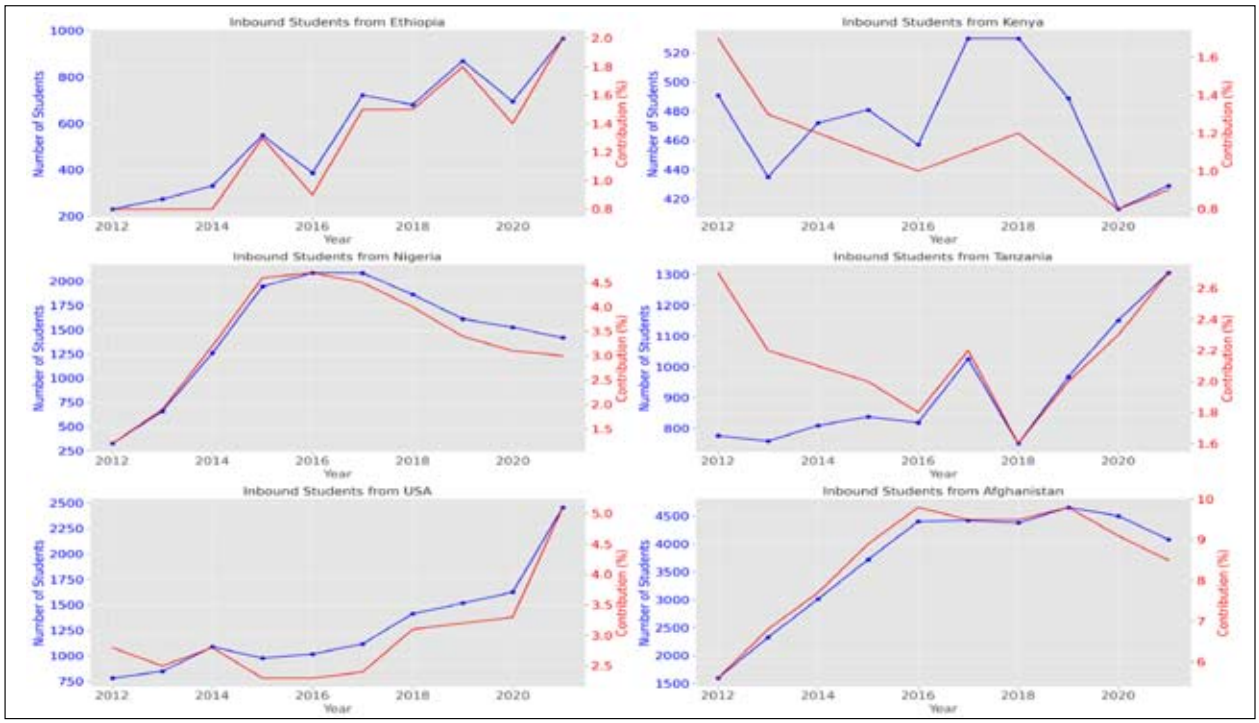
National Education Policies (NEP), 2020

The need for internationalization and global engagement in higher education is emphasized in the NEP 2020 In order to foster scholarly cooperation, research alliances, and faculty and student exchange programmes with overseas universities, it promotes the creation of internationalization centers inside universities The policy emphasizes the incorporation of foreign viewpoints into the curriculum, encouraging cross-cultural awareness and global citizenship among pupils (Reddy and Rao, 2023). Furthermore, the NEP seeks to draw international students to Indian universities by granting scholarships, streamlining the visa application procedure, and offering courses taught in English and different foreign languages.

Study in India Program, 2018

The goal of the government of India's Study in India initiative is to entice international students to enrol in Indian universities for higher education. The program provides overseas students with scholarships,

Fig.-3 Inbound Student from Kenya and Ethiopia



fellowships, and tuition price waivers in a variety of areas. Additionally, it promotes the variety and calibre of educational options offered in India and concentrates on marketing Indian higher education abroad (Gupta and Singh, 2023). Prospective overseas students can use the Study in India portal to search for courses, institutions, and scholarship options, making the enrolling process easier.

Scheme for Promotion of Academic and Research Collaboration (SPARC)

SPARC is a Ministry of Education project aiming at promoting research and academic interaction between Indian and international universities. The program offers money for cooperative research initiatives, conferences, workshops, and faculty exchanges between Indian and international institutions. It aspires to foster multidisciplinary research, solve global concerns, and boost Indian higher education institutions' worldwide exposure and competitiveness (Kumar and Mishra, 2023). SPARC promotes collaboration with top-ranked worldwide institutions in order to benefit from each other's experience, resources, and networks.

National Institutional Ranking Framework (NIRF)

Internationalization and outreach are two of the several criteria used by the Ministry of Education to assess Indian higher education institutions in the NIRF. Institutions are graded based on international cooperation, faculty diversity, and foreign student enrolment. The framework for rankings encourages institutions to become more globally engaged, foster collaborations with other countries, and raise their standing in the world.

Along with such policies, government of India also promotes collaborations and MoU (Memorandum of Understanding) with overseas educational institutions and other stakeholders. Adopting a credit-based semester system with constant internal review is one of the strategies necessary to compete with Western countries. Credit transfer is facilitated by providing students with a cafeteria-style alternative for the course. Many traditional institutions in India lag behind in non-professional courses. Due to the incapacity of the UGC, AICTE (All India Council of Technical Education), and other regulatory bodies to effectively intervene and regulate foreign educational institutions, the Indian government established a committee under the NAAC, led by Ram Takwale, to oversee the admissions process for foreign universities. There are more than hundred and half-overseas universities from the UK, Australia, United States, Canada and other European nations that have been working in India. Under the banner of "Study India Program," the UGC has chosen to open submissions from academic institutions eager to "export Indian education" to overseas students (Strielkowski et al., 2021).

Challenges Faced by Indian Higher Education within Internationalization

The downside of globalization is that it has the potential to erode our traditional values and ethics. The fact that the wealthiest are getting wealthiest and the poor are getting poorer is another detrimental effect of globalization. For impoverished pupils, access to global learning has become unattainable. Within globalization, education has become more commercialized and commoditized in our nation (Naik, 2015). because of Globalization there are lack of job opportunities and resources for a country. Higher education is currently being marketed as a commodity. It is a global marketing firm. Foreign institutions have been preparing for a piece of the Indian educational market for decades. This transformation of education from a social benefit to a marketable commodity goes against Indian culture (Altbach, 2012).

Quality Assurance and Accrediting

It might be difficult to ensure education quality and maintain accrediting requirements across multinational cooperation. Concerns with credentials equivalence and recognition may arise from differences in educational standards, evaluation procedures, and legal frameworks among nations.

Infrastructure and Resources

Many Indian higher education institutions confront obstacles due to a lack of infrastructure, technology, and resources to support internationalization initiatives. Limited financing for research, labs, libraries, and foreign exchange programmes might impede colleges' capacity to compete worldwide (Patel and Jain, 2022).

Faculty Development and Capacity Building

It can be difficult to build and improve faculty members' capacity to effectively participate in international collaborations, research partnerships, and cross-cultural teaching with well-equipped knowledge. For faculty members to thrive in

Fig.-4 Indian Student Abroad

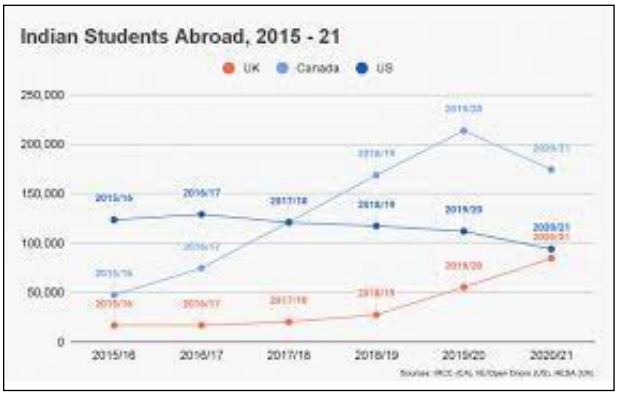
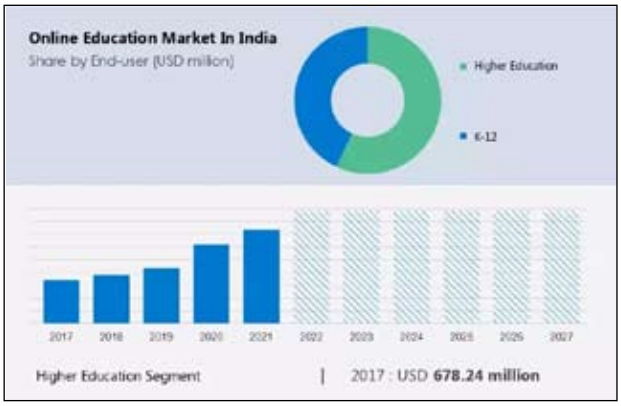


Fig.-5 Online Education Market In India



international academic settings, training programmes, language competency, and cultural awareness are needed.

Communication and Language Barriers

Proficiency in English in particular might cause problems when it comes to students and faculty communicating with foreign partners and taking part in international academic debate. Language competency and communication skills are critical for efficient collaboration and mobility (Prahalladappa, 2014).

Equity and Access

It is still difficult to guarantee that all students, regardless of their socioeconomic status or geographic location, have equal access to international opportunities and resources. Students from impoverished backgrounds may find it more difficult to engage in internationalised activities due to high tuition costs, visa limitations, and cultural difficulties.

Brain Drain and Talent Retention

The possibility of brain drain, in which outstanding students and professors relocate overseas for better opportunities, is a major concern for Indian higher education. Retaining qualified professionals and creating an atmosphere receptive to innovation and research is essential for retaining talent within the country. Figure 4 shows how Indian Youths settling themselves in foreign for seek of better career options majorly UK,USA, and Canada as per the report of the MEA, India.

Opportunities

Indian higher education is at a watershed moment, set to seize multiple prospects for globalization. Indian universities may improve research productivity, creativity, and academic achievement by forming strategic alliances and collaborations with top international institutions. Wide-ranging educational opportunities, such as study abroad initiatives and cross-cultural interactions, enhance students' intellectual and personal development, cultivating intercultural proficiency and equipping them for triumph in a more interconnected world. Furthermore, expanding foreign student enrolment helps to promote cultural variety, income creation, and knowledge sharing, all while improving the university reputation and competition (Tilak and Panchamukhi, 2001). Internationalization also encourages research and innovation by providing easier access to worldwide networks, financing possibilities, and cutting-edge technology, hence expediting knowledge generation and tackling difficult global concerns. Government assistance, legislative measures, and financing systems further enhance internationalisation efforts. Providing avenues for institutional growth, talent development, and economic prosperity (Sharma and Tyagi, 2022). By making use of these opportunities, Indian higher education institutions may increase their global standing, contribute to sustainable development, and build a culture of quality and creativity in the quest for knowledge.

Emerging Trends in Higher Education in India

After globalization of higher education in India, we may see there are tremendous changes in the higher education system. A number of changes incorporated to compete with international education system (Fig-5). Following are some measure emerging trends in India after internationalization of higher education;

Special focus to STEM Education and Research: Science, technology, engineering, and

mathematics (STEM) education and research are increasingly being prioritized in order to address global concerns and create innovation. Indian institutions are partnering with worldwide STEM peers to harness experience, resources, and infrastructure for collaborative research initiatives, technology transfer, and innovation centers.

Increase in Online Learning

Though there was already significant use of technology in higher education, the COVID-19 pandemic has accelerated these processes to an all-time high. Online courses, blended learning programmes , and virtual exchange opportunities are increasingly being offered by Indian universities to enhance access and flexibility for students, teachers, and researchers. Online learning in educational markets in India consistently increases and has a future growth rate, which estimated billions of US Dollar. Through virtual conferences, webinars, and joint research projects, digitalization is fostering global cooperation, knowledge sharing, and academic mobility.

Fig.-6 Trends in student Mobility—2012-2021



Collaborations with Multiple Disciplines

As more institutions realize how crucial it is to include many viewpoints and methods to handle complicated social challenges, interdisciplinary collaboration is becoming more and more popular. Indian universities are developing interdisciplinary research clusters, centers, and institutions to encourage cross-disciplinary collaboration and comprehensive answers to global concerns. To match academic programmes with business needs and worker expectations, employers, industry partners, and higher education institutions are working together more and more (Reddy and Rao, 2023). To provide students with internships, co-ops, and chances for experiential learning, Indian colleges are collaborating with startups, industry groups, and global businesses.

Student's Mobility and Employability: International student mobility is still a major trend in higher education, notwithstanding the constraints presented by the epidemic. Scholarships, exchange programmes , and marketing campaigns are helping Indian colleges attract a wide pool of overseas students, promoting cultural diversity and global learning experiences on campus. The significance of helping students acquire employability, cross-cultural skills, and global competencies is becoming increasingly apparent. To better prepare students for the global labour market and promote global citizenship, Indian schools are offering internationalization-focused programmes , language courses, and intercultural training.

From the figure above depicting Student mobility from 2012-2021 it can be well reflected that more than half a million Indian students in 2021 went abroad for university education, thus retaining its position as the second largest sending country behind China. India's student outflow between 2012 and 2021 increased by about 173 per cent. In 2020, the inbound-outbound ratio slipped further to about 1:10 (Pawar, 2023). The inbound rates (number of international students as a percentage of total HE enrolments) have remained in a narrow 0.10 to 0.14 range. The number of outbound students is consistently higher than the inbound, indicating a net outflow each year. There is a clear increasing trend in the number of outbound students over the years, peaking in 2020.The inbound student numbers show slight fluctuations but remain significantly lower than the outbound figures. Net outflows also follow an increasing trend, with some year-to-year variations. This visual representation clearly shows India's student mobility dynamics over the given period throughout the world.

Conclusion

With 1.42 billion people, India is the second most populous country in the world and is home to many different states and cultures. India's higher education sector has grown significantly in the past, as evidenced by the rise in institutions and the Gross Enrolment Ratio (GER) of higher education. However, there are still issues that need to be resolved, like the standard of education, the accessibility of resources, and the requirement for reform.

Currently, efforts are being made to improve the quality of higher education in several Indian states. For instance, Tamil Nadu boasts several

reputable universities and a strong higher education system. Additionally, the state government has launched a variety of initiatives to aid pupils from socioeconomically disadvantaged backgrounds.

In a similar vein, Kerala has improved the standard of higher education considerably. The government has launched programmes like the e-education programme, which attempts to give internet access to educational materials, and built several universities and colleges.

However, several states—including Bihar, Jharkhand, and Uttar Pradesh—face serious difficulties in the field of higher education. These states struggle with poor infrastructure, insufficient funding, and low-quality education. They also have lower GERs. Nonetheless, the government is tackling these issues by giving students financial aid, creating new institutions, and enhancing those that already exist. To be honest, the Indian higher education system is diverse and complex, with particular difficulties that each state must overcome. Even though certain states have achieved great strides, the nation's higher education system still needs reform and development.

In conclusion, it is high time that Indian higher education institutions take a proactive stance in navigating this complex environment, welcoming internationalization and globalization as forces for revolutionary change. Indian universities have the ability to become international hubs of excellence through the development of an innovative culture, acceptance of diversity, and connected internationally. in addition to it politicians must actively participate in developing policies and programmes that promote the internationalization agenda, ensuring that India's higher education sector remains globally competitive and responsive to the evolving needs of society. The many facets of internationalization and globalization in higher education will be explored in the pages that follow. Best practices throughout the world, case studies, and policy proposals will be looked at with the goal of influencing the direction of higher education in India. Let us all grab the opportunities that lie ahead and pave the road for a brighter, more inclusive future for higher education in India.

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❑

Changing Scenario of Globalization and Internationalization of Higher Education: Recent Trends of Student's Mobility and Causes

S P Singh*

Globalization and Internationalization are two correlated perceptions that significantly impacted the entire world during the last few decades. (Albatch & Knight, 2007) Internationalization refers to growing interconnections and linkages between countries, while globalization refers to increasing economic, social, and cultural amalgamation around the world. The education landscape of the world is substantially influenced by these two processes, higher education particularly has a major impact leading to many challenges that led to several changes in the system of higher education.

Student mobility and diversity play crucial roles in enhancing the international experience within higher educational settings. This mobility of students and scholars is one of the major outcomes of internationalization and globalisation. This concept involves students traveling to study in different countries, thereby fostering cultural exchange, broadening perspectives, and creating a more inclusive learning environment. Student mobility programmes are classified into two categories i.e. short-term (focuses on language skills, community service or cultural activities through an intensive short-term program) and long-term mobility (lasting for 6 to 10 months or for a full course of 1- 4 years duration)

With the enhancement of global trade and commerce, year after year, the mobility of students seeking education opportunities in foreign countries and universities is also increasing. Multinational corporations are actively recruiting international students. These factors result in a diverse and multicultural student population in many universities, enriching the educational experience and creating opportunities for cross-cultural exchange and learning. This increase in internationalization and globalization has also created many challenges around higher education. One of the major outcomes of these challenges is assuring quality education. Due to increasing number of international students and programmes , the issue of quality education by providing specific standards and also offering value for the high capital expenditures done by the student is a major requirement of higher educational institutions. This phenomenon has enhanced the importance of endorsement bodies and quality assurance instruments to ensure that international students studying in higher educational institutions endorsed by these bodies receive a high-quality education. Another challenge of internationalization and globalization is the issue of cultural understanding and empathy. With the increasing diversity of student populations, universities must be sensitive to their students' cultural backgrounds and perspectives. This requires universities to develop programmes and policies that support cross-cultural understanding and communication and provide services that fulfill the unique needs of international students.

Internationalization and globalization have also impacted the course curricula and teaching techniques in higher education. Many universities have implemented a global perspective in their curriculum, incorporating topics and issues relevant to today's global environment. One of the major influences of globalization and internationalization is the introduction of an interdisciplinary and collaborative approach to education leading to the development of such programmes and courses that focus on global issues and challenges. Overall, internationalization and globalization have profoundly impacted higher education, creating both opportunities and challenges. To maximize the benefits of internationalization and globalization, universities must be proactive in developing programmes and policies that support the needs of their diverse student populations along with maintaining high standards of quality and academic rigor. By doing so, universities can help to prepare students for more opportunities and long-term success in a rapidly changing world.

Recent Trends in International Migration and Student Mobility

Since primitive times, the human race has been

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on the move. People move from one place to another for better work opportunities, to join their family if living away from them, or to study. Few others move to escape war, suffering, or large-scale human rights disturbances. A good number of people also in respond to the adverse effects of climate, natural calamities, or other environmental circumstances.

Today, many people are residing in a country other than the one in which they were born. According to the Population Division of the United Nations Department of Economic and Social Affairs (UNDESA), as of 1 July 2020, the worldwide number of international immigrants was estimated to be 281 million. International migrants comprise some 3.5 per cent of the global population, compared to 2.8 per cent in 2000 and 2.3 per cent in 1980. Hence it shows that there has been a steady increase in this number over the years. (Peace, dignity and equality on a healthy planet, n.d.)

The number of internationally mobile students rose from about 2.1 million in 2000 to 3.7 million in 2001, reaching 6.3 million in 2021 (UNESCO Institute of Statistics, 2023).In 2017, 258 million international migrants, which is 3.4% of the world's population have migrated to different countries. In 2021, 6.4 million international students have migrated globally to different countries. In 2022, 7.5 Lakh Indian youth have migrated abroad for higher studies. In 2023, 1.3 million Indian students have enrolled for studies abroad with Andhra Pradesh/Telangana, Punjab and Maharashtra as the top Indian states for outgoing students. Many countries have witnessed a tremendous increase in international students since 2010. It was largest in the United States, Canada and Australia, followed by Germany. (Ranjan & Kumar, 2023) Destinations where international students are migrating have multiplied over the past few years, the main origin countries have largely remained constant, with China and India accounting for 22% and 10% of all international students, respectively. The shape of outbound mobility from India has altered during 2023, with the UK and US gaining a significant share of Indian students, and Australia recording more growth in Indian enrolments compared with 2022.

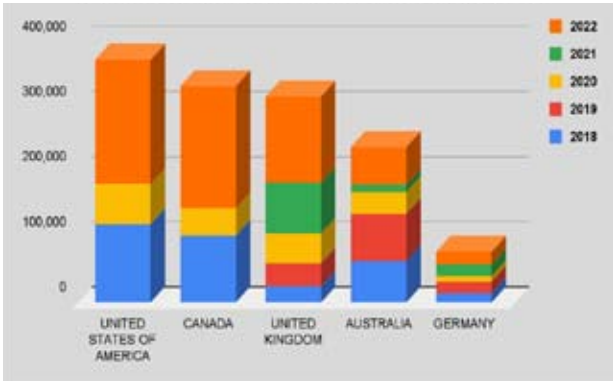
Since 1970, the United States has been the primary destination for international immigration. With nearly 51 million migrants in 2020, the US leads the world on this measure by a wide margin. Germany has the next-largest such population with about 15.8 million migrants, followed by Saudi Arabia with 13.5 million.

It is a fact that apart from the many other reasons for migration, the most prominent reason today for the people of this generation is better opportunities. In terms of migration to the USA, it has been witnessed that the USA has the best opportunities in the fields of Science, Technology, Engineering, and Mathematics (STEM), especially in cutting-edge areas of study, like artificial intelligence and semiconductor manufacturing, to name a few. Hence, the USA has grown to be a student's destination for studying STEM fields because of its exceptional colleges with fantastic research possibilities (Dreams, 2023). The USA has therefore also put in place several immigration laws designed to keep overseas students after they graduate. STEM graduates have an option to work in the US for up to 3 years after receiving their degrees because of the Optional Practical Training (OPT) program. During this period, they get an opportunity to develop their skills and perhaps even land job offers. Many foreign students take advantage of this chance to start their careers in the USA. The availability of prestigious educational institutions and top-notch research opportunities is one of the reasons for international students seeking education, especially in STEM in the USA.

Indian Students Going Abroad for Higher Education

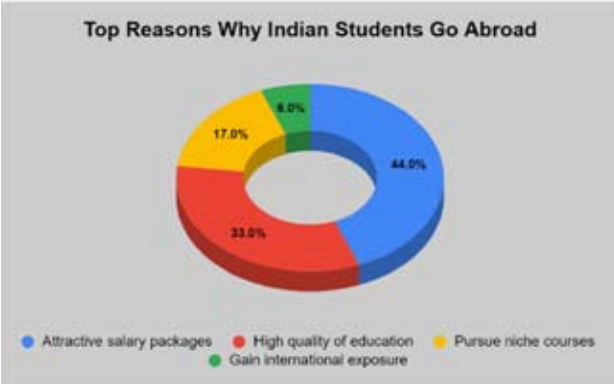
In the tapestry of Indian student mobility, each thread weaves a story of ambition, resilience, and adaptability.

Fig. 1 trends in The Indian Student Movement Over 5 Years



Source: (Rao, 2023)

Fig. 2 Reasons for Indian Students to Go Abroad



Source: (Oxford International, 2022)

The United States, Canada, the United Kingdom, Australia, and Germany are among the top five destinations where Indian students are seeking higher education (Fig-1). In 2022, approximately 750,000 Indian students migrated abroad for higher education, a significant rise compared to 450,000 in 2017 and 260,000 in 2020. India surpassed China as the leading contributor of overseas students in the USA in 2022 (Rao, 2023).

As already mentioned, Indian and other international students choose the USA for some of the best academic and post-academic work opportunities. Amongst all other international students, Indian students are witnessed to be prominent representations in the STEM field of USA institutions. (The Open Door Report, 2023) released in Washington DC, showcases a significant surge, with Indian student numbers reaching an all-time high of 268,923 in the academic year 2022-23, marking a remarkable 35% increase compared to the previous year. STEM subjects, mainly mathematics and computer science, remained the desired fields of study for Indian students in the US (Fig-2) (The Economic Times, 2023).

International Student Mobility to India

India which is conventionally one of the greatest exporters of students has adopted extensive strategies to attract more international students. India being a vibrant country different communities coexist peacefully, and the foreign students enjoy a once-in-a-lifetime opportunity in this multicultural society. In addition to regular studies, international students in India get the opportunity to learn about many cultures, languages, cuisines, and festivals.

India has become a leading nation globally and introducing the Indian Knowledge System (IKS) into higher education may help in attracting international students seeking to explore the depth and wisdom of India's traditional knowledge. Learning IKS along with the regular courses will contribute to a holistic understanding of India's culture. More sought-after areas in India by international students are Ayurveda, Sanskrit and Yoga.

In the Indian context, internationalization and globalization have considerably impacted higher education, in recent times. India is emerging as a crucial player in the world, with a growing number of Indian students seeking education opportunities abroad and an increasing number of international students seeking to study in India. On one hand, many Indian students seek education opportunities outside India, in countries like, Germany, Australia, Canada, USA and the UK, and on the other hand international students are gradually choosing to study in India, attracted by the country's rich intellectual heritage, high-quality education, and moderately low tuition fees.

In India, Internationalization and globalization of higher education are leading to an increasing range of student populations. Many Indian universities today accommodate a diverse mix of local and international students, creating opportunities for cross-cultural exchange and learning. The emerging challenge of Indian higher education from internationalization and globalization is the brain drain. Many talented Indian students and scholars are leaving the country to pursue education and career opportunities abroad, leading to losing talent and expertise in India. This has led to the launch of several schemes to retain talent in India, including programmes to support entrepreneurship and innovation and efforts to provide high-quality education in higher educational institutions of the country.

The Future Trend

It has been slow in coming, but technological interferences in education are accelerating rapidly. Digital technologies and evolving attitudes are set to drive a radical transformation by 2050. (Andrew, n.d.) They will overturn the medieval model of universities – as well as antiquated approaches to teaching and lifelong learning. The first change in the future of education will be more compelling ways to learn online and in hybrid formats. Technology will enhance if not replace traditional classroom

learning with new ways to explain topics to help students progress. There will still be a vital role for humans and teachers and tutors to trace, support, connect, and understand, but much more learning itself will be self-guided with increasingly high-quality content and pedagogical tools. Second will be greater personalization – and not just in the pace and structure of individual lessons. Students will be learning about their priorities or interests. Third will be a growing hunt for quality and value for money in courses, leading to the reduction in the fee structures of the universities. All this will enhance the mobility of students if not fully physically than in the blended format of higher education.

The global higher education scenario too will witness an enormous increase in the mobility of international students, as many more individuals will seek diverse academic experiences and cross-cultural learning opportunities. In the ever-evolving landscape of global education, the pursuit of knowledge exceeds borders, and Indian students stand at the forefront of this international academic journey. The rise of students pursuing higher education abroad from India is evident, with projections indicating a staggering 18 lakh students by 2024. (Zaveri, 2024) Motivations behind this trend are varied, including a desire for superior educational standards, easier acceptance at foreign universities, and the practical applications offered by global institutions. For the purpose of growth in student mobility higher education institutions as well as governments need to adapt their recruitment strategy to attract international students and stay competitive in the market. The evolving global educational landscape, academic preferences, and pandemic management considerations will shape future trends. The United States and various European countries are becoming preferred destinations, with a growing interest in diverse academic programmes . As the landscape of student mobility continues to evolve, understanding and adapting to these trends will be crucial for institutions and service providers seeking to cater effectively to the varied needs of Indian students. The enrollment of Indian students in studies abroad is expected to climb from roughly 1 million as of 2019 to as many as 2 million by 2025, according to an analysis of Indian student mobility produced by University Living, *Beyond Beds and Boundaries: Indian Student Mobility Report 2023*. It is anticipated that during the next decade, the demand for higher education will increase in Asia, mostly due to the convincing and expanding economy of China and India. Asia will see the highest growth of tertiary students in the coming years – preparing to shift focus from sending students to study abroad to also welcoming them on their own campuses. The increasing demand for higher education in India grabs the attention of governments to implement a national internationalization strategy and make international student recruitment a priority on a national level. By implementing policies that help attract a higher number of international students, these strategies also boost the national economy and new human capital developed by this process will help to create expertise and leverage domestic economic growth. It is clear that the pursuit of knowledge knows no bounds, and the global stage awaits the next generation of Indian scholars with open arms.

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❑

AIU Invites Proposals for Collaboration for Organizing

ANVESHAN- International Student Research Conventions–2024-25

Association of Indian Universities organizes the ***Anveshan*-Student Research Convention** every year to identify and nurture the young talents and budding researchers in Indian Universities. In these Conventions, Innovative Research Projects are invited from the students (Undergraduate to Ph. D level), and assessed by a group of experts of the field on a well-laid criteria. The best Research Projects are conferred with certificates and awards. The Projects are invited in the disciplines of ***1) Basic Sciences & Applied Sciences, 2) Engineering and Technology, 3) Agriculture and allied fields, 4) Health Sciences and allied fields, 5) Social Sciences; Humanities; Commerce; Business Management; and Law, and 6) Interdisciplinary.*** The Conventions are to be held at two levels i.e. **Zonal and International**. The duration of each convention is of two **days**. These events are to be conducted in the current Financial Year i.e. before **March 31, 2025**.

AIU invites proposals from member universities/institutions for hosting these Conventions in Four Zones - East, West, North South, and One International Level Convention. Interested Member universities/ institutions may send their **Expression of Interest** (EoI) along with a proposal duly endorsed by the Head of the Institutions to AIU at the address given below:

Dr Amarendra Pani
Joint Director & Head (Res)
Association of Indian Universities
AIU House, 16 Comd. Indrajit Gupta Marg
New Delhi – 110 002
E-mail: *researchaiu@gmail.com*

The proposals are required to be submitted latest by May 15, 2024. The Event will be finalized on mutually convenient dates and terms and conditions laid down by AIU. For any further query please contact on 011-23230059, Extn-202, **E-mail: *researchaiu@gmail.com***. The details can also be downloaded from AIU Website: ***www.aiu.ac.in***

N.B.: AIU is not a Funding Organization. All these events are AIU activities for which Collaboration from member Universities/Institutions is solicited. Primarily, the events will be conducted under the banner of AIU. The details of terms and conditions will be communicated on the selection of the Proposal

The proposal must be sent to AIU with the Approval /Endorsement of the Vice Chancellor/ Head of the Institution.

Globalisation and Internationalisation of Higher Education

M M Pant*

Anticipating the Future

The Challenges

Predicting the future of globalization and internationalization in higher education by 2047 is challenging due to various factors like technological advancements, geopolitical shifts, and societal changes. But it is also necessary to attempt doing so, because children pursuing their education now, would be in their prime at that time. And as we know it is the formative years of education that will be crucial. If education is to be seen as preparation for the future, we need to do some forecasting of what kind of future we expect to live in. We are not talking about a distant interstellar future imagined in a Science fiction scenario, but a period that is but two decades ahead.

One major shift that we can see would be an appreciation that we will need education to equip the youth to deal with global challenges rather than mere local concerns and education would become a lifelong pursuit rather than for a finite small number of years, and that too with an active self-directed disposition of the learners. However, these trends will likely continue to grow, with increased cross-border collaborations, diverse student populations, and digital learning platforms playing significant roles in shaping the landscape of higher education globally.

India Vision 2035

- India has been doing future scenario planning in the past. There is a document created in the year 2015, Technology Vision 2035 : *https://www.anilkakodkar.in/assignments/Technology-Vision-2035.pdf*
- An important articulation of the vision on page 58 of the document states that Schools, Colleges and Universities as currently constituted will be redundant in 2035. Instead we will have Institutions of learning that are virtual/meta/open in character. Ubiquitous online access to reliable educational resources and services through multiple mobile devices would be available to all, either free of cost or at extremely affordable price.
- An essential vision for 2035 will be the delivery of language neutral content to all individuals, at the press of a button, 24X7.
- Most important of all, predetermined content would be a thing of the past. This would open the possibility of peer to peer learning.
- The impact of AI in education had been anticipated and articulated.

The National Education Policy—2020

The National Education Policy—2020 (NEP–2020) at para 4.6 states that its thrust will be to move the education system towards real understanding and 'learning how to learn' – and away from the culture of rote learning. Self-Learning is perhaps the most important 21st Century Skill. Once a person has 'learnt how to learn' the person is on the way to become a self-learner. Robert Frost, the Famous Poet and Professor said " I am not a teacher, I am an awakener". And Richard Feynman in his famous " Lectures on Physics" quoted Edward Gibbons ' and the power of instruction is of little efficacy except in those fortunate dispositions, where it is almost superfluous'. In other words the teacher has disappeared. When the student is ready the teacher will appear. When the student is truly ready... the teacher will disappear.

These well known statements don't seem to have a verifiable source. The "teacher" in the first statement does not need to have to be a human.

It can be a situation, nature or an inner guide.

It can be experienced as a moment of epiphany.

We also have a story of the 24 Gurus of Dattatreya(*https://lnkd.in/duUriTXg* 24 Gurus are: Earth, Water, Fire,Wind, space, moon, sun, flock of pigeons, Python, ocean, moth, bumblebee, honeybee, elephant, deer, fish, prostitute, bird with worm in beak, crying baby, silence, snake, arrow-maker,spider, and a worm.

Let's turn to the 2nd statement now. On the first reading, it's difficult to appreciate how the teacher disappears when the learner is ready. *We now have an autonomous self-directed learner*.

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The SDG Goal 4

Sustainable Development Goal 4 which was also stated in 2015, with the hope of achieving the goals by the year 2030 has 10 targets encompassing many different aspects of education. There are seven targets which are expected outcomes and three targets which are means of achieving these targets.

There are also education elements in the targets of several of the other SDGs: *https://en.unesco.org/education2030-sdg4/targets*

Education 2050

Self-guided learning, personalization of courses, and an increased focus on value for money will drive the future of education. The futurist Thomas Frey says "If we continue to insert a teacher between us and everything we need to learn, we cannot possibly learn fast enough to meet the demands of the future". Instead of authority based certification of learning, there would be better diagnostic tools that will assess the knowledge processing abilities of learners, including skills such as complex problem solving, critical thinking, computational thinking, creativity and other desired competencies.

The Learning Pyramid

- Studies show that varying the study methods and learning materials improve the retention and recall of information, and enhance the learning experience.
- The "learning pyramid", sometimes referred to as the "cone of learning", developed by the National Training Laboratory, suggests that most students only remember about 10% of what they read from textbooks, but retain nearly 90% of what they learn through teaching others: https://www.educationcorner.com/the-learning-pyramid/
- Yet lectures form the dominant mode of teaching I higher education.

Bloom's 2 Sigma Problem

Bloom's 2 sigma problem refers to the educational phenomenon that the average student tutored one-to-one using mastery learning techniques performed two standard deviations better than students educated in a classroom environment. It was originally observed by educational psychologist Benjamin Bloom and reported in 1984 in the journal "Educational Researcher". Bloom's paper analyzed the dissertation results of University of Chicago PhD students Joanne Anania and Joseph Arthur Burke. As quoted by Bloom: "the average tutored student was above 98% of the students in the control class". Additionally, the variation of the students' achievement changed: "about 90% of the tutored students ... attained the level of summative achievement reached by only the highest 20%" of the control class.

The phenomenon's associated problem, as described by Bloom, was to "find methods of group instruction as effective as one-to-one tutoring".

Wikipedia article on Bloom's 2 sigma problem :*https://en.m.wikipedia.org/wiki/Bloom%27s_2_sigma_problem#:~:text=Bloom's%202%20sigma%20problem%20refers,educated%20in%20a%20classroom%20environment.*

The Promise of AI

- The promise of AI in education is to provide mass education, that is personalised, so that Bloom's search for methods of group instruction as effective as one on one can be realised.
- The best resource for this theme is the book by Anthony Seldon, "The fourth education revolution" published in 2016 and its follow up "The fourth education revolution : reconsidered".
- Nothing matters more than education if we are to see AI liberate, not infantilise humanity. Sir Anthony Seldon, explores the most important issue facing education (and humanity at large): the fast-approaching revolution in Artificial Intelligence or AI. This book is a call to educators everywhere to open their eyes so that we can begin shaping the future of education around the world. Britain and the US have an excellent education system in their schools and universities... but it is tailored to the twentieth century. The factory mass teaching methods of the last educational era have failed to conquer enduring problems of inequity and unfairness. Students have to make progress at a set rate which can demotivates and bore some. Will the AI revolution be able to remedy these problems? This extended thesis explores the history of education, the many different styles of education (with a particular focus on Britain and the USA), and the different types of intelligence for which current teaching methods are unable to provide any support.
- Here is a recent conversation between Bill Gates and Salman Khan of Khan academy on the future of learning with AI and a personal tutor

(Khanmigo) for every learner: *https://youtu.be/X2oF8oZopdA?si=i6r6yntmgii1H0hK*

Active Learning

- Active learning is an approach to instruction that involves actively engaging students with the course material through discussions, problem solving, case studies, role plays and other methods. Active learning approaches place a greater degree of responsibility on the learner than passive approaches such as lectures, but instructor guidance is still crucial in the active learning classroom.
- An active learning session may be seen to comprise the following 7 stages:

  1: Advance Reading;

  2: Initial question or challenge'

  3: Vote;

  4: Discussion among peers;

  5 and 6: Revote and show results; and

  7: Discussion.

- You may be inclined to compare this with the well known Gagne's 9 events of instruction: *https://www.niu.edu/citl/resources/guides/instructional-guide/gagnes-nine-events-of-instruction.shtml*

  1: Gain attention of the students

  2: Inform students of the objectives

  3: Stimulate recall of prior learning

  4: Present the content

  5: Provide learning guidance

  6: Elicit performance

  7: Provide feedback

  8: Assess performance

  9: Enhance retention and transfer

- Suitably combining the 7 steps of active learning with Gagné's nine events of instruction can help you build a suitable learning model that can then be adapted to fit both the content and students' level of knowledge.
- One of the proponents of active learning is Carl Weiman, the 2001 Physics Nobel Laureate who is also a Professor in Education in Stanford University, who actively opposes the lecture model. Here are a few relevant links.

1: Carl Weiman and active learning : *https://mediatheque.lindau-nobel.org/recordings/38480/dont-lecture-me*

2: Don't lecture me : *https://www.nature.com/articles/d42473-019-00339-6*

3: Carl Weiman on new ways of teaching Science and engineering (58 minutes): *https://youtu.be/9A13RWOs6oA*

4: The active learning method (7 minutes): *https://youtu.be/xxVxgQJwV7w*

5: Don't lecture me: a discussion on active learning with Nobel Laureate Carl E Weiman : *https://www.nature.com/articles/d42473-019-00339-6*

ChatGPT for Active Learning

The Impact of ChatGPT

Within two months of the chatGPT launch by Open AI, Hon'ble Prime Minister Shri Narendra Modi said that self-learning through technology is an opportunity for today's generation: *https://lnkd.in/d9FJN9Jh* Press release from PMO dated: 20 JAN 2023 11:59AM by PIB Delhi ChatGPT has had several impacts in education, including:

1. Personalized Learning: ChatGPT can provide personalized explanations and examples tailored to individual learning styles and paces.
2. 24/7 Availability: It offers on-demand support and information, allowing students to learn anytime.
3. Supplemental Learning: It can act as a supplementary resource to textbooks and lectures, offering additional explanations and examples.
4. Language Practice: ChatGPT can assist in language learning through conversation practice and writing assistance.
5. Accessibility: It can help make education more accessible to diverse learners, including those with disabilities.
6. Research Assistance: ChatGPT can aid students and researchers in finding information, generating ideas, and exploring new topics.

While ChatGPT has its advantages, it's important to complement its use with traditional educational methods to ensure a well-rounded learning experience.

The Capabilities of ChatGPT

Salman Khan on revolutionising education with AI : *https://youtu.be/2ShAkmhG-_E?si=BbUlm Hd06E Cjfbe9*

ChatGPT can assist self-learners in various ways, including:

1. Providing explanations on complex topics.
2. Answering questions to clarify doubts.
3. Generating examples to illustrate concepts.
4. Offering additional resources or references for further study.
5. Suggesting study strategies or learning techniques.
6. Assisting in brainstorming ideas and problem-solving.
7. Supporting language practice through conversation and writing prompts.
8. Engaging in discussions to deepen understanding and critical thinking skills.

Overall, ChatGPT can serve as a valuable tool for self-learners seeking information, guidance, and assistance across a wide range of subjects.

The Limitations of ChatGPT

The 10 most common limitations of chatGPT: *https://contentatscale.ai/blog/chatgpt-limitations/*

The limitations of using ChatGPT for effective learning include:

1. Lack of real-time feedback: ChatGPT does not provide immediate feedback like a human teacher would.
2. Limited contextual understanding: It may struggle with complex or nuanced topics that require deep expertise.
3. Inability to engage in real-life practical exercises: ChatGPT cannot physically demonstrate skills or provide hands-on learning experiences.
4. Potential for misinformation: ChatGPT's responses are based on patterns in the data it was trained on and may not always provide accurate or up-to-date information.
5. Dependency on user input: Effective learning requires active participation, and users may need to ask relevant questions to extract the most value from ChatGPT.

ChatGPT for Active Learning

Here is a very informative talk by Mike Sharples: A new science of learning with AI: *https://youtu.be/CZ2R-UjqKpw?si=b8fjPjHfBKf1Rpe4*

ChatGPT can be used for effective learning by providing explanations, answering questions, generating examples, and offering insights on various topics. By interacting with ChatGPT, learners can reinforce their understanding, clarify concepts, and explore new ideas, contributing to a more engaging and fruitful learning experience.

ChatGPT can facilitate active learning by engaging users in interactive conversations, answering questions, providing explanations, and generating examples to deepen understanding. By actively interacting with ChatGPT, users can enhance their knowledge, explore new concepts, and receive personalized feedback, making the learning process more dynamic and effective.

Using Prompts for Effective Learning

Using prompts is a powerful technique for effective learning as they provide a structured starting point for generating ideas or responses, helping to guide and stimulate thinking. They can be tailored to focus on specific concepts or tasks, aiding in memory retention and deepening understanding through active engagement with the material.

A Forbes article on prompts: *https://www.forbes.com/sites/jodiecook/2023/05/25/supercharge-your-learning-10-game-changing-chatgpt-prompts-to-upskill-faster/amp/*

The Science of Learning

Teaching-learning has so far largely been a matter of practice with very little inputs from scientific research. Even when there was any research done, like for example 'the learning pyramid' referred to earlier in section 2 of this article, it was ignored in practice, by the educational authorities.

The UGC has a rule for all Universities of more than 75% compulsory attendance of lectures, and no financial watchdog such as the CAG questioned the colossal waste of public money because of the ineffectiveness of lectures.

Many other well entrenched educational practices are also based on the opposite of the conclusions of the Science of learning. For example admissions to engineering colleges is carried out by an NTA based on the total marks obtained by a student in Physics, Chemistry and Mathematics. This sum is not a measure of any meaningful capability. There are many other examples of educational

practices that have no basis in cognitive science which acknowledges that the brain is something that changes itself.

The situation was similar to that prevailing in the practice of medicine. The ignorance of doctors about Science was such that President Garfield of the US died at the hands of his doctors : *https://www.cbsnews.com/news/how-doctors-killed-president-garfield/#*

But Universities like Johns Hopkins University took a lead in Science based medicine, and Institutions like MIT in the US and IITs in India took the initiative and' lead in Science based engineering leading to substantial technological progress. Thomas Lewis in his book " The Youngest Science" shares a doctor's fascinating view of what medicine was, and what it has become. Looking back upon his experiences as a medical student, young doctor, and senior researcher, Thomas notes that medicine is now rich in possibility and promise. Thomas first learned about medicine by watching his father practice in an era when doctors comforted rather than healed.

British Physicist who was also my mentor, described Science as ' public knowledge' and suggested that progress would be seen as moving from the 'art of teaching' to the ' science of learning'. Only then will we achieve the goal of universalisation of learning.

The science of learning explores how people learn and retain knowledge. It involves studying factors like memory, cognition, motivation, and effective teaching strategies to enhance the learning process. Cognitive scientists have conducted research on what's called the "science of learning"—how we learn stories, names, facts, important events, unimportant events, and more. Research on the science of learning dates back more than 100 years.

Teaching fads feel like they've persisted for 100 years, too. Sometimes we learn about these fads during pre-service programmes and professional development, and other times through word of mouth or online blogs. We've all had the experience of being excited about a "new" teaching idea, only to file the materials away for a rainy day. Rarely are these new strategies utilized, and professional development programmes often feel like a waste of time.

There are two main reasons why educators keep reinventing the wheel with teaching strategies based on the "fad of the semester," when scientifically based strategies are already out there:

- The science of learning sits dormant in academic journals, rather than easily accessible in pre-service textbooks and professional development materials.
- The science of learning has recently been featured in newspapers, blogs, and social media, but it's hard to know if these are trusted sources or simply people concocting more fads.

Teachers are given the impossible challenge of finding time to seek out good research, make sense of it, and apply it in classrooms. Educators often ask, "Why haven't I heard about this research before? Why didn't I learn about this in my pre-service program or professional development?" It's because this research isn't accessible—literally and figuratively. There is valuable research on the science of learning out there, but it's sitting behind lock and key.

By drawing on empirical research by fellow cognitive scientists and practical strategies from educators around the world, let's focus on four powerful teaching strategies based on the science of learning: retrieval practice, spaced practice, interleaving, and feedback-driven metacognition.

- Retrieval practice boosts learning by pulling information out of students' heads (e.g., quizzes and flashcards), rather than cramming information into students' heads (e.g., lectures). Retrieval practice is a no-stakes learning opportunity that increases student performance, beyond formative and summative assessments.
- Spaced practice boosts learning by spreading lessons and retrieval opportunities out over time so that learning isn't crammed in all at once. By returning to content every so often, students' brains have had time to rest and be refreshed.
- Interleaving boosts learning by mixing up closely related topics and encouraging discrimination. For example, learning increases when students practice addition, subtraction, multiplication, and division problems all mixed up, rather than one type of problem at a time.
- Feedback boosts learning by providing the student the opportunity to know what they know, and know what they don't know. This enhances students'

metacognition or understanding about their own learning progress.

Research demonstrates that these four strategies:

- Raise student achievement by a letter grade, or even two (from a C to an A.) Research shows there is a consistent and reliable increase in students' grades, confidence, and engagement.
- Boost learning for diverse students and subject areas at all grade levels and disciplines (e.g., STEM, social studies, language arts, fine arts, special education, and foreign languages).
- Enhance higher-order learning and students' transfer of knowledge. These strategies apply for basic fact knowledge, skill learning, and critical thinking.

When it comes to retrieval practice, spaced practice, interleaving, and feedback-driven metacognition, the combination of being research-based and classroom-proven is paramount. The rigor of science gives us confidence that these strategies aren't fads, and successful classroom implementation gives us confidence that these strategies work in the real world, not just in the laboratory. The better you understhtand the research behind the strategies, the more effectively you can adapt them in your classroom to propel and guide student learning.

Link to and discussion of Mike Sharples video on the new science of learning with AI : *https://youtu.be/CZ2R-UjqKpw?si=AjDRPFn_BgHfvxXZ*

Education Beyond 2050

Predicting education beyond 2050 involves speculation, but some trends might include increased use of technology like AI and virtual reality in education, personalized learning experiences, emphasis on critical thinking and problem-solving skills, and a shift towards lifelong learning models to adapt to rapidly changing job markets and technology.

In the immediate future, we may see that AI general intelligence and humanoid robots may prove to be more effective in both qualitative and quantitative teaching.

But the next jump in educational technology is expected to be the brain computer interface, which is being explored by Elon Musk in Neuralink. We already have subcutaneous chips implanted in humans, as also cochlear implants and cardiac pacemakers. It is only a matter of time that such devices that were used so far for persons with disability may be used for augmenting the cognitive functions.

In 2050 and beyond, the global education landscape is likely to be radically different from what we see today, driven by technological advancements, shifting societal needs, and environmental challenges. The rise of artificial intelligence, virtual reality, and personalized learning platforms has transformed the way students learn and acquire knowledge.

Education in 2050 will be highly individualized, catering to each student's unique learning style and pace. AI-powered tutors provide personalized learning experiences, adapting content and pace based on the student's progress and preferences. Virtual reality classrooms enable students to visit historical events, explore distant planets, or conduct virtual experiments, enhancing their understanding and engagement.

The traditional classroom model would have evolved into a more flexible and collaborative learning environment. Physical school buildings may still exist, but students also have access to online courses, remote learning opportunities, and digital libraries. Global collaboration and knowledge-sharing would have become the norm, with students from different countries working together on projects and exchanging ideas in real-time.

The concept of lifelong learning would have gained prominence, as rapid technological advancements require individuals to continuously update their skills and knowledge. Professional development programmes , micro-credentials, and online courses would allow all individuals to upskill and reskill themselves throughout their careers.

Environmental education and sustainability would have become integral parts of the curriculum, reflecting the urgent need to address climate change and environmental degradation. Students would be taught about renewable energy, conservation practices, and sustainable living, preparing them to be responsible global citizens.

In terms of access to education, significant progress would have been made in bridging the digital divide. Affordable internet access and mobile devices have made education more accessible to underserved communities around the world. Online platforms offer free or low-cost educational resources, enabling

individuals in remote areas to learn and connect with global experts.

Assessment methods have also evolved to focus more on skills and competencies rather than rote memorization. Performance-based assessments, portfolios, and real-world projects are used to evaluate students' abilities to think critically, solve problems, and collaborate effectively.

Despite these advancements, challenges remain in ensuring equitable access to quality education for all. Disparities in access to technology, resources, and qualified teachers persist, especially in developing countries. Efforts to address these disparities through government policies, international partnerships, and community initiatives are ongoing.

In conclusion, the global education scene in 2050 and beyond is characterized by innovation, flexibility, and inclusivity. Technology has revolutionized the learning experience, empowering individuals to pursue knowledge and skills in ways that were previously unimaginable. While there are still obstacles to overcome, the future of education holds great promise for fostering a more knowledgeable, skilled, and interconnected global society. ❑

AIU Notification for Inviting Proposal for AADC

Association of Indian Universities, apex level representative body of universities and other higher education institutions in India, invites proposals with expression of Interest (EOI) from the member universities for its newly introduced scheme- **Academic and Administrative Development Centres (AADC)** to be established in select member universities.

AADC is a pioneering initiative of AIU which aims at organizing short-term training and capacity-building programmes for the faculty members and administrative functionaries of Indian Universities and other HEIs. Introduced in **2022**, AADC is envisioned to function similarly to the UGC Human Resource Development Centers operating in different universities. The focus of these centres is to provide training to faculty for online/blended mode of teaching-learning, developing e-content and using technology for continuous assessment and evaluation and research collaboration along with programmes on effective management using technology in governance and administration of universities.

The general terms and conditions of establishing AADC are as follows:

- AADC is to be established under the banner of AIU and be named as **AIU-……. University Academic and Administrative Development Centre**.
- AIU-AADC will offer short-term programmes of varying duration aimed at continuous capacity building of the key stakeholders through online and in-person modes.
- The Centres are to be allocated to **15** selected member universities of AIU based on their interest and required infrastructure.
- Initially, seed money of **Rs. 2.00 lakhs** will be provided by AIU as one-time financial support to each centre. Thereafter, the centers will be functioning in self-financing and self-sustaining mode
- **Rs. 1.00 Lakh** will be provided at the beginning of the first programme and the remaining One Lakh will be released after receiving the utilisation certificate from the University.
- Each Centre will organise **05** programmes in an Academic Calendar year.
- AIU will also provide academic support in identifying resource persons, planning and designing the academic aspects of the courses. The details of the programme structure, duration, selection of themes, preparation of training materials and modules, and resource persons will be decided on mutual consultation and cooperation with the host/concerned university.
- A report after each programme may be submitted to AIU for documentation and publishing in University News and uploading to AIU website.

Globalization and Internationalization of Higher Education

Sanjay Tiwari*

Globalization and internationalization are two pivotal forces shaping the landscape of higher education worldwide. While they are closely linked and often used interchangeably, they represent distinct processes with profound implications for institutions, educators, and students. Understanding these concepts is key to navigating the complexities of today's educational environment. Internationalization is perceived as an activity undertaken by higher education institutions, whereas globalization is perceived as an event that is occurring within them. Numerous institutions of higher education, both public and commercial, are undergoing a swift transformation into global entities, aligning with a prevailing pattern observed in various other sectors.

The 2020 National Education Policy heralded a new era for Indian publicly funded higher educational institutions by enabling them to establish campuses overseas. IIT Delhi led the initiative by seeking government permission in 2020 to expand internationally. Subsequently, IIT Delhi and IIT Madras received the nod to inaugurate campuses in Abu Dhabi and Tanzania, respectively. This move marks a significant milestone as India's publicly funded institutions embark on international expansion.

The precise understanding of the impact of globalization on policies and practices in higher education has proven challenging, despite its widespread usage in mainstream media. Globalization is an intrinsically intricate phenomenon, always defying straightforward interpretation and implementation. Similar to globalization, internationalization is a widely used and commonly adopted concept, employed in different contexts and for various goals. However, the practical definition of this phrase remains equally ambiguous and indeterminate. Globalization and internationalization can be differentiated such that globalization can be conceptualized as the spark, whereas internationalization can be seen as the response, albeit a proactive one. Internationalization plays a crucial role in expressing and strengthening globalization. Internationalization should be regarded as a primary factor that promotes and enables globalization, rather than merely a variable that describes how institutions react to the influence of globalization in the realms of economics, politics, culture, and social movements.

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Globalization in Education

The prioritization and serious consideration of globalization in education is imperative, as our societies are profoundly influenced by education. Only via the globalization of education can other dimensions such as culture, economics, politics, and others be shaped to have a significant impact on the world. The impact of internationalization or globalization on education, including the subjects taught and the methods employed, has significant implications for the global economy. Consequently, the globalization of education has gained relevance. It establishes a basis for collaborations in education and research, resulting in the sharing of not just students but also syllabi and ideas created throughout the partnerships. Globalization is driving sectors and businesses, perhaps leading to a transformative era that can significantly impact trading and business, including smaller and local traders. Institutes and schools at the individual level play a crucial role in facilitating the implementation of the swift transformations that regulate globalization. Universities and other higher educational institutions have the responsibility to adapt to the evolving times and meet the demands of global societies. Higher Education plays a crucial role in the development of the nation's social, economic, and cultural well-being.

The institution will make a significant contribution not only by fostering the intellectual growth of students and equipping them with the necessary skills for employment but also by augmenting the global reservoir of knowledge and comprehension.

The role of universities is undergoing significant transformation due to the advancement and widespread adoption of Globalization. Universities are no longer solely focused on imparting knowledge and facilitating job opportunities. They are now expected to offer experiential learning opportunities

that foster values and encourage students to address social issues, assume responsibility, engage in volunteer work, and contribute to citizenship. It is important to note that age and academic qualifications are no longer the sole determining factors in this regard.

The qualifications for higher education encompass the drive to acquire knowledge and the capacity to cultivate curiosity in one's environment. Asynchronous education will assume a prominent role, enabling students to pursue courses and degrees on both part-time and full-time basis. The emphasis will be placed on the extent of knowledge rather than the quantity of degrees possessed by each individual. The prominence of research and the establishment of an academic milieu will assume a central role in the context of globalization. Given the rapid social and economic changes, it is crucial for universities and other higher educational institutions to carefully assess their long-term contribution to society, as higher education is an investment in human progress and prosperity.

Globalization, being the primary driving force, exerts a significant influence on the environment and our immediate surroundings. The process of digitalization and communication facilitates a unique and unprecedented collaboration between institutions and individuals on a global scale. The advent of digitalization has facilitated worldwide connectivity, leading to the emergence of the concept of a global village. The rapid dissemination of ideas, best practices, and fresh research across different geographical regions facilitates ongoing conversations and ultimately fosters the generation of novel ideas. One of the primary objectives of globalization is to cultivate pupils' consciousness of the surrounding world and its broader implications. It not only limits itself to that, but also progresses and strives to increase their awareness of the world's heritage, creativity, variations in lifestyles, communication, and more. Globalization encompasses and must address various themes such as economic systems, literature and culture, human rights, and social justice. Globalization also leads to the blurring of borders between different academic fields, resulting in the emergence of elements that are not accounted for in multidisciplinary and interdisciplinary approaches. This would facilitate global connectivity and potentially enable learners to approach global issues and conflicts from a fresh perspective. The issues in another country will not be disregarded as superfluous, but rather will be deliberated about and remedies will be sought to address them. Amidst an abundance of information, globalization in education will enable us to differentiate between genuine and counterfeit content, fostering learners who possess ethical, critical, and creative thinking and job skills.

Globalization in Higher Education

Globalization refers to the process of interaction and integration among people, companies, and governments worldwide. In the context of higher education, globalization has several key dimensions:

Cross-Border Education

The flow of students, educators, and educational content across borders has increased significantly. This includes international student mobility, with students traveling abroad to pursue higher education, and faculty exchanges among universities worldwide.

Digital Learning Platforms

The rise of online learning platforms has globalized access to education, allowing students from any part of the world to access courses offered by universities globally. Massive Open Online Courses (MOOCs), for instance, have made education from prestigious institutions accessible to a global audience.

Research Collaboration

Globalization has facilitated international research collaborations, enabling scholars to work together across geographical boundaries. This has led to a rise in multi-country research projects, global conferences, and international research publications.

Global Rankings and Standards

Higher education institutions now operate in a global marketplace, with university rankings and accreditation standards gaining importance. These rankings, often based on research output, faculty qualifications, and global reputation, influence institutional strategies and priorities.

Internationalization of the Indian Higher Education

India, being a nation in the process of development, is a captivating topic for scholarly

investigation. Higher education has its historical roots in Takshashila, a Greek translation of Taxila, dating back to 5 B.C. The inception of the university in Nalanda during the year 5 A.D. is a noteworthy achievement. At its peak, the university attracted researchers and students from around the world, including Tibet, China, Greece, and Persia. This institution is notable for being one of the first residential institutions. A noteworthy attribute is the nation's substantial contribution to the advancement of higher education on a global scale. The expansion under consideration was not solely an ancillary element, but rather a foundational principle that influenced the values and principles of higher education. India's continued commitment to hosting international students in the post-Independence era can be attributed to its longstanding reputation as a prominent center for global education, rather than being exclusively motivated by governmental requirements. When considering India's participation in regional capacity building, it is important to highlight that the country has traditionally drawn students from emerging economies that were formerly under colonial rule. In the realm of neo-colonialism, these nations are frequently denoted as "periphery," whereas developmental economists classify them as "low- and middle-income countries". This specific segment encompasses around 95% of the entire population of international students. The persistence of economic inequality in these countries, along with several developing nations, can be ascribed to the existence of an ineffective postsecondary education system. The higher education systems in countries that have traditionally depended on India as a source of international students are considered insufficient. There are concerns regarding the insufficiency of educational standards in skill-oriented sectors such as science, technology, medicine, management, and professional-vocational programmes . Nevertheless, it is crucial to acknowledge that the mere existence of relative advantage in the quality of higher education by itself does not hold significant significance in isolation. The students from low-wage source nations want cross-border higher education to improve their chances of obtaining high-paying jobs. This provides a partial explanation for the growing phenomenon of cross-border student mobility in South Asia, despite the advancements in domestic higher education in all participating nations and the escalating expenses associated with international study. Enhanced educational proficiency appears to serve as an indirect incentive for students to pursue further education overseas.

Internationalization refers to the process by which higher education institutions integrate an international, intercultural, or global dimension into their teaching, research, and service functions. Key aspects include:

- ***Curriculum Internationalization***: Universities are increasingly incorporating global perspectives into their curricula, offering programmes that prepare students for a globalized world. This includes the development of international study programmes , foreign language courses, and courses focusing on global issues.
- ***Strategic Partnerships***: Institutions are forming strategic international alliances and partnerships for various purposes, including joint degree programmes , research collaborations, and exchange programmes . These partnerships enhance the global reach and impact of institutions.
- ***International Campuses***: Some universities have established branch campuses in other countries, offering their degree programmes to international students. This strategy not only expands the institution's global footprint but also provides students with international learning environments.
- ***Attracting International Talent***: Higher education institutions strive to attract students, faculty, and researchers from around the world. This diversification enriches the learning environment, bringing together diverse perspectives and experiences.

The potential benefits and strategies for maximizing the advantages of such international campuses:

Enhancing Diversity

Establishing campuses abroad invites students from varied cultures and educational systems, enriching the educational atmosphere with diverse perspectives. It's crucial to target a global student body beyond the Indian diaspora to foster true cross-cultural understanding and prepare students for the interconnected world.

Improving Global Perception and Reputation

Low perception scores are a hurdle in international rankings. An international presence

can enhance the global image of Indian institutions, positively impacting their standing in global academic rankings.

Generating Additional Revenue

Overseas campuses represent a new revenue stream. By setting higher tuition fees and managing funds efficiently, surplus revenue can be invested back into the main campuses in India, bolstering infrastructure and academic resources.

Fostering Collaborations

International campuses can become centers for collaboration with global universities, research bodies, and industries, promoting knowledge sharing, joint research, and innovation.

Attracting International Faculty

With the ability to offer competitive salaries, international campuses can attract world-class faculty, enriching the academic environment and research output.

Engaging Alumni Globally

International campuses can strengthen connections with the global alumni network, whose support is vital for funding and development projects.

Mitigating Brain Drain

Offering high-quality education and research opportunities abroad might retain Indian talent that could otherwise seek opportunities overseas.

Influencing Global Policies

The international presence of Indian institutions can enhance India's influence on global education policies, bolstering the country's prestige internationally.

The international education has the potential to significantly contribute to the advancement of socio-cultural development. In certain regions of Asia and Africa, it is frequently observed that there exist socio-cultural patterns and political-governmental obstacles that are less progressive. The students have the potential to greatly benefit from embracing India's comparatively stable political environment and socio-cultural liberalization. The transference of progressive sociocultural ethos is closely linked to the politico-diplomatic connections between India and the nations of popular origin. The Indian government has explicitly stated its intention to implement measures targeted at enhancing the representation of overseas students in India, with the objective of promoting public diplomacy. The process of internationalizing Indian colleges encompasses objectives beyond mere philanthropic and symbolic motivations. The dominant position of India as a provider of cross-border higher education among popular source nations can be attributed to its diplomatic and ambassadorial standing. The concept of "soft power" and its relevance to the Indian context supports the argument that enhancing higher education networks can enhance India's reputation, particularly in the "South Asian Region," as a provider of cross-border higher education and a leader in knowledge generation and dissemination. It is noteworthy that overseas students hailing from underdeveloped nations and pursuing higher education in India demonstrate their significant contributions to the labor market. An analysis of the aggregated data from international students who have successfully obtained undergraduate or postgraduate degrees from higher education institutions in Pune, a city in peninsular India with the highest concentration of international students, reveals that these students exhibit a propensity for high achievement upon their return to their home countries. These students often emerge as leaders in governance, policy-making, and administration. The individuals in this group tend to get managerial roles within the corporate sector, particularly in fields related to accounting, finance, and business administration. Several heads of government and political figures in Asia and Africa, such as Aung San Suu Kyi and Hamid Karzai have obtained higher education in India. The success of these students as leaders and members of the workforce can be attributed to the employability and value-added features of their higher education.

Challenges and Opportunities

The globalization and internationalization of higher education present both challenges and opportunities. Challenges include ensuring quality across diverse educational systems, managing the commercial aspects of international education, and addressing equity and access issues. However, the opportunities are vast, including fostering global

citizenship, enhancing cultural understanding, and preparing students for a global workforce.

Conclusion

Globalization has had a significant impact on the educational landscape, particularly on the roles of instructors and students. The societal transition from an industrial-based civilization to an information-based one is occurring rapidly. Globalization in education has numerous drawbacks. The disparity between the affluent and the impoverished is becoming increasingly apparent due to the division caused by technology. Less robust economies are experiencing the impact of technology on education, leading to dissatisfaction among young people, unemployment, violence, and antisocial conduct. Numerous families and kids are deprived of education and information due to their inability to afford the expenses associated with acquiring advanced technologies in education. The contemporary challenge in the 21st century lies not alone in the acquisition of new knowledge for students, but also in the cultivation of skills and attitudes that foster their development into responsible individuals and active members of society. The ultimate objective of education has expanded beyond the acquisition of knowledge, encompassing the cultivation of learners' awareness of global trends and culture. Additionally, education aims to equip individuals with the necessary mindset to embrace these changes within themselves and create an environment that facilitates personal and global growth. The primary obstacle presented by globalization is to envision the improvement of the entire planet and its inhabitants, rather than confining oneself to geographical and internal limitations. The current imperative is to restore the prominence of Vasudhaiv Kutumbakam, the ancient Indian ethos, in order to foster a global mindset and drive.

In conclusion, globalization and internationalization are transforming higher education, making it more interconnected and interdependent than ever before. Institutions that navigate these processes effectively can enhance their educational offerings, broaden their impact, and prepare their students for the complexities of a globalized world.

However, launching and sustaining international campuses entails navigating regulatory landscapes, ensuring resource availability, maintaining quality, and upholding core values and standards. It's pivotal to assess the performance of the initial campuses before considering further expansion. With strategic planning and diligent implementation, the advantages of international campuses can significantly contribute to the institutions' growth, global reputation, and rankings.

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Globalization and Internationalization of Higher Education: Indian Scenario @*Viksit Bharat* 2047

Vikas Nehra*, Aman Kumar and Naresh Kumar Kakker*****

Under the current landscape of information technological advancement, globalization of higher education is need of the hour. Globalization and internationalization of higher education refers to the processes by which educational institutions, programmes, and academic activities become more globally connected and networked. Factors like technological advancements, economic interdependence, and the growing realization of the importance of a global perspective in education have propelled this trend forward in recent decades. Since the beginning of colonialism, globalization of higher education has been observed, although at a slow pace. However, improved societal and political literacy, cultural integration, sharing and dissemination of knowledge, concepts, and ideologies worldwide, and economic progress, are all results of its faster spread. With reference to attracting international students, generating revenue, building the institution's reputation, and establishing a lasting global presence, both internationalization and globalization bring about significant changes to the educational system. Both students and teachers in domestic institutions benefit from the presence of students from diverse global cultures and surroundings. It encourages the fostering of cultural harmony amongst nations and raises students' intellectual standards.

To establish India as a leading destination, the country should prioritize its foreign education policy. The emphasis on internationalization and globalization is crucial for transforming the educational system. International student mobility has driven the internationalization of higher education, thus emphasizing the importance of prioritizing this aspect. India's higher education sector requires a thorough overhauling of foreign education policy at both national and institutional levels. Currently, India is considered a net importer of educational services. To improve accessibility, quality, and diversity, educational resources and services should be mobilized globally and internationally. The future of education may be shaped by Education 4.0, the National Education Policy (NEP) 2020, current pandemics, changing student needs, and rising technologies. Higher Education Institutions (HEIs) are redesigning their higher education ecosystem to make it more accessible and inclusive, taking into account social, generational, and technological changes.

HEIs have played a crucial role in promoting information sharing and acquiring the essential capabilities during the course of the fourth industrial revolution. This has given rise to Education 4.0. Key aspects of this new educational paradigm include high-speed internet, mobile technologies, and social media platforms. Key qualities include personalized learning, transforming teachers into facilitators and mentors, and making learning accessible anytime, anywhere. Education institutions and regulatory authorities can quickly adopt new technologies and methods, unlike when computer education first arrived in India over 30 years ago.

The epidemic and subsequent global lock-downs have accelerated this transition. The shift to online education has had a substantial impact on structure of the education system, including teaching, learning and evaluation methods. Various colleges and universities have introduced remote learning without modernizing the required equipment and systems. Internationalization is viewed as a process that academic institutions undertake, but globalization is perceived as something that happens to organizations.

Almost all HEIs are rapidly becoming global actors, mirroring a trend observed in several other sectors. Various earlier studies have highlighted the impact of 'globalization' and 'internationalization' on the character and behaviour of HEIs. However, the more these definitions are employed, deeper their literal meanings become mixed and muddled. However, to understand how HEIs are evolving, we

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need to understand certain important distinctions between these ideas.

Globalization vis-a-vis Internationalization and Indian HEIs' Roadmap

Globalization is the flow of technology, economics, knowledge, people, values and ideas across boundaries, which affects each country differently owing to its unique history, customs, culture, and priorities. As a result, globalization is a continuous process that can impact nations in a variety of ways, including financially, culturally and politically, but it has no ideological stance or position on whether this impact is favorable or detrimental. Globalization of higher education has resulted in significant changes in international education. Attracting a large number of overseas students has been a relatively strong base for the education trade, which is rapidly expanding around the globe. India boasts among the most comprehensive and sophisticated educational systems in the world. The likelihood of the entry of foreign universities into India is an inevitable consequence of globalization. Elite international universities are envisioned to improve the reputation and status of Indian HEIs. Foreign universities are likely to provide much-needed capacity and fresh ideas in management of higher education, teaching methods, research and also investment. Internationalization may be described as engine of globalization with its focus on global conditions which impact views on space, action, mobility, communication nature, and orientation regarding social communication, emphasizes close attention on the intentional actions of people, groups of people, and social organizations as they are constantly seeking to cross national borders. Internationalization is considered as the integration of transnational components into the "purpose, functions, or delivery of higher education". Education in higher education is increasingly internationalized, thanks to the government initiatives that encourage foreign investment and classify it as a tradable service under international accords like General Agreement on Trade in Services (GATS). Therefore, globalization and internationalization may not be isolated. These are two sides of the same coin.

Since independence, India's HE system has expanded significantly, with more than 1000 universities, 42,000 colleges and 11,500 institutes, most of them are owned by private individuals. The Indian HE system is the world's third largest, providing instruction and training in nearly all areas. India's HE system should prioritize student-centricity and become an international gateway. To accomplish this incredible feat, India has to divide its long-term goals into smaller, more feasible ones. The Indian Government's NEP-2020 is a revolutionary project, however, more has to be done to improve the caliber and accessibility of colleges and universities in India and around the world. For India to exist as a cost-effective higher education destination, it must take strategic initiatives.

To meet India's higher education targets by 2047, the first step is to redesign the infrastructure to create a healthy and student-centric environment. Newer educational policies must address the broader Indian population's dissatisfaction with traditional time-bound degrees. HEIs should incorporate skill development into the course of study, enabling students to acquire knowledge at their own pace and drafting out their own learning path. Stakeholders must prioritize putting students first when redesigning higher education. India's college and university system may attract overseas students by emphasizing its best qualities while focusing on areas for development. Education, particularly higher education, is to serve as the foundation for a developed, prosperous, and educated human civilization, contributing to global peace, prosperity, harmony and happiness. This necessitates a persistent emphasis on quality, relevance, and excellence, fostered in an atmosphere that connects education to ethical principles and aims for national progress and a harmonious world. Hon'ble Prime Minister of India, Shri Narendra Modi Ji, while addressing the Honourable Chancellors and Vice Chancellors of Indian Universities on December 11, 2023, at the time of launch of the mission *Viksit Bharat*@2047, made it abundantly clear that the education that we provide to the younger generations in our colleges and universities have to play a significant role in transforming our country into a developed and prosperous nation. It was emphasized that India, one of the world's strongest and largest democracies, is currently at a watershed moment in its history, with the ability to make a huge leap in economic growth, social transformation, environmental sustainability and good governance.

To achieve such a rapid and profound transformation, our young generation must be trained and equipped to take charge of the nation and prioritize national interests, stated India's Prime Minister. University education must go beyond imparting knowledge by taking on the task of nurturing both technology and soft skills, as well as mentoring young inspired minds to imbibe character skills such as honesty, integrity, peace, harmonious coexistence, and environmental sustainability. The higher education eco-system must be significantly revitalized to foster an environment where students not only learn what they currently understand, but also how to get things done and coexist peacefully with the environment.

Indian Perspective Regarding Globalization and Internationalization and Key Aspects of Higher Education

Student and Faculty Mobility

The movement of students beyond boundaries for academic reasons has expanded dramatically. This includes international students studying abroad, and also domestic students participating in exchange programmes or pursuing degrees with an international focus. In recent years, the Indian subcontinent has emerged as a major provider of overseas colleges. Based on data gathered from the UNESCO Institute of Statistics, India is the world's second-largest source of international students, following China. The region's rapidly expanding economy and growing worldwide influence have prepared the path for its education system to make an impact on the global stage. If one compares the recent 7-8 years, the Institute of International Education notes that the number of Indian subcontinent students studying in the Canada, United States, and European countries has performed consistently at a rising pace throughout the previous decade.

Many Indian subcontinent students pursue graduate degrees in specialized professions such as engineering, veterinary, medicine, computer science or business. They believe that overseas colleges provide better programmes in these areas than their home countries. Students from the Indian subcontinent benefit from studying abroad because it exposes them to new cultures, broadening their horizons and giving them a more global viewpoint. FDI is typically hesitant to enter India's education business because of its complex regulation and non-profit purpose, despite improving family affordability and K-12 graduation rates. NEP 2020 seeks to enhance the current higher education GER from -27% to 50% by 2035. By 2035, the Indian college and university education system must expand to serve about thirty-four million students, in addition to upgrading staff and facilities. The total student-to-teacher ratio (STR) in Indian higher education was estimated to be 28:1 in the year 2020. In contrast, the STR in the United States was reported at 15:1. There is a growing trend of academics and researchers moving across borders to collaborate, teach or conduct research at institutions around the world. Foreign colleges view India as the important source of foreign students for a variety of reasons. For starters, India has a sizable and increasing youth population, with many seeking further education abroad. According to data of Ministry of Education, the total amount of Indian students enrolled in international universities increased from 4.44 lakh in 2021 to 7.5 lakh in 2022. Secondly, India has a big number of smart and highly educated students, of which many want to study at elite universities/institutions around the world. Over the past few years, there are many changes in structure and policies in India's higher education industry. To develop world-class talents, the higher education environment must adapt to changing patterns and seize new opportunities.

The All India Survey data of the Government of India (2022) on higher education reveals a huge increase in the number of foreign students travelling to India to pursue their studies. The 42% increase in foreign student enrollments at various colleges indicates that India may lead future higher education statistics for foreign nationals. With a plethora of attractions, the government of India has successfully established itself as the location for students from abroad. Being the second-biggest higher education system in the world, India provides cutting-edge infrastructure, modern laboratories, well-equipped classrooms, top-tier resources, interactive learning, and 360-degree support, solidifying international students' strong desire to choose India as their future educational destination.

Finally, India's economic prosperity and growing worldwide influence have made it a significant player in the international education sector. By creating graduates with different expertise and innovative knowledge, India would be able to compete efficiently in the global workforce.

Furthermore, a significant emphasis on research and development inside HEIs positions India to lead the way in emerging technologies and business. This not only draws multinational corporations looking for talented workers, but also promotes the establishment of indigenous industries, thereby increasing the country's global competitiveness.

Global Collaboration

Universities and research institutions are increasingly engaging in international research collaborations. This involves joint projects, co-authored publications, and the sharing of resources and expertise. Institutions form partnerships and alliances with counterparts in other countries to enhance academic and research capabilities. These partnerships may include joint degree programmes , collaborative research centers, and exchange agreements. By 2040, the NEP 2020 aims to make India's college and university system a model for the globe. NEP 2020 is the first national policy that prioritizes internationalization. The goal is to allow India to become a global centre for education and a study destination that draws in students from around the world. NEP 2020 proposes establishing branch campuses by prominent foreign universities (placed in the top 100 worldwide). Establishing overseas branch campuses for prestigious Indian colleges is the goal of NEP 2020. Many private Indian institutions have campuses with branches in many countries. Indian colleges have branch campuses in Australia, Mauritius, Nepal, Singapore, Sri Lanka, the UAE, and Uzbekistan, as per the Cross-Border Education Research Team's most recent foreign campus listing.

In 2018, India launched the Scheme for Promotion of Academic and Research Collaboration (SPARC) to strengthen collaborations with selected countries. From 2015 to 2019, the Global Initiative for Academic Networks (GIAN) attracted over 1,283 scholars from 56 nations to Indian HEIs. India's MOOC platform, Study Web of Active Young Aspiring Minds (SWAYAM) is increasingly getting popular. SWAYAM courses are available to foreign students. SWAYAM, like open universities in the UK and UNISA in South Africa, has the potential to enroll a substantial number of international students. Several schemes, such as 'PM Scholars Return to India', have been launched to attract back Indian scholars who have resided overseas. This would enhance the number of international-trained academics teaching at Indian universities. Collaborations are perceived as a trustworthy and sustainable approach to promote internationalization. The NEP 2020 sets new ambitious goals for India's HE sector, placing thoughtful attention on important elements including: -

- Promoting equitable and inclusive learning environments for all students
- Offering an educational system that is accessible to all and serves all students in a customized manner, regardless of their gender, age, dedication, desires, assets or weaknesses
- The reputation as well as qualities of colleges and universities
- Consolidation and reorganization of institutions
- A comprehensive, interdisciplinary education that provides the best possible learning environment and student assistance
- Skilled, dedicated and motivated faculty
- Education aimed for boosting a person's livelihood i.e. vocational education
- National Research Foundation to support high-quality academic research
- Regulations, governance, and leadership of HEIs in India

NEP 2020 is an golden opportunity for important educational stakeholders to implement major reforms and initiatives in lieu of policies that will provide the best value, equity and authenticity from elementary to higher education. Thus, NEP 2020 is a critical move adopted by the Government of India to prepare students to face a fast changing global scenario. The NEP 2020 emphasizes collaboration as a crucial aspect in the success of India's HEIs. Institutions that interact across disciplines can boost their creativity, innovation, and the ability to solve problems while also improving the lives among their pupils and communities. However, there are barriers to collaboration, such as differences in culture, language, and procedure, which might result in misunderstandings and misinterpretations.

To overcome these problems, clear communication procedures, agreed goals, and the promotion of a culture of respect and openness are required. Best practices must be developed to promote effective multidisciplinary collaboration in higher education. These include developing a

shared vision, establishing defined roles and duties, and leveraging technology to improve collaboration. Online collaboration technologies such as Google Docs and Zoom can help persons from many fields work together more efficiently. It is additionally important to create an environment of collaboration in which people are urged to share their ideas and knowledge in an open and courteous manner. There are many possibilities for transdisciplinary cooperation in India's HE system. Cross-domain collaboration can lead to innovative solutions in a variety of fields including social justice, public health, and sustainable development. Collaboration with business, government, and non-profit groups can assist institutions in meeting social concerns and community needs. Encouraging teachers and students to work across disciplines can help build a collaborative culture, which can provide better outcomes. The inclusion of developing skills in the educational framework is another crucial element. Practical skills are essential for the advancement of the country and the systems of higher education need to have a harmonious blend of conceptual understanding and applied abilities. India's powerful HE system would improve the quality of professionals and researchers generated in the country, resulting in a qualified workforce. This, in turn, will attract international collaborations, research partnerships and global talent, enhancing India's position as a centre of academic excellence.

By using a multidisciplinary approach, institutions of higher learning can improve the caliber and applicability of their programmes in many ways. Few methods for doing this are elaborated below:

Creation of a Multidisciplinary Curriculum

Colleges and universities can create a curriculum that combines knowledge from several disciplines. This technique can assist students in developing a better understanding of various disciplines, cultivating critical thinking skills, and equipping them with skills applicable to their future employment. This is attainable by use of elective classes that let students focus on particular subjects and core courses that cover a wide range of topics. The curriculum should be developed such that students fully understand the subject matter and develop transdisciplinary abilities.

Encouraging Collaboration

Collaboration across different institutions helps improve multidisciplinary education. Arts, business and science institutions might work with other colleges to provide interdisciplinary courses and activities. Such collaborations can occur with other universities or vocational training institutions, allowing students to gain interaction with a range of disciplines of study and industry. It can also help to establish a network of professionals who can share knowledge and tackle complex challenges.

Recruitment of Multifunctional Faculty

Colleges and Universities have the ability to assemble a diverse faculty from a range of subject areas. This allows students to learn from experts in many fields, gain knowledge and ideas, and gain a thorough comprehension of the subject. A varied faculty with varying backgrounds, expertise, and teaching methods can provide new ideas and perspectives, promote creative thinking and give a more comprehensive learning experience.

Colleges/Universities Can Support Collaborative Study That Addresses real-world Issues

Students and teachers can find new answers to the complicated problems by collaborating across disciplines. Additionally, it can help students become better researchers and apply their knowledge in real-world contexts.

Professional Development

Colleges can assist staff members and instructors in gaining the abilities and information required to carry out interdisciplinary instructions successfully. Workshops, seminars, and training programmes are examples of such initiatives. These opportunities can give faculty members the resources they need and knowledge to create and implement multidisciplinary courses and programmes . By emphasizing higher education, India can develop a generation of competent professionals capable of addressing difficult challenges and contributing to technical developments. This, in turn, will encourage an innovative culture, increase productivity, and attract funding for R&D.

Partnering with Commercial Collaborators

Higher education institutions can work with business partners to create programmes that are pertinent to the job market. Such collaborations can help students get practical skills and experience in specialized industries. Collaboration with business partners allows higher educational institutions to

identify new demands and trends, this might then be included in the curriculum to better prepare students for the workforce.

With a multidisciplinary approach to the teaching-learning process and consistent implementation throughout HEIs, India is on its path to become the world's "knowledge capital". Universities must set an example regarding environmental sustainability by building their campuses in a manner that they practice the highest levels of compliance with clean air, renewable energy, water security and effective waste management standards. The universities will then preach what they practice and form their students into crusaders of *Viksit Bharat*, who will build India, the Bharat of our dreams, and lead the globe on paths of inclusive and sustainable development that defend the interests of people and the planet mother earth.

To cultivate a mindset suited to peace, progress, and sustainable growth in a tech-savvy world, universities must have a strong connection to the local community along with a global outlook. World require universities to unfold the appropriate ecosystems for innovation research, technology incubation and a supportive atmosphere for ideas to innovative products and commercialization. In brief, it asks for a significant shift in our approach from "universities as centres of learning and scholarship" to "universities as Global Knowledge Enterprises," which includes centres of learning and scholarship, technology and innovation incubation, and enterprise growth. Universities will then adopt the phrase "Knowledge to Sustainable Prosperity" and serve as a driving force in speeding the socioeconomic development of society.

Cultural Diversity

Globalization and internationalization help create a more linguistically variety of students on HEIs campuses. Exposure to different perspectives and cultures enriches the educational experience and prepares students for a globalized workforce. Institutions often offer courses in multiple languages to accommodate international students and promote language diversity. Advances in technology have facilitated the growth of online education, allowing students to access courses and programmes from institutions worldwide. This has further blurred geographical boundaries in education. Virtual exchange programmes and online collaboration tools enable students to engage with peers and faculty globally without physically relocating. International rules for certification and quality control are being developed in an effort to guarantee that degrees earned from various regions of the world adhere to a set of requirements. The university system has evolved into a significant economic driver as international students contribute to the economical growth through tuition fees, accommodation, and other expenses.

Prospects of Veterinary Education in Globalization and Internationalization

In today's global environment, the veterinary profession is struggling to satisfy societal requirements and safeguard diverse employment opportunities. As the human population is growing tremendously, there is more pressure to produce enough food in a sustainable way. The social expectation is for a professional approach to managing food security, safety, environment, and biodiversity. Every veterinarian must face the challenge of becoming and remaining competent with a lifetime commitment to education. An education in international veterinary medicine encompasses a variety of factors that includes global trade; food supply, security and safety; infectious disease transmission; zoonotic diseases; emerging and remerging diseases of animals and worldwide conservation efforts. Veterinary educators are examining global issues in their curricula due to trade globalization, rising demand for animal products, food insecurity, poverty, international travel, diseases of international importance, bio-terrorism, biodiversity loss, and the global conservation crisis. Priority areas for internationalization include research, education, and student experience. Some institutions provide unique certificate, diploma and post graduate degree programmes to better prepare students for across the globe professions. Further improvement and vision is needed to fully grasp the significance of Indian Veterinary Education on the above mentioned aspects. Some universities/ institutes across the world excel in specific areas due to their diverse programmes and teachers. Therefore, more collaboration across faculty and programmes with worldwide institutes/universities is the need of the hour to address transnational concerns affecting the veterinary profession, taking into account the diverse capabilities of each institution. To maintain

uniformity and skills across veterinary graduates, curriculum should be standardized across the world for some common courses.

The Indian Veterinary Educational Programmes have the capability to address and tackle number of issues and novel situations, including health, transboundary diseases, leadership, entrepreneurship, information technology, food safety and security, and stakeholders' expectations regarding programme accreditation, day-one competency, global recognition, and animal ethics and welfare. A long-term plan for recognizing veterinary qualifications globally is critically needed. The society expects all veterinarians to have graduated at the same quality and possess fundamental competence. These competences must allow the profession to provide the vast variety of knowledge and services necessary today and in the foreseeable future. Accreditating veterinary institutes and universities may help build a well-educated workforce, safeguard human and animal health, ensure educational quality, and promote continual progress. It will help in the quality of veterinary services is a societal concern, students' investment in education and professionally graduate competencies. Collaboration between veterinary colleges/institutes/universities, veterinary services, veterinary statuary bodies and associations, as well as support from national, regional, and global organizations is crucial for providing quality veterinary education and preparing veterinarians to address global challenges.

The concept of a Gurukul University around university campuses could be a great idea as self-sustaining, AtmaNirbhar Campuses that are committed to nurturing talent, cultivating ground-breaking science and technology innovations, and practicing the greatest levels of inclusivity and sustainability. While focusing on local needs, these campuses will also meet the global community's universal education and research goals. While living and learning in harmony with nature will be the hallmark of *Viksit Bharat*'s University Gurukuls, these Gurukuls will create their own energy, have effective rainwater harvesting and waste water treatment, recycle and reuse treated water, grow their own food, and maintain biodiversity and a clean air environment. These outstanding university Gurukuls in modern India would draw the brightest minds from around the world, transforming India, the Bharat, into a major hub for education and research for equitable growth and sustainability. Yoga, meditation, Ayurveda, Naturopathy, and Sattvik cuisine will be combined to nurture a healthy body, healthy mind, and a happy spirit. Healthcare would be redefined as wellness in these University Gurukuls. The university education would then, in a true sense, serve as the foundation for the students' holistic development and preparation for a joyous life in service to God Almighty and Mother Nature.

In the year 2047, India will commemorate its 100 years of freedom. As we envision a "ViksitBharat" - an advanced, developed and successful India, education will take the forefront. A system of education that empowers all Indians, fosters inclusive growth, and gets them ready because the 21st century's potential and difficulties are what we all need to imagine. India can offer its people the knowledge, skills, and values needed to build a really *Viksit Bharat*. It's a route that calls for unflinching dedication, teamwork, and a shared vision for a better future. We are aware that education is the cornerstone of building a just, egalitarian, and prosperous society rather than merely a means to achieve financial success. Let's celebrate 2047 not only with prosperous economies but also with educated citizens who are motivated to improve the world for themselves and coming generations. It is important to keep in mind that this route will entail not only community involvement, infrastructure development, private sector investment, and governmental improvements, but also a shared dedication to education as a lifetime goal and a foundation for national achievement.

Conclusion

Global knowledge production has a significant impact on national education systems, making no country immune. Knowledge is created at the national level but disseminated internationally. Indian education institutions must have a worldwide presence and engagement. Collaborating and sharing knowledge internationally enhances visibility and academic legitimacy. International cooperation offer potential to elevate Indian higher education in the global context, strengthening India's position in the global education sector. The majority of ideas about internationalizing higher education are revolving around international movement of students, initiatives, organizations, and faculty. However, internationalization encompasses more than just cross-border migration. In higher education,

around one percent of Indian student study abroad, while the majority study within the country. To ensure successful internationalization, it's crucial to prioritize students in Indian universities. India should prioritize both global and domestic internationalization efforts. Internationalization at home occurs through development of world class infrastructure and updating academic program in terms of curricular revisions, teaching methods, learning tactics, student evaluation, and socialization on campuses. The NEP 2020 aims to generate highly skilled and nationally rooted graduates from universities. New initiatives like GIAN and SPARC aim to promote internationalization at home through collaborations with foreign universities, curriculum revision, and producing graduates with international potential from Indian HEIs. Internationalization requires funding for institutions, facilities, and individual teachers and pupil. It is believed that education is the key to secure India's future, as it equips the next generation to build an inclusive, prosperous, and egalitarian country. India is ready to face the challenges of globalization in veterinary education, but it will take time to fully realize its potential. Despite significant obstacles, teaching and learning activities have been adapted to improve the quality of veterinary education. The path to *Viksit Bharat* starts with every student, teacher, and community taking a step forward, driven by the spirit of creation and illuminated by the light of knowledge. The possibilities are endless. India will become the world's developed nation by 2047, and in the course of this AmritKaal, we must elevate higher education and together embark on a variety of revolutionary reforms.

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Charting the Course: Strategic Navigation in Higher Education Marketing

Madhavi Garikaparthi*

Higher education stands at a crossroads, poised on the brink of transformative change driven by technological innovation, shifting demographics, and evolving student expectations. As institutions grapple with the complexities of a rapidly evolving educational landscape, the role of marketing and strategy has emerged as pivotal in shaping their future trajectory. In this article, we delve into the multifaceted challenges and opportunities facing higher education from a marketing and strategy perspective and explore strategies for institutions to thrive amidst unprecedented disruption and change.

The advent of digital technology has revolutionized the way education is delivered, consumed, and marketed. Online learning platforms, virtual classrooms, and interactive digital content have transformed the educational experience, blurring the boundaries between traditional and online modes of learning. Institutions must embrace digital transformation, leveraging technology to enhance student engagement, personalize learning experiences, and expand access to education beyond physical confines. From developing robust online infrastructure to crafting compelling digital marketing campaigns, institutions must harness the power of technology to remain competitive in an increasingly digital world.

In an era of heightened competition, market differentiation and brand positioning have become critical imperatives for higher education institutions. With students having a plethora of choices, institutions must articulate compelling value propositions and distinctive brand narratives that resonate with their target audience. Whether through academic excellence, innovative programmes , or unique campus culture, institutions must identify their core strengths and leverage them to differentiate themselves in a crowded marketplace. Effective branding and marketing strategies are essential for building brand equity, attracting top-tier students, and enhancing institutional reputation and competitiveness.

As student demographics evolve and expectations shift, institutions must adopt a student-centric approach to marketing and strategy. Today's students demand personalized learning experiences tailored to their interests, preferences, and career aspirations. Institutions must leverage data analytics and predictive modeling to understand student needs and behaviours, and develop targeted marketing campaigns and customized programmes that address their unique requirements. By placing students at the center of their marketing and strategic initiatives, institutions can enhance student satisfaction, retention, and success, and position themselves as trusted partners in students' educational journey.

The phenomenon of globalization presents both new avenues for growth and fresh hurdles for higher education institutions as they strive to broaden their impact and relevance within the global landscape. International collaboration, student mobility, and cross-border partnerships have become integral components of institutional strategy, offering opportunities for cultural exchange, knowledge sharing, and research collaboration. Institutions must develop comprehensive internationalization strategies, tailored to the unique needs and opportunities of diverse international markets. Whether through recruiting international students, establishing branch campuses, or forging strategic partnerships with foreign institutions, institutions must embrace globalization as a cornerstone of their marketing and strategic vision.

In an era marked by heightened social consciousness and ethical scrutiny, institutions must demonstrate a commitment to ethical leadership and social responsibility in their marketing and strategic endeavors. From sustainability initiatives to diversity and inclusion efforts, institutions must align their marketing messaging and strategic priorities with their values and principles. Transparent communication, ethical decision-making, and responsible stewardship of resources are essential for building trust and credibility with internal and external stakeholders.

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By upholding ethical standards and embracing social responsibility, institutions can foster a culture of integrity, trust, and accountability that resonates with students, faculty, and the broader community.

Challenges

With an increasing number of institutions vying for students' attention and limited resources, standing out in the marketplace and attracting top-tier students requires strategic differentiation, compelling branding, and targeted marketing efforts. At an equal stance, technology is constantly evolving, and institutions must invest in digital infrastructure, tools, and training to effectively leverage technology for marketing, recruitment, student engagement, and strategic decision-making.

Meeting the diverse needs and preferences of today's students requires institutions to develop innovative programmes , services, and delivery models that cater to a wide range of learning styles, schedules, and priorities. Limited funding for marketing and strategic initiatives can hinder institutions' ability to compete effectively in the marketplace, develop innovative programmes , and enhance brand visibility and reputation. Equally, rapid changes in the job market and industry landscape require institutions to regularly review and update their programmes . This helps to ensure that graduates are equipped with the skills, knowledge, and competencies needed to succeed in their chosen fields.

India has witnessed the enactment of data protection laws such as the Personal Data Protection Bill, which aims to regulate the processing of personal data and establish data protection obligations for organizations. Compliance with these regulations presents challenges for higher education institutions as they must ensure that their marketing and strategic initiatives adhere to the stringent data protection requirements to avoid legal repercussions and financial penalties. On the other hand, instances of academic misconduct, financial mismanagement, or ethical lapses can damage institutional reputation and erode public trust, highlighting the importance of ethical leadership, transparency, and accountability in marketing and strategic decision-making.

Changes in government policies, such as immigration restrictions or funding cuts, can have significant implications for higher education institutions, requiring strategic adaptation and contingency planning to mitigate risks and seize opportunities. In the event of a crisis, institutions must act swiftly and decisively to protect the safety and well-being of students, staff, and stakeholders, while also safeguarding institutional reputation and integrity. Institutions with long-standing traditions and legacies may face resistance to change, making it challenging to implement innovative marketing strategies, adopt new technologies, or revamp traditional academic programmes . Finding the right balance between tradition and innovation is essential for institutions to remain relevant and competitive in a rapidly changing higher education landscape.

Opportunities

By identifying their core strengths, values, and competitive advantages, institutions can craft compelling brand narratives that resonate with their target audience, attract top-tier students, and enhance institutional reputation and visibility. Institutions can harness the power of social media, Search Engine Optimization (SEO), content marketing, and email campaigns to enhance brand awareness, drive website traffic, and generate leads. By investing in digital marketing strategies, institutions can expand their reach, target specific demographics, and increase enrolment and retention rates.

By understanding the demographics, motivations, and aspirations of their student population, institutions can tailor academic programmes , extracurricular activities, and support services to meet their evolving needs. Offering personalized learning experiences, experiential learning opportunities, and student-focused amenities can enhance student satisfaction, engagement, and success. Institutions can capitalize on the growing demand for international education by attracting a diverse student body, fostering cross-cultural exchange, and establishing partnerships with foreign universities and organizations. By embracing internationalization as a strategic priority, institutions can enhance their global reputation, competitiveness, and impact.

Collaborative initiatives, such as research partnerships, corporate sponsorships, and community outreach programmes , can provide opportunities for knowledge exchange, resource sharing, and mutual benefit. By aligning with strategic partners that share their values and goals, institutions can amplify their impact, expand their reach, and create value for stakeholders. Institutions can differentiate themselves

by offering cutting-edge programmes in emerging fields such as artificial intelligence, sustainability, data science, and entrepreneurship. By staying ahead of the curve and anticipating future trends, institutions can attract high-caliber students, faculty, and researchers, and position themselves as leaders in innovation and thought leadership.

By leveraging data analytics to track student demographics, behaviours, and outcomes, institutions can gain insights into enrolment trends, retention rates, and academic performance. Data-driven decision-making can enable institutions to identify areas for improvement, allocate resources more effectively, and tailor their marketing and strategic initiatives to meet the needs of their stakeholders. Institutions can engage their community through events, forums, and social media platforms, fostering a sense of belonging and loyalty among their stakeholders. By empowering brand advocates to share their positive experiences and stories, institutions can amplify their message, attract prospective students, and strengthen their reputation and influence.

Conclusion

In navigating the future of higher education from a marketing and strategy perspective, institutions are confronted with a myriad of challenges and opportunities that underscore the dynamic and evolving nature of the industry. From intense competition and changing student demographics to rapid technological advancements and ethical considerations, the path forward requires a strategic approach that embraces innovation, fosters collaboration, and upholds institutional values and integrity.

Despite the challenges posed by budget constraints, regulatory changes, and socio-political uncertainty, higher education institutions have an array of opportunities at their disposal to differentiate themselves, enhance their brand visibility, and achieve their strategic objectives. By leveraging digital marketing channels, developing student-centric programmes , and forging strategic partnerships, institutions can enhance their competitiveness, attract top-tier students, and foster a culture of innovation and excellence.

Moreover, in a globalized world, institutions must embrace internationalization, diversity, and inclusion as integral components of their marketing and strategic vision. By fostering cross-cultural exchange, expanding global engagement initiatives, and championing diversity and equity, institutions can enhance their global reputation, enrich the educational experience, and cultivate a diverse and inclusive campus community.

At the heart of successful marketing and strategic initiatives lies a commitment to ethical leadership, transparency, and accountability. Institutions must uphold ethical standards, maintain integrity in their marketing practices, and respond effectively to crises and reputational challenges. By prioritizing ethical considerations and building trust with stakeholders, institutions can safeguard their reputation, inspire confidence, and create lasting value for students, faculty, staff, and the broader community.

In conclusion, the future of higher education from a marketing and strategy perspective is one characterized by both challenges and opportunities, where innovation, collaboration, and ethical leadership serve as guiding principles in navigating the complexities of an ever-changing landscape. By embracing change, fostering strategic partnerships, and staying true to their mission and values, higher education institutions can chart a course toward a brighter, more inclusive, and impactful future, where education remains a transformative force for individuals, communities, and societies alike.

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Internationalisation of Higher Education: An Elusive Goal to be Achieved

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India has a rich legacy of internationalizing higher education. This is evident from the famous ancient Indian universities such as Takshashila, Nalanda, Vikramshila, Vallabhi, Ujjain, and Kanchi etc. that set the highest standards of multidisciplinary teaching and research. These renowned institutions enjoyed global recognition and drew scholars from different parts of the world. To maintain this glorious legacy, National Education Policy 2020 (NEP 2020) strongly advocates internationalization of the country's higher education by its own strength. For which, NEP 2020 recommends to introduce 'courses and programmes in subjects, such as Indology, Indian languages, AYUSH systems of medicine, yoga, arts, music, history, culture, and modern India, internationally relevant curricula in the sciences, social science, and beyond, meaningful opportunities for social engagement, quality residential facilities and on-campus support, etc. (NEP 2020, p. 39). It is expected that these steps would be strengthened to attain this goal of global quality standards, attract greater numbers of international students, and achieve the goal of 'internationalization at home' (NEP 2020, p. 39). Through this process, it is visualised that our country would be the global study destination for premium education at affordable costs and India will restore its ancient role as a *Vishwa Guru*.

In achieving this elusive goal, a concerted effort at both national and institutional levels are essential. To materialize this vision, the University Grants Commission (UGC) has issued the 'Guidelines for Internationalization of Higher Education' to serve as a roadmap for Higher Education Institutions (HEIs). These guidelines recommend for various initiatives, including the development of internationally relevant curricula, strengthen the global reputation of Indian HEIs, promote academic and research collaborations with foreign universities, facilitating credit recognition through twinning arrangements, embracing a global citizenship approach, and actively engaging with foreign alumni networks. Through the effective implementation of these guidelines, Indian HEIs can grab opportunities to expand their global outreach and nurture a diverse and inclusive educational environment.

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Present Scenario

India has emerged as the second-largest higher education system globally, boasting over 38 million students across approximately 50,000 academic institutions, including 1,100 universities. Over the past decade, India has made significant progress in enhancing its position in the World University Rankings. In the QS World University Rankings for 2023, Indian universities secured a total of 355 entries, marking an impressive 18.7% increase compared to the preceding year (*The New Indian Express, 28 Jul 2023*). Despite this progress, India's representation in international rankings still holds significant potential for further enhancement. On the other hand, the trend of Indian students seeking educational opportunities abroad emphasises the importance of expanding internationalisation efforts within the country. In 2022 alone, an estimated 750,000 students ventured overseas to pursue higher education, signaling an exponential desire for global exposure and quality education. On the contrary, according to the AISHE Final Report 2021-22, the total number of foreign students enrolled in higher education during 2021-22 is 46,878. The foreign students have come from 170 different countries. The highest share of foreign students was from Nepal (28%), followed by Afghanistan (6.7%), United States (6.2%), Bangladesh (5.6%), UAE (4.9%), and Bhutan (3.3%). The highest number of foreign students were enrolled in Undergraduate courses, (74.8%) followed by Post Graduate courses (15.8%).

The Ministry of Education, Government of India launched the 'Study in India' portal on the 18th of April, 2018. This portal functions through a centralised online portal that serves as a comprehensive resource for international students, offering information on programmes offered by Indian universities. This initiative aims to streamline

the process for international students, helping them choose institutes and courses that align with their goals. To address the issue of brain drain, the Ministry of Education has facilitated the establishment of foreign universities in India. In collaboration with renowned institutions, the Government is trying to provide students with world-class education opportunities at the country.

Recent developments, such as IITs establishing campuses abroad, further expand the reach of Indian higher education. These ventures not only promote educational excellence but also facilitate cultural exchange and knowledge sharing on a global scale. The Indian Institute of Technology Madras (IIT Madras), has become the first IIT in the country to launch an international campus, which is coming up in Zanzibar-Tanzania.

Transformation Drives in Indian Higher Education

Indian Knowledge System (IKS)

The NEP 2020 emphasises integrating Indian Knowledge System (IKS) into all levels of education, including higher education. IKS comprises advanced disciplines developed in India over centuries and encompasses traditions from various communities, including tribal ones. In March, 2023 UGC issued a guideline for incorporating Indian Knowledge in higher education curricula with the following recommendations (UGC Official Website):

- Research on IKS is mandated for all higher education institutions.
- IKS should be integrated into school, college, and higher education curricula.
- Guidelines are provided for incorporating IKS into undergraduate and postgraduate programmes , aiming for a comprehensive understanding while allowing flexibility to adapt to diverse fields of study.
- Students should be encouraged to take credit courses in IKS, with a minimum of five percent of total mandated credits.
- At least 50% of IKS credits should relate to the student's major discipline.
- Course materials should be based on authentic sources and highlight continuity and distinctive features of Indian Knowledge Traditions.
- Contemporary applications of IKS should be explored where possible.
- The medium of instruction for IKS courses can include Indian languages approved for higher education, besides English and Sanskrit.
- Technical terms and citations from Sanskrit sources should be provided in Devanagari script and English transliteration in English course materials.

Develop Multidisciplinary Institutions

The UGC released guidelines in September 2022 aimed at transforming HEIs into multidisciplinary entities, drawing from ancient Indian traditions like those seen in Nalanda and Takshashila. The NEP 2020 emphasises multidisciplinary education to develop various dimensions of individuals and raise India's global standing in knowledge. NEP 2020 recommends establishing large multidisciplinary HEIs in or near every district by 2030. However, India's current HEIs often lack interdisciplinary exploration due to rigid disciplinary boundaries. The NEP 2020 suggests transforming HEIs into multidisciplinary universities, colleges, and clusters to address this issue. It outlines objectives to transform single-stream institutions, strengthen infrastructure, and promote collaboration.

UGC recommends different approaches for establishing Multidisciplinary Higher Education Institutions:

- ***Encourage Academic Collaboration*:** Foster collaboration among academic institutions by forming Higher Education Institution (HEI) clusters, fostering multidisciplinary education and research in various formats.
- ***Consolidate through Mergers:*** Consolidate single-stream institutions by merging them with other multidisciplinary institutions, whether under the same management or different managements, to enhance synergy and resources.
- ***Expand Disciplinary Sphere*:** Enhance the capacity of institutions by introducing additional departments in diverse fields such as Languages, Literature, Music, Philosophy, Indology, Art, Dance, Theatre, Education, Mathematics, Statistics, Pure and Applied Sciences, Sociology, Economics, Sports, Translation and Interpretation,

and other relevant subjects necessary for a comprehensive multidisciplinary institution.

Guidelines for the Internationalisation of Higher Education

UGC issued guidelines for the internationalisation of higher education in July 2021. The following major initiatives have been suggested by the UGC guidelines for the internationalisation of the Indian higher education.

Internationalisation at Home in Indian Higher Education

The main point of the UGC guidelines is the concept of "Internationalisation at Home," which requires ingrained international dimensions into the learning environment domestically. In this approach, HEIs must balance global perspectives with Indian contextual needs. In this respect, key elements need to be addressed such as capacity building, promoting collaborative communication between Indian and international faculty, integrating international dimensions into curricula across disciplines, particularly in STEM (science, technology, engineering and mathematics) fields, and providing internships and apprenticeships to attract foreign students. Further, HEIs should provide good-quality residential facilities and on-campus support services for international students, facilitating their social and academic integration. Measures such as assigning mentors, offering local language courses, and fostering connections with local communities are vital. Furthermore, HEIs should offer short-term niche courses on Yoga, Philosophy, Ayurveda, Health, Sanskrit and Vaastushastra etc. to demonstrate core competencies and incorporate global literacy into the curriculum. Finally, quality assurance processes for HEIs are essential for ensuring teaching and learning excellence, community engagement, and student satisfaction.

Credit Recognition under Twinning Arrangement

Under the twinning arrangement, Indian students are registered at a local higher education institution while undertaking a portion of their coursework at a partnered institution in another country, adhering to respective national regulations. However, the conferred degree in a Twinning arrangement remains the sole prerogative of the Indian Higher Education Institution.

The Twinning program aims for the comprehensive development of learners through cultural exchanges and encouraging social cohesion. Participation in the Twinning program facilitates exposure to global best practices, teaching methodologies, and learning approaches, enhancing the capacity of our institutions and aiding students in making informed career decisions. Encouragement is given for Indian Higher Education Institutions to offer degree programmes through Twinning arrangements.

Internationalisation through ICT

The rapid advancement of Information and Communication Technology (ICT) has revolutionized higher education, opening up new avenues for internationalization. ICT's borderless nature has the potential to transform traditional barriers, offering new educational opportunities and flexible approaches. HEIs are motivated to revitalise their systems through various measures. Some of the measures may be offering MOOCs/online courses, upgrading infrastructure to a global standard with ICT, online admission provisions for foreign students using ICT, using ICT for data collection and analysis to understand the preferences and needs of foreign students, establishing virtual partnerships with foreign experts through workshops and webinars, providing virtual mobility experiences for students through e-conferences and workshops with foreign universities and exploring pedagogical opportunities of ICT in internationalization efforts, etc.

Academic and Research Collaboration

The world has been facing various interconnected problems such as food security, energy security, and infectious diseases. To tackle these problems through research, collaboration among top universities is essential. This collaboration not only facilitates the identification of root causes and addresses concerns but also accelerates institutional progress and enhances the quality of education. HEIs are urged to engage in collaborative activities while adhering to relevant norms and regulations. These activities include various initiatives:

- HEIs should promote short-duration visits to reputable international universities, encouraging cultural exchange and academic enrichment.
- Implementing twinning arrangements facilitates semester-long academic exchanges, broadening students' perspectives and academic experiences.
- Encouraging faculty members to participate in

exchange programmes and short-term projects at foreign universities encourages knowledge exchange and professional development.

- Organizing joint workshops, seminars, and conferences with international universities promotes interdisciplinary collaboration and knowledge sharing.
- HEIs should expand partnerships with international institutions, pooling resources and expertise to tackle global challenges collaboratively.
- Forming networks of individual researchers facilitates knowledge exchange, resource sharing, and two-way communication, facilitating collaborative research efforts.
- Collaboration with alumni from foreign universities, both students and faculty, enhances academic and research activities through networking and shared expertise.
- Creating chairs abroad in honour of eminent Indian scientists, scholars, and philosophers strengthens institutional ties and promotes academic excellence on a global scale.

Brand Building

The brand-building initiative is imperative for HEIs to strengthen their global reputation and appeal to international students. This effort encompasses diverse communication channels, including social media, to effectively engage with prospective students. Institutions are urged to prioritize brand development to enhance India's attractiveness as a preferred destination for education and to highlight the unique strengths of their establishments.

Alumni Connect

An Alumni network always serves as a pillar for any Higher Education Institution. Through an active Alumni Association, institutions can gather support in academic affairs, student welfare, and resource mobilization, be it financial or otherwise. Alumni engagements promote the opportunity for the institution to leverage their expertise as advocates, showcasing the strengths of the Indian Higher Education system. Both local and international Alumni play vital roles in enhancing the global reputation of Indian Higher Education and positioning India as a premier study destination. Indian Higher Education Institutions must foster a culture of Alumni engagement, establish effective platforms for brand promotion, and acknowledge their invaluable contributions. The initiative "Alumni Connect" encourages Indian HEIs to actively involve Alumni, irrespective of their geographical location, in advancing the institution's objectives.

Establishing Office for International Affairs

Each institution will establish an Office for International Affairs that helps to implement the effective strategies and initiatives mentioned in these guidelines. This office will play a crucial role in advancing the internationalization of higher education in India.

Summation

Internationalisation of HEIs is perhaps the need of the hour for our country. In the globalised business environment and NEP 2020 context, several educational institutions like IITs, IIMs and some premier Indian Universities are gradually occupying positions in the best 200/500 educational institutions in the world. However, it will not be an easy task for every institution in the country to prepare for internationalisation. To start with, institutions that have been accredited A++ or A+ by NAAC can make planned efforts to join this movement and it will be perhaps relatively easy for them. Whatever it may be, any institution within the country wishes to enter into this internationalisation movement have to understand that why a student or his/her parents agree to send their children for higher education abroad. Usually, students or their parents interested in going abroad for higher education choose an institution based on its physical facility, academic environment prevailing in those institutions, public image and goodwill and image in the global market. In fact, creation of these physical infrastructures like academic and administrative buildings with state of art including hostels for boys and girls, residential facilities for employees and faculty, playground, gymnasiums, swimming pool, laboratories, health centres, auditoriums and canteens and places for recreation etc. requires huge space, heavy investment and sufficient time. Simultaneously, there should be proper manpower (both teaching and non-teaching) acquisition development so that they can give their best at par or better than their counterparts abroad to develop confidence in the stakeholders. In addition to physical infrastructure and trained experienced exposed competent manpower, there

should be deployment of advanced IT infrastructure to enable each one inside the campus to connect anytime anywhere in the world easily for anything. To achieve all the above, every organization should take the support and consultancy services of the best available educational consultants, both from India & abroad depending upon the magnitude of internationalisation the organization is going to undertake. Above all, to manage everything and to develop and nurture an international educational institution, there should be the selection of the best leader as Vice Chancellor/ Director or whatever the position may be designated to lead the system. In fact, the leader of the institution will play a key role in internationalisation process. The leader has to create a healthy organizational culture and favourable academic climate for which the right people should be selected for the right position with the right compensation and incentive. In fact, for the best individual high compensation or any consideration should not be detrimental consideration. The success of internationalization depends on quality people who are to be hired for quality output in terms of research, publication and teaching. Moreover, there should not be any reservation for investment nor there should be a concern for quick return or investment. Thus, to conclude to make internationalisation a reality, organisations should develop a clear-cut plan in terms of everything. It should be an integral part of their vision and mission and everyone starting from the top to bottom should understand this vision and mission and have to understand what is their role and responsibility towards this and if are committed to it, internationalization of higher education in the country will be a reality.

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(Set of Four Volumes): (ISBN 81-7520-164-9)

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Higher Education@2047: First Step towards Internationalizing Higher Education Using a Holistic Approach

Anil P Agarwal*

The world population review suggests that Indian population on March 03, 2023, stood at 1.428 billion against China's 1.425 billion and United States at 339 million people. In 2047, India's population is estimated at 1.66 billion.

Based on population pyramids of the world in 2023 (see below), more than 42.6% of India's population is below the age of 24 (608 million) and more than 59.3% (846+ million) below the age of 34.

Assuming the same demographic percentages, the population below the age of 24 will be 608 million (in 2023) vs. 707 million (in 2047) and below the age of 34 it will be 864 million (in 2023) vs. 984 million (in 2047).

Global Manpower Supplier

India's staggering youth population below the age of 34 at 864 million (in 2023) and 984 million (in 2047) is seen to be a significant contributor to the global workforce. Indian government is looking for ways to capitalize this labor force in India and is inspiring Indian diaspora living outside India in several countries including United States, United Kingdom, and Canada, to participate in government's initiatives to help. The government is taking steps to attract foreign investment and companies to set up operations in India to improve domestic employment. In a new geo-political power balancing act between United States and China, the Indian government's "Make in India" initiative is yet another step aimed at promoting the manufacturing sector within India with an eye on western countries to relocate their operations from China to India. The government's "e- migrate" portal is another initiative to facilitate the registration and recruitment of Indian worker for overseas employment.

India's population presents challenges and opportunities for the next several decades (Fig-1). While it may be difficult to predict what future may hold for Indian youth, Indian government is left with no choice but to invest in education, employment, and democratic institutions to harness the potential of its young population (Fig-2). When done correctly, India's young population is expected to be a source of strength for the country.

Indian National Education Policy (NEP), 2020

"All education in a country has got to be demonstrably in promotion of the progress of the country in which it is given" (Mahatma Gandhi) India's National Education Policy (NEP) 2020 is such an effort to boost its education system. Policy makers responsible for education system are forced to reimagine Indian education system for the coming several decades.

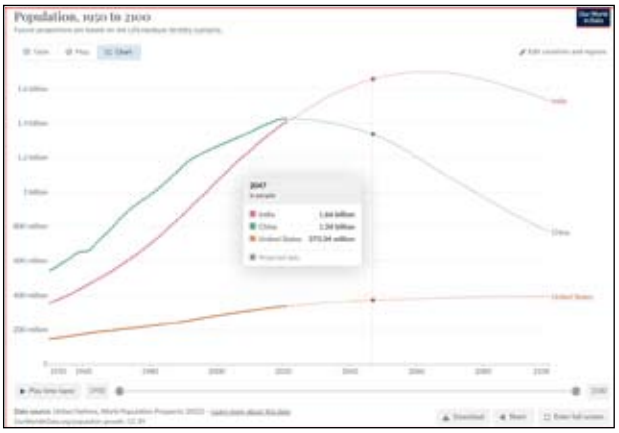
India's Ministry of Education (MoE) recognizes the importance of higher education for its youth to be globally competitive and is taking steps to prepare them to join the global work force. The issuance of NEP 2020 policy is one such effort to revamp India's fragmented and obsolete education system. Its primary focus is to raise the academic level of India's teachers and students to par with the rest of the world.

The Policy recommends and mandates provisions to be implemented by All Indian Higher Education Institutions (HEIs) to achieve this critical global goal for India's faculty and students. One such provision that supports this goal is 'Internationalizing Higher Education'.

An ambitious vision of NEP–2020 policy promotes collaborations (aka memorandum of understanding "MoU") between the top universities of India and the foreign countries. Keeping the complexities of such MoU and the bureaucracies of Institutions in mind, a MoU usually takes a long time to materialize, and often it is partially implemented or never at all. Universities carry a bureaucratic burden that tends to drain excessive resources, slow the process, and risk the diffusion of enthusiasm and interest over time. Additionally, the MoUs are limited to top universities who either enjoy top academic ranking or have the budget needed to implement these MoUs. Most of the other universities with either low academic ranking or un-sufficient budgets are excluded.

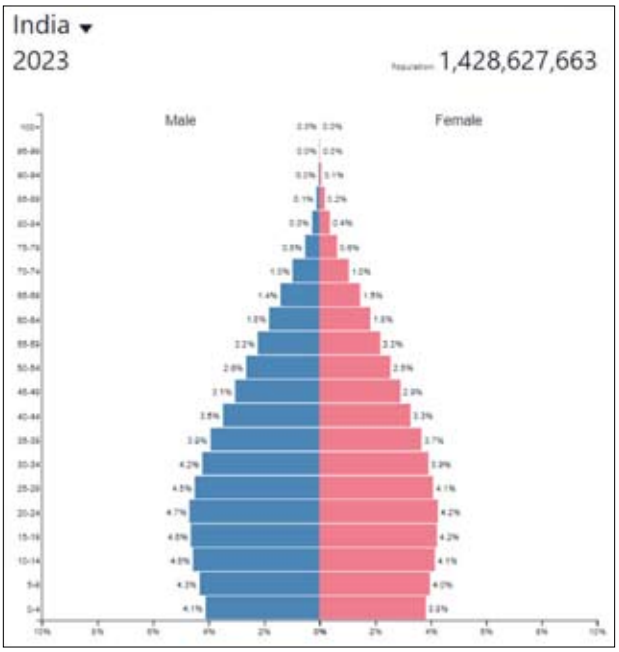
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Fig-1: Population Projections



[Source: Our World in Data, Population 1950 to 2100]

Fig-2: India Population Pyramid



[Source: https://www.populationpyramid.net/India/2023]

University Grant Commission (UGC) Guidelines – Window of an Opportunity using 'Holistic Approach'

The UGC guidelines pave the way to a small window of opportunity for Indian diaspora and Indian institutions to work together to achieve higher standards of quality of education in India to equal or surpass the international quality of higher education by 2023. The direct approach eliminates the circus between the two bureaucratic institutions, is termed a 'holistic approach', needs the least amount of budget commitment, and is remarkably simple to implement. All it requires is a simple bridge between institutions in India and competent international academic talent (i.e., world-class retired faculty, Alumni, tenured or non-tenured faculty) using the "adjunct" or "visiting" model, thereby, simplifying the process of agreement and resolving the issue of availability without getting their institutions involved at the outset. This holistic approach kicks start the 'Internationalizing Higher Education' initiative with the first international academic talent lecturing a course at the very first hour without any need for complex MoU upfront.

Revolutionizing Indian Higher Education: Association of Indian Universities (AIU), Edify Online, and Noodle Forge Global Academic Ecosystem

Explore the ground breaking collaboration between AIU, Edify Online, and Noodle that aims to elevate the quality of online education across AIU's 992 member universities in India, fostering global academic exchange and innovation.

The Association of Indian Universities (AIU), in a landmark collaboration with EdifyOnline and Noodle, is set to transform India's higher education landscape. By harnessing global academic talents and introducing a "shared HEIs ecosystem", this initiative aims to elevate the quality of online course offerings across 992 AIU member universities. Here's a closer look at how this partnership is poised to reshape the educational experience for countless students and faculties alike.

Empowering Global Academic Exchange

At the heart of this collaboration are two leading platforms one of Edify Online enabling search and match of international academic talent from around the world and another from Noodle Learning Platform (NLP), a customizable, LMS-agnostic platform designed to facilitate seamless online education. Through this partnership, AIU member universities will gain access to a vast pool of internationally qualified academics, enabling the exchange of knowledge and pedagogical strategies at sustainable costs. This initiative not only aims to enhance the quality of education available to Indian students but also opens avenues for Indian faculties to contribute to international HEIs in the future.

Revolutionizing Indian Higher Education: AIU, EdifyOnline, and Noodle Forge Global Academic Ecosystem



Fostering Knowledge and Innovation

The collaboration aligns with the National Education Policy 2020's emphasis on centering education around teachers and students, thereby fostering a knowledge enterprise. By creating a shared ecosystem, the partners aim to improve awareness of global education standards, professional development opportunities, and innovative teaching methodologies. This ecosystem is envisioned to be a holistic, sustainable, and affordable model for advancing higher education, driving both knowledge exchange and innovation.

Setting the Stage for Advanced Research and International Exposure

One of the initiative's key components is the pilot study on University Clusters in India, aimed at providing students with international exposure and sparking advanced research in higher education. This study is expected to catalyze the development of innovative ideas and processes, thereby contributing to the broader goals of educational excellence and global competitiveness. The success of this initiative could set a precedent for similar collaborations worldwide, emphasizing the importance of shared resources and collective efforts in the pursuit of educational advancements.

Conclusion

As AIU, EdifyOnline, and Noodle embark on this ambitious journey, the potential implications for the global educational landscape are profound. By creating an inclusive and accessible platform for quality education and research, this partnership could significantly contribute to the democratization of knowledge and the fostering of a global academic community. The success of this initiative may well redefine the parameters of higher education, making it more responsive to the needs of a rapidly changing world. ❑

Higher Education@2047: Future of Work and Skill Development and the Impact of Artificial Intelligence

Nirmaljeet Singh Kalsi*

India is at a pivotal juncture in its history, with the potential to shape the 21st century as its own. The nation is progressing confidently into the future, with projections indicating it could become the third-largest by 2027. The Government of India has set forth an ambitious vision for the country to become a developed nation by 2047, initiating the Vikasit Bharat@2047 program. To achieve this vision, it is imperative that reforms in higher education as well as vocational education, training and skilling (VETS) are aligned with the necessary policy frameworks, resources, technical expertise, and capabilities, for integrating skilling into education at every level and ensuring that these ambitious plans are not only supported but also successfully realized.

India's education system and values are deeply entrenched in the rich history and culture of its ancient civilization. The educational models of historic institutions like Takshila University (1000 BCE), Nalanda (500-1200 CE), Vallabhi (600-1200 CE), and Vikramshila (800-1193 CE) were predominantly learner-centric, emphasizing multidisciplinary education. This education covered a wide array of subjects, including ancient scriptures, law, medicine, astronomy, military science, and the eighteen arts (silpas). The principles of multidisciplinarity, flexible curricular structures, student-centered learning, and lifelong education were inherent in our ancestral educational and cultural frameworks.

Recently, there has been a noticeable shift in contemporary educational philosophy globally, emphasizing the holistic development of individuals through flexible models and curricular structures. In India, this shift is embodied in the National Education Policy (NEP) 2020, which represents a transformative approach designed to meet the current demands of the country's education system.

The National Education Policy (NEP) 2020, approved and notified by the Union Cabinet of India on 29th July, 2020 under the leadership of Prime Minister Shri Narendra Modi, focuses on creating a more flexible, progressive, and inclusive educational framework. This policy aligns with the aspirations and objectives of 21st-century education, integrating the sustainable development goals of the 2030 agenda. Marking a significant shift from the previous National Policy on Education (NPE) established in 1986, NEP 2020 is the first education policy of its kind in the 21st century, delineating the future direction of the nation's education system.

While the National Policy on Education (NPE) 1986 was forward-thinking, it did not adequately address the rapidly evolving educational needs, particularly in terms of employment opportunities and technology use. Key elements such as strengthening foundational learning, a holistic approach to education, teacher training, and the integration of different educational streams needed greater emphasis. An attempt to revise the education policy in 1992 did not achieve the desired outcome of aligning with the global landscape and the aspirational goals of the 21st century. The resulting gap between existing learning outcomes and the necessary advancements called for a transformation in the education ecosystem. The National Education Policy (NEP) 2020 emerged as a policy focused on using education as a means to achieve mobility, inclusion, and equality.

NEP 2020: A Holistic Approach to Learning

The National Education Policy (NEP) 2020 is a landmark policy aimed at transforming the education landscape in India. The NEP- 2020 envisions a progressive, flexible, and inclusive educational landscape that equips students with skills to thrive in a rapidly evolving world, thereby exerting a positive influence on the nation's future by producing a more educated populace. Central to NEP 2020 is the amalgamation of general (academic) and vocational education, reflecting the policy's goal to foster a unified and effective educational approach.

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To reform both mainstream academic, Technical as well as Vocational Education and Training (TVET) in India, the National Education Policy- 2020 has prioritized creating a learning environment that is more '*experiential, holistic, integrated, inquiry-driven, discovery-oriented, learner-centered, discussion-based, and flexible'*.

Drawing lessons from the shortcomings of the National Policy on Education (NPE) 1986, the revised National Education Policy (NEP) 2020 aims to address several systemic issues in education. These include the prevalence of rote learning, inflexible curricula, neglect of early childhood education, insufficient vocational education integration, underutilization of technology, language policy issues, inadequate teacher training, an exam-centric evaluation system, inequality, lack of inclusivity, and a limited global outlook. NEP 2020 champions holistic and multidisciplinary learning as core principles, fostering interdisciplinary and integrated education. This change is intended to cultivate a comprehensive skill set in students, encouraging them to engage with a broad spectrum of disciplines beyond traditional academic pursuits.

NEP – Equipping Students with Skills

In the traditional '*Gurukulas*' of Indian education, students or learners had the liberty to choose from various arts ('*kalas'*) or disciplines ('*vidyas'*) based on their abilities and interests. Ancient texts uniquely mention Lord Krishna, who is said to have mastered all these arts within just 64 days. These skills were acquired through hands-on training and interactive practice, laying the groundwork for livelihood skills. Thus, skill integration has been a fundamental aspect of the Indian Education System. The National Education Policy (NEP) revives this concept, adapting it to the demands of the modern world by facilitating the integration of vocational education and skilling throughout a learner's educational journey.

NEP also tries to address the issue of lack of aspirational value as well as the social status hierarchy associated with the term vocational education or Skills. The NEP places utmost value in holistic education which is not limited to classroom education but accounts for all kinds of learning and promotes integration of vocational education, training, and skilling in school and higher education. The NEP 2020, therefore aims to equip the learners/ students with different types of necessary skills and life skills through improved curriculum, industry exposure, and inculcating a culture of innovation and entrepreneurship to enable them to thrive better in the market.

Future of Work and Skill Development

In the rapidly evolving job market of India, numerous fields of study and skill sets are becoming crucial for nurturing future talent. These fields span a broad spectrum, mirroring the varied demands of industries and the swift progress in technology. Key areas of importance include Artificial Intelligence (AI), Advanced Machine Learning (ML), Data Science, Internet of Things (IoT), Blockchain, Cybersecurity, and Data Privacy.

Additionally, sectors like Green Energy, Edge Computing, Quantum Computing, Semiconductors, and the Value Chain in Electronics Design and Manufacturing are emerging as vital for the development of future talent. Concentrating on these essential fields for study and skill enhancement will prepare India's future talent to fulfill the dynamic requirements of industries, fostering innovation, sustainability, and economic expansion.

Predicting the precise landscape of work and skill development in higher education by 2047 presents challenges due to the fast pace of technological and societal transformations. However, based on current trends and the advent of new technologies, we can anticipate several potential developments and directions.

- ***Personalized Learning Paths:*** Higher education institutions are increasingly leveraging advanced data analytics and AI to create personalized learning experiences for students. This includes adaptive learning platforms that customize coursework, assessments, and support services to match individual learning preferences, interests, and career aspirations.
- ***Interdisciplinary Curriculum***: The lines between traditional academic disciplines are becoming increasingly blurred, leading to more interdisciplinary programmes and courses. This shift allows students to engage with a variety of fields, enhancing their skills and knowledge across areas like computer science and ethics or environmental studies and data science.
- ***Experiential Learning and Work-integrated Education:*** There is a growing focus on providing

students with experiential learning opportunities, such as internships, cooperative education, and project-based learning. These experiences equip students with practical skills, industry connections, and applicable knowledge for the workforce.

- ***Continuous Skill Development***: Lifelong learning is becoming a key component of higher education, offering students continuous opportunities to gain new skills and qualifications throughout their careers. Trends like micro-credentialing, online courses, and competency-based assessments are gaining traction, enabling ongoing skill updates to meet changing industry needs.
- ***Emphasis on Soft Skills:*** Beyond technical abilities, the importance of soft skills like creativity, emotional intelligence, adaptability, and cultural awareness is gaining recognition. Educational programmes are increasingly incorporating these skills through methods like project-based learning, teamwork exercises, and leadership training.
- ***Global Collaboration and Virtual Learning Environments:*** Technological advancements in VR and AR are enabling immersive, global collaborations, allowing students and faculty worldwide to interact in virtual learning spaces. These environments offer realistic simulations, cross-cultural interactions, and access to specialized global expertise.
- ***Ethical and Social Responsibility Education:*** With technology profoundly influencing society, higher education is placing a premium on teaching ethical considerations, social responsibility, and the broader impacts of new technologies. Curricula are integrating topics like digital ethics, environmental sustainability, and social justice.
- ***Reskilling and Upskilling for Workforce Transitions:*** Higher education institutions are increasingly vital in helping individuals reskill and upskill for new career paths, especially in response to automation and changing job markets. Flexible and competency-based education programmes are aiding workers in transitioning to sectors with rising demand, such as renewable energy, healthcare, and cybersecurity.

Impact of Artificial Intelligence on the Future of Work and the Way Forward

Artificial Intelligence (AI) is proving to be a game-changer, transforming industry landscapes and altering the essence of work. In the digital era, the adoption of AI technologies in various aspects of business and everyday life is becoming a norm, significantly affecting the future workforce and the skill set required to excel in this changing context.

AI technologies, including machine learning, natural language processing, robotics, and automation, are set to streamline operations, enhance efficiency, and foster innovation. However, this technological shift brings challenges, notably in terms of potential job displacement, changing skill demands, and the necessity for ongoing skill development.

The character of work is experiencing a fundamental change, with automation taking over routine and monotonous tasks. This shift, while boosting productivity, demands a transformation in the workforce's skills. The market is increasingly valuing individuals who not only have technical expertise in AI and related fields but also demonstrate adaptability, critical thinking, and creative problem-solving abilities.

Introduction to the National Programme on AI Skilling Framework

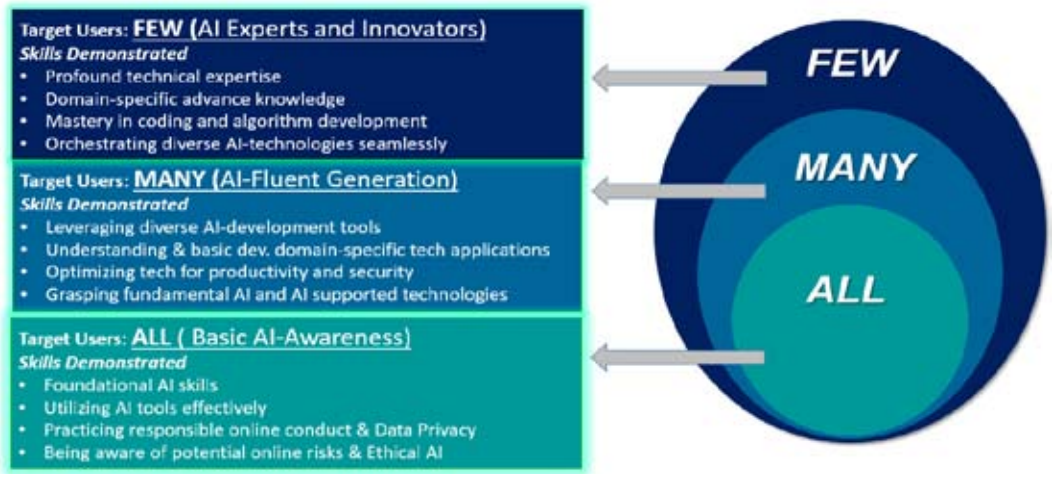
In the context of the changing nature of work, the National Programme on AI (NPAI) Skilling Framework, spearheaded by the National Council for Vocational Education and Training (NCVET) under the Ministry of Skill Development and Entrepreneurship (MSDE), represents a forward-thinking initiative aimed at providing India with the necessary skills in Artificial Intelligence (AI), including cutting-edge technologies like Generative AI. This framework highlights the critical role of skill development in adapting to the dynamic AI landscape.

The National Programme on AI Skilling Framework is a strategic response to the challenges and opportunities AI introduces to the workforce. It transcends conventional skilling programmes by tackling the complexities of AI literacy, digital fluency, and expertise. Exploring the significant effects of this framework on the future of work and skilling, it is crucial to understand its place within the larger discourse on AI's impact on the workforce and the urgent need for targeted skilling efforts.

A Three-tier Skilling Approach

The framework intelligently categorizes AI skilling into three tiers— 'For All', focusing on basic

Fig-1: Three Categories of AI Skilling



digital literacy; 'For Many', catering to AI-empowered individuals seeking digital fluency; and 'For Few', targeting AI-skilled professionals with digital mastery (Fig-1). This approach ensures a nuanced response to diverse skilling needs, acknowledging the varied roles within the AI ecosystem.

In the context of the impact on the future workforce and skilling, this stratified approach holds significant implications (Fig-2).

a. ***Inclusivity and Accessibility:*** The tiered strategy promotes inclusivity by catering to the basic digital literacy needs across the population, labeled 'For All'. This foundational level aims to provide individuals with essential skills for navigating AI interfaces effectively. Beginning at the grassroots, this approach establishes a foundation for a workforce well-versed in digital technology.

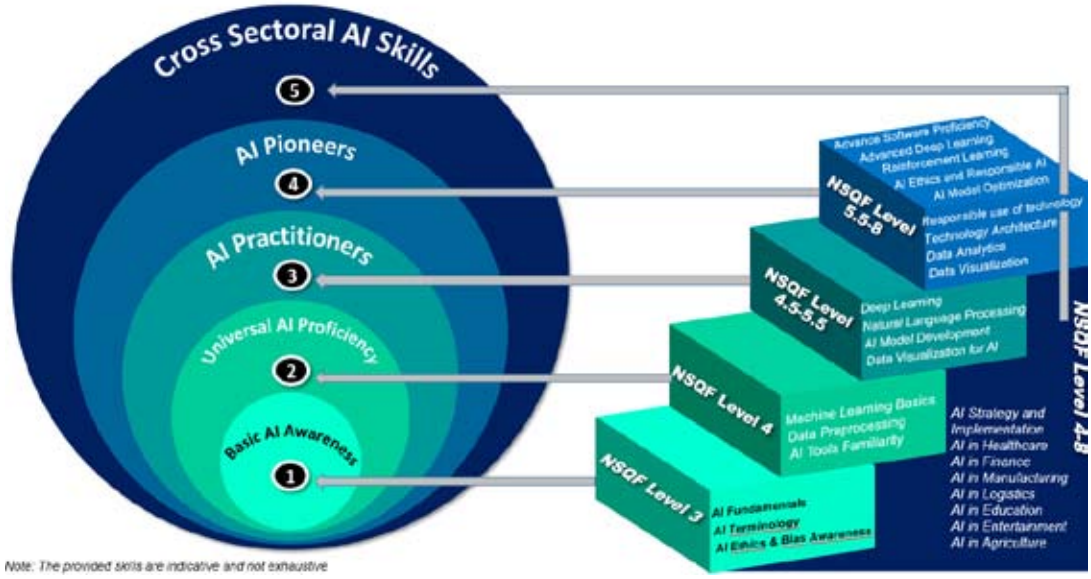
b. ***Empowering an AI-Fluent Workforce:*** The 'For Many' tier highlights the necessity of digital fluency in an AI-empowered workforce. As AI integrates across sectors, developing digital fluency becomes essential for boosting productivity and understanding AI's practical uses. This level prepares for a future workforce adept at employing AI to enhance their professional skills.

c. ***Nurturing AI Mastery for Specialized Roles:*** At the pinnacle, the "For Few" tier caters to professionals who require extensive AI skills, signifying the crucial need for experts in digital and AI technologies. These individuals have

Fig-2: A Three-tier Workforce Model to Meet the Demands of the Emerging Businesses due to Gen AI Adoption



Fig-3: Layered Approach in National Artificial Intelligence Skilling Framework



advanced skills in coding, data analytics, and machine learning, ensuring the development of sophisticated AI solutions across various fields.

d. ***Addressing Diverse Roles within the AI Ecosystem:*** This layered approach acknowledges the varying roles within the AI ecosystem, from basic users to innovators. It ensures that each level of the workforce contributes effectively to the AI landscape, preparing for a future where AI is central to all sectors (Fig-3).

e. ***Future-Proofing the Workforce:*** Recognizing the diverse skill sets and roles, this stratified skilling method helps in future-proofing the workforce against the rapid advancements in AI. It facilitates ongoing adaptability, enabling individuals at various career stages to upskill or reskill, thus maintaining relevance in a dynamic job market.

Conclusion

To realize the vision of a developed India by 2047, continuous efforts in human development through quality education and skill formation are essential. This needs to be supported by a range of industry-enhancing interventions, including liberal market policies, investments, and innovations. The National Education Policy (NEP) 2020 acknowledges the 21st century challenges and opportunities, aiming to prepare students with the necessary skills for a rapidly evolving world. As the NEP 2020's initiatives begin to take effect, their significant influence on India's educational framework will gradually become evident.

Moreover, the importance of Future Skills and the influence of Artificial Intelligence on these skills have been recognized, with ongoing initiatives aimed at addressing these areas. These efforts will be crucial in overcoming the challenges and achieving the goal of transforming India into a developed nation by 2047 i.e. Vikasit Bharat@2047.

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The Future of the Workforce

S S Mantha*

The future workforce seeks flexibility, with businesses adopting hybrid and remote work policies and such teams managed through digital tools. Future workforce is a complex, fluid landscape with increasing automation and remote work, that consciously includes diversity, equity, and inclusion in the workplaces. These attributes are important to hiring and management practices. In building a future-ready workforce, there must also be an increased focus on employee well-being and mental health.

The future of work is shaped by the integration of automation, Artificial Intelligence, and remote work which poses several challenges. The gig economy is another challenge that seeks continuous learning and skills upgradation. While there are challenges, there are also opportunities for innovation, skill development, and the creation of flexible and inclusive work environments. Adaptability and a commitment to lifelong learning are also essential for individuals navigating these changes. That said, just how the technology would impact employment opportunities, job structures, and the overall work-life balance in the future, is a subject of great interest to the current and GenNext.

Today, automation and AI are automating routine, repetitive tasks, leading to job displacement in certain industries. Jobs in manufacturing, customer service, and data entry, for example, are seeing changes as automation technologies are becoming more prevalent. However, it is not as if jobs have vanished. While some jobs may have, the transformation has created and continues to create new opportunities. Roles related to the development, maintenance, and oversight of AI systems, as well as those requiring creative and critical thinking, are seeing an increase in demand.

The COVID-19 pandemic may have accelerated the adoption of remote work. Social isolation imposed by the pandemic affected many people. Those at the start of their careers, who were still into acquiring soft skills such as networking, negotiating, and communicating effectively, in large groups, were affected the most. Contrary to people's thinking that the intrusion of technology would end with the pandemic, it has not only continued but has become more intrusive through digital collaboration tools, video conferencing, project management platforms, and cloud-based services, shifting the way how teams collaborate and communicate.

Many companies have continued embracing flexible work models that allow employees to work remotely, in the office, in a hybrid mode, or a combination of both. They can be just as productive as working in their offices. There are reports too that a hybrid work culture allows a better work-life balance that increases job satisfaction and employee retention. Maintaining communication, fostering collaboration, and ensuring accountability are important in a virtual environment. However, there are 'well-being' and mental health challenges posed by remote work that could be addressed through flexible work policies, mental health programmes , and specific initiatives aimed at promoting work-life balance. Some of the challenges can also be addressed by the digital tools.

The 2020 'Future of Jobs Report' of the 'World Economic Forum' (WEF), reveals that roughly 33% of all employers were expected to use digital tools for such purposes. The increasing integration of technology in the workplace is driving a growing demand for digital skills. Employees with proficiency in data analysis, digital literacy, and technology adaptation will find high demand. Smart assistants will be commonplace. Generative AI, quantum computing, cognitive computing, cyber security, (IoT) internet of things, 5G, DevOps, Blockchain, Data Science, Cloud Computing, RPA (Robotic Process Automation), 3D Printing, Augmented Reality (AR) and Virtual Reality (VR) are some of the future technologies where proficiency would be required.

What would be the shape of future applications for the GenNext? Mobile applications for social media, gaming, and banking, for sure. They run on smartphones or other mobile devices. Wearable Technology is another. Devices such as smartwatches and fitness trackers are worn on the body. They track fitness data, monitor health conditions, and provide notifications. Cloud computing will generate multiple jobs in the future such as online file storage, web-based email, and software-as-a-service (SaaS) applications.

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Smart assistants such as Apple's Siri, Amazon's Alexa, and Google Assistant, use AI to provide users with information, perform tasks, and respond to voice commands. Developing smart assistants is a huge market. Users experience a computer-generated environment that feels like a real-world environment through Virtual Reality technology. This too can spew several jobs that include gaming, education, and training simulations. Technology applications are widespread and are used in various industries and aspects of daily life. New technology applications continue to emerge as technology advances, providing new opportunities for innovation and automation.

In these days of instant gratification, the gig economy and freelancing have gained momentum, providing individuals with opportunities to work independently or on a project basis. The trend is driven by factors such as the shift towards remote work, a desire for flexibility in work, and a need for a little more income amid economic uncertainty. Platforms connecting freelancers with businesses have become more prevalent today.

However, this shift also poses challenges. For gig workers and freelancers, there's often a lack of job security and benefits. For businesses, managing a decentralized workforce can be complex.

These are also times when disruptions are taking over our lives. This means we must increasingly value flexibility and autonomy in our careers, leading to a shift away from traditional, full-time employment models. While all that may be true, the shift to gig work and remote work has brought attention to the importance of work-life balance, even as companies are placing a greater emphasis on employee well-being, recognizing the need for a healthy work environment, both physically and mentally.

Another aspect of the future workforce is that employers are increasingly finding that diversity, equity, and inclusion in the workforce pay dividends and that they drive innovation, increase profitability and enhance decision-making. This trend requires businesses to not only hire diverse talent but also create an inclusive culture where everyone feels valued and heard. They must also ensure equity, providing equal opportunities and benefits to all employees, regardless of their backgrounds or identities.

While technical skills are crucial, soft skills such as adaptability, creativity, and emotional intelligence are important too. Living a hassle-free life in the current times requires a combination of personal, professional, and technical skills. Time management, communication, adaptability, stress management, financial literacy, digital literacy, problem-solving, networking**,** health and wellness, organization skills, and emotional intelligence are skills that will be valued. What is interesting to note is that these skills are less susceptible to automation and are ever valuable in a rapidly changing work environment. Cultivating these skills can contribute to a more resilient and adaptable approach to life, helping us to navigate challenges and pursue opportunities with greater ease.

However, for this to happen, reskilling and upskilling is of great importance. Employees of future workplaces will be required to learn new skills that are driven by a rapid digital transformation, to help adapt to an even more rapidly changing work life. Further, the 'Future of Jobs Report' reports that employers may offer reskilling and upskilling to just over 70% of their employees by 2025. Since there is a significant gap between the skills required by employers and those that the workforce has, it needs to be bridged. Bridging can be addressed through training programmes , online courses, and mentorship programmes . Micro credentials and fractional credits on value-added courses/skill-based courses must come from the universities.

However, skills must be acquired from wherever they are available. Digital transformation, reskilling, and upskilling are necessary so employees have more opportunities to decide their career choices. They must also focus on building purpose-driven and people-centric cultures. Organisations too will need to adapt and be open to change though they have access to a much wider talent pool than ever before with most universities conducting skill-based courses. The future workforce needs a shift in mindset and culture of learning and inclusion, where continuous improvement, diversity, and workforce well-being are valued and rewarded. However, the future workforce is not the responsibility of only the future employers. Barack Obama, the former President of the USA once said, "It's not enough to train today's workforce. We also have to prepare tomorrow's workforce by guaranteeing every child access to a world-class education." That in essence, sums up the role of universities in preparing the future workforce.

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Role of Indian Universities in Fostering Startups for *Viksit Bharat*

Raj Nehru*

The idea of *Viksit Bharat* has ignited the thought process of every citizen of this land.

A nation is typically considered to still be 'developing' if it does not meet the defined socioeconomic criteria and the classification of a country as a developed economy is based on a combination of various indicators and measurement metrics. While there is not a universally agreed-upon set of criteria, several key indicators are commonly considered e.g. GDP, Industrialization and Diversification, Human Development Index (HDI), Health Standards, Labor Productivity, Innovation, Research, income equality and Education and Skill levels besides Political Stability.

Countries like Switzerland, United States, Denmark, Germany, Singapore, Israel and others considered as developed nations have more than $60k GDP per Per-capita and the Human Development Index (HDI Index) is above 0.90 compared to developing India's $2.5K GDP Per capita and 0.63 HDI index ranking India at 132nd position.

India needs a significant push in all sectors however a major contributor towards the attainment of the vision of *Viksit Bharat* will be attained through a strong ecosystem of startups. Startups are crucial to economic expansion. This is because they create jobs, which leads to lower unemployment rates, which in turn signifies a more developed and better-functioning economy.

Many surveys and research have quantified that 25.7 percent of aggregate growth that comes through innovation is accounted for by entering firms alone. Startups have the potential to grow GDP and employability multi-fold and also improve income levels. Of all the economies in the world, the Indian economy is expected to be the fastest-growing one – and startups are expected to contribute a whopping 5% to the GDP of our country in the next 5 year.

Despite the recessionary trends in one decade and then challenges posed by Covid, India has not let its startup growth recede and has shown a remarkable resilience. In the last decade, India has seen significant growth in Startups. From a mere 350 startups in 2014, India now has close to 1.16 lakh government-recognized **s**tartups. As per a report from Traxcn, there is a clear dominance of a handful of Higher educational institutions and universities in building the startup ecosystem in India. As of 13 September 2021, India had 465 startups valued at/over $100 million. The founding team data were available for 201 of these startups. Out of the 374 founding members, 45% (169) belonged to the Indian Institutes of Technology (IITs), followed by the Indian Institutes of Management ([IIMs] 22%; 83). Two other notable Indian academic institutions with a significant share in the overall founder pool were the Indian School of Business ([ISB] 5%; 19) and the Birla Institute of Technology and Science, Pilani ([BITS Pilani] 5%; 19). Perhaps when we compare with other developed countries, Ten universities in the US produced 2,109 startup founders. Seventy-three per cent of these founders came from just the top five universities: Stanford University, Massachusetts Institute of Technology, Harvard University, University of California (UC), Berkeley, and Cornell University.

Colleges and Universities are a great place to start thinking about the idea that can change the whole world. In fact, most remarkable startups in the world have been conceived by college students or graduates of some of these universities be it Google, Facebook, Netflix, Word Press, Times Magazine, WhatsApp, Air BnB, Instagram, Snapchat, and FedEx.

India too has many well-established startups coming from higher educational institutions that include Chayyos, Atomberg, Grey Orange, Dunzo, Flipkart, Zomatoo and Snapdeel

These data points highlight that higher educational institutions have immense potential while contributing towards the creation and growth of the startups. India stands at a crucial juncture where the promotion of startups can significantly contribute to economic growth. Indian universities can play a pivotal role in shaping the entrepreneurial landscape

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by nurturing a culture of innovation and providing the necessary support for budding startups. Not only these startups will create an economic impact but they can increasingly focus on creating a social impact by developing solutions to address some of the country's biggest challenges, such as poverty, education, and healthcare

While India has seen remarkable growth in the startup ecosystem, especially in a few higher education institutions, there is a huge untapped potential, given that India has around 1200 Universities, more than 50,000 colleges, and around 10,000 standalone institutions. A concerted effort is needed to create an environment that fosters entrepreneurship on a larger scale across these institutions, to realize the dream of becoming *Viksit Bharat* by 2047.

Key Steps for Universities to Enhance Startup Growth

Discover to Uncover

Every University and institution must scan their local and regional environments. Visit nearby areas, and assess socio-economic challenges. Interact with local industries, artisans, and business communities. This is important to understand and define the problem in its right perspective. What are the issues, that people and society are experiencing? It can be health care, transportation, agriculture, banking, education, and any other sector. Almost 70% of Higher Education Institutions in India are in rural belts and given the immense local issues and challenges, local research can open significant opportunities for young minds towards developing solutions. Data indicates that solving local problems & providing solutions at scale in diverse is the vital reason for the increasing number of startups from these parts of the country. It is also significant to note that 49% of start-ups are from tier-2 and tier-3 cities, which has turned out to be a game-changer as the business advantages in these locations enable entrepreneurs to operate at lower costs as compared to tier-1 cities.

However, this requires institutional and academic leadership to step out of their comfort zones and come out from their traditional academic mindsets, and network outside the boundaries of their campuses. Through this process, teachers can engage students and offer them such internship assignments that will facilitate them to understand local problems for developing solutions.

Design to Deliver

More than 600 million people in India are aged between 18 and 35. With 65% under the age of 35, India's demographic dividend needs to be translated into a demographic advantage. With a 29% of Gross Enrolment Ratio and technology disrupting every field, student thinking needs to be channelised towards becoming a job creator instead of job seeker. This puts a significant responsibility on our Academic Leaders need to design and develop curriculum in such a way that develops an entrepreneurial mindset to enhance creativity and critical thinking. The curriculum design must create opportunities for students to understand how entrepreneurship works from a young age and build tenacity and resilience where they learn to take failures as a part of the journey and not get frustrated by them easily. Designing a curriculum with these objectives will help students through their lives by making them more tolerant and aware of their abilities to carve the right path. The curriculum design needs to be student-centric where they learn skills more applicable to entrepreneurs. Given that entrepreneurship is not a linear process and creativity is central to it, finding structure is an unstructured process. It is therefore important to incorporate Design Thinking into the curriculum. Design thinking is a practical approach where students step out of the classroom, This experimental design can help students gain deeper perspectives of real-world issues for better reflection. Curriculum can also incorporate Hackathons and Idea Generation besides making Brainstorming an important aspect of the teaching and learning process inside the classroom and campus.

Incubation Centres

Startup India reports have indicated that incubated start-ups develop a lot quicker than their non-incubated counterparts and their survival rate is additionally 40% higher at 80%. The studies also suggest that incubators or university spin-offs could act as catalysts in speeding the entrepreneurial growth in an economy. The reports show that an increase in the number of incubators would have a positive implication for the start-up ecosystem by catering to the growing demand and increasing the success rate of start-ups, thereby promoting entrepreneurship and innovation.

Therefore, every institution needs to establish dedicated incubation centres. Create spaces within universities where aspiring entrepreneurs can receive

mentorship, access technology and resources, and collaborate with like-minded individuals. These incubation centres will serve as hubs for idea generation and development. An incubator firm helps grow a startup from an early-stage idea to a company that can stand on its own. Incubators help entrepreneurs by providing practical, concrete resources that may be difficult for a new business to obtain or afford. Incubators provide many support services that include office space, administrative functions, education and mentorship, access to investors and capital, and idea generation.

One notable example is the Indian Institute of Technology (IIT) Madras, which has established the IITM Incubation Cell. This cell has nurtured several successful startups, including hyperlocal delivery platform Dunzo and healthcare technology company Perfint Healthcare. More than 1500 start-ups have been incubated under the Startup India Scheme as per the latest report

Industry Collaboration

The collaboration between industry and academia encourages open-mindedness, where students are motivated to share and publish discoveries, improve themselves to optimum capabilities, and be market-ready and job-ready faster and with more self-confidence. The collaboration helps students to understand how enterprises are created, managed, and successfully run besides understanding challenges and opportunities within the entrepreneurial ecosystem and emerging market needs. Creating Next Gen Startups is the need of the hour and industry academia collaboration can boost this objective. Industry-Academia partnerships will also foster a mutually beneficial exchange between Knowledge generators and business actors. Collaborative research between Industry and Academia can lead to more inventions, innovations, and patents thereby making outcomes socially beneficial and economically meaningful. Countries with strong industry-academia collaborations are often more competitive globally due to a robust innovation ecosystem. As per the World Intellectual Property Organization, India ranks 40th out of 132 economies on the Global Innovation Index.

Every institution must set up a Corporate Relations Department or an Industry Integration Cell that extensively works on building Partnerships with Industry and seeks their support to provide students with real-world insights, industry-specific challenges, and potential areas for innovation. These partnerships can bridge the gap between academia and industry, fostering practical skills. This exposure will raise the level of skills and understanding of the students and will prepare them to think and act like an employer. The joint research can facilitate the creation of startups and enterprises. However, the biggest challenge in industry academic partnership is that academics typically prioritize fundamental research for establishing new concepts, while industries focus on applied research for process improvement and maximization of profits thereby creating a significant cross-purpose conflict. This is where academic leaders must think out of the box and develop more meaningful and purposeful partnerships that lead to the creation of startups for socio-economic growth

Many organizations in India are already collaborating with many IITs, universities and start-ups in the country in Quantum Computing, AI, Design and Edge Computing and many other emerging areas, and this high opportunity area is awaiting a strong and structured response from Indian Universities and Higher Education Institutions.

Seed Funding Initiatives

Every University and HEI must develop its own Startup Policies to promote the nurturing of ideas and startups within the campus. As a policy, Institutions must earmark some funds as financial support that can be offered to students to pursue their ideas while inside the campus. This fund is aimed at encouraging innovators who need early-stage funding to work on their research discoveries, college project ideas, etc. Providing financial support in the early stages can be a catalyst for turning innovative ideas into viable startups. Institutions can also connect students with Venture Capitalists or Angel Investors as well to further support the success of the ideas at later stages as well.

These policies can further bring focus to prioritise seed funding to such ideas that have potential to translate into startups in emerging areas and technology integrated HEI's can also set up their own Section 8 companies that can seek funds from corporates, industries or philanthropists who are ready to financially support social entrepreneurs on other innovative ideas.

Hackathons, Innovation Challenges and Competitions

Institutions must host Hackathons, Idea Competitions and encourage students to participate in

innovation challenges and startup competitions. These events will not only showcase their ideas but also provide opportunities for networking and exposure to the entrepreneurial ecosystem. These initiatives can also be arranged in partnership with industries to work on live ideas and also have students getting mentored to shape their ideas for better outcomes. Every year since 2012, NASA has been inviting people to join their International Space Apps Challenge, a two-day hackathon where publicly available data is used to find new solutions to global challenges (SpaceApps). The most renowned hackathon story is probably the one of the company GroupMe. The mobile group-messaging app was developed at the TechCrunch Disrupt hackathon in 2010, raised $11.5 million USD in funding, and was acquired by Skype in August 2011 Microsoft acquired Skype later that same year.

However academia is yet to fully recognise the significance of Hackathons as a ground for creating start-ups. Even though the concept has been adopted and adapted and is used in a wide range of different sectors, academia has not been able to fully leverage this. There it is a great opportunity for HEI's to make Hackathons or Idea competitions as a vehicle to create startups.

Teachers as Transformers

As the world changes, so do the skills. Students need to be continuously trained and skilled in such a way that will help them to become lifelong learner, and build a sustainable career and a better society.

Teachers need to practice innovative teaching and training pedagogies that encourage students to chart their course through independent thinking. They need to help students to think broadly which helps them to unleash their creativity.

The traditional teaching and training models need to be reformed and student centric models need to be adopted. The traditional methods focus on pre-packaged ideas and linear thinking while the need of today is to encourage students to think and ideate. Students are often asked by teachers to do something or follow some steps. This prevents them from thinking creatively which is key to entrepreneurial thinking. Teachers have to create such a classroom environment where students start to question the rules and think about new possibilities. Through the use of classroom space, intentional course design and scheduling, and building a 'brand' identity, teachers can create a startup culture of empowerment and innovation for their students. Startups require some key skills and Teachers can develop a holistic pedagogy to equip students with such skills by introducing, critical thinking and innovation, design thinking for entrepreneurs, market research strategy, and Continuous improvement based on seeking continuous feedback. Teachers can plan to invite successful entrepreneurs who can interact with students besides facilitating networking opportunities for the students. Teachers also need to incorporate practical assignments that involve solving real-world problems. This hands-on experience helps students develop problem-solving skills essential for entrepreneurship.

Conclusion

Imagine our academic institutions where all graduates leave with an entrepreneurial idea already in motion

By aligning academic curricula with the demands of the entrepreneurial landscape and fostering a supportive ecosystem, Indian universities can significantly contribute to the growth of startups. Teachers, as mentors and guides, play a crucial role in shaping the entrepreneurial mindset of students. Through collaborative efforts, universities can become epicenters of innovation, driving economic development and positioning India as a global hub for startups that will take India faster on the path of *Viksit Bharat.*

Swami Vivekananda said, "Take up one idea. Make that one idea your life – think of it, dream of it, and live on that idea. Let the brain, muscles, nerves, and every part of your body, be full of that idea, and just leave every other idea alone. This is the way to success that is the way great spiritual giants are produced."

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Futuristic Higher Education Landscape: Skill-building for a *Viksit Bharat* Workforce

Balvinder Shukla* and Archana Chandra**

The centenary celebration of India's independence focuses on *Viksit Bharat*@2047 which envisions a transformed and empowered nation; Resilient Economy: $30 trillion economy by 2047. Shaping the future of Indian higher education for *Viksit Bharat* requires a collective effort from policymakers, educators, industry leaders, and the community.

"The *Amrit Kaal*" is the right time to take leaps towards building a developed India. By 2047, we envision a greatly transformed India with respect to demographics, economy, technologies, and education. The youth of today will be the flagbearers of the *Amrit Kaal*. They will represent leadership in various sectors by 2047. The responsibility of Imagining the higher education landscape 25 years from now provides an opportunity to begin innovating to meet the country's future challenges. This article explores key directions we can expect to see in Indian higher education by the pivotal year 2047.

Aligning the Higher Education Vision with *Viksit Bharat*

Viksit Bharat's vision focuses on eradication of poverty, farmer welfare, inclusivity, empowering of the youth, economic growth, technology, environmental sustainability, governance, international cooperation, internal security, and cultural preservation. The vision aims to improve education, healthcare, infrastructure, technology, climate change mitigation, clean energy, and sustainable use of natural resources.

Aligning the higher education vision for 2047 with the overarching national vision of a developed and a self-reliant nation is essential for ensuring synergy and coherence in the developmental efforts of the country and making the education system an integral part of the nation's overall growth and progress. It ensures that the education system contributes directly to the development of a skilled, innovative, and adaptable workforce that can drive the nation's economic growth. India aims not only to meet international standards but also to excel in various fields, making a mark on the global stage. Higher education institutions are hubs for innovation and research, technological advancements, which play an important role in propelling the nation forward.

The government has taken significant strides to transform the higher education landscape into a progressive ecosystem. Several initiatives have been introduced by the government in this direction *https://www.ugc.gov.in/MajorInitatives :*

National Education Policy—2020

The cornerstone of the government's efforts in reshaping higher education is the National Education Policy—2020 (NEP—2020). This comprehensive policy overhaul aims to bring about a holistic transformation by emphasizing flexibility in learning, promoting multidisciplinary education, and encouraging innovation and research. NEP—2020 lays the foundation for a more student-centric and globally competitive education system.

SWAYAM and SWAYAM PRABHA

The government launched the SWAYAM platform, offering free online courses from elementary to postgraduate levels. SWAYAM PRABHA complements SWAYAM by providing high-quality educational content through DTH channels. These initiatives enhance access to quality education and promote lifelong learning.

National Institutional Ranking Framework (NIRF)

The NIRF was introduced to rank institutions based on various parameters such as teaching, learning, research, and outreach. This initiative fosters healthy competition among institutions, pushing them to enhance their academic and research capabilities. Transparent ranking systems contribute to an environment of continuous improvement.

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Higher Education National Qualifications Framework (NHEQF)

NHEQF defines the qualification levels, learning outcomes, and academic standards for various higher education programmes . It aims to reform and standardize higher education in India and promotes flexibility, mobility across disciplines, and credit accumulation, reducing dropout rates. It encourages lifelong learning, standardizes higher education, integrates vocational and academic streams, and recognizes prior learning.

National Credit Framework (NCrF)

The NCrF (NCrF) is a credit-based system that enables student mobility and credit transfer, levels of learning and associated qualifications in India for harmonizing the education and skill development landscape. The NCrF operates within the broader NHEQF, helping to facilitate credit transfer and accumulation in accordance with the guidelines set by the NHEQF. It supports alternative educational models like competency-based education, online learning, and scalable credentials that provide more flexibility.

Skill Development Initiatives

The government has launched various skill development programmes, such as the Skill India Mission, to align education with industry requirements. Integrating skill development into higher education curricula ensures that graduates are not only academically proficient but also equipped with practical skills demanded by the job market.

Modernizing Curricula

Investing in modernizing curricula, teaching methods, and educational technologies to ensure students gain relevant skills suited for the modern workforce and economy.

These initiatives form a crucial foundation for reshaping higher education. By combining policy reforms, infrastructure development, and a focus on innovation, the government endeavors to create a dynamic and globally competitive higher education ecosystem that aligns with the aspirations of a rising nation.

Having laid the foundation, there is a lot of ground to be covered over the next 25 years. The key focus areas need to be broken down into short- and long-term goals. The building blocks to be laid down now to make this vision a reality by the 100th anniversary of India's independence.

Walking the Talk

Creating a phase-wise and time-bound roadmap is crucial for the successful implementation of the vision of shaping the future of Indian higher education for *Viksit Bharat@*2047. A well-structured plan with timely checks and balances ensures accountability, allows for adjustments based on evolving needs, and facilitates a smoother transition toward the desired outcome. (FICCI, 2022). A clear roadmap will enable:

Setting Milestones with a Clear Vision

It establishes specific goals and objectives, providing a sense of direction for policymakers, institutions, and stakeholders.

Resource Allocation

By outlining priorities for each phase, the government can allocate funds, manpower, and other resources judiciously, optimizing their utilization and preventing wastage.

Adaptability to Change

A phased roadmap allows for flexibility and adaptability based on changing circumstances, technological advancements, or emerging educational trends.

Stakeholder Involvement

A well-structured roadmap facilitates collaboration and engagement, as each phase can include specific actions for different stakeholders including educators, students, industry leaders, and policymakers.

Quality Assurance

Timely checks and balances within the roadmap serve as quality assurance mechanisms. Regular evaluations ensure that the implemented strategies are effective, and if not, adjustments can be made to maintain or enhance the quality of education.

Risk Mitigation

Quality Assurance mechanisms allow for the development of mitigation strategies for timely addressing of potential risk.

Continuous Feedback and Improvement

Incorporating mechanisms for regular feedback fosters a culture of continuous improvement in the education system.

Public Accountability

A transparent and time-bound roadmap allows stakeholders to track progress and builds confidence in the education system.

Global Benchmarking

By benchmarking its practices against global standards and setting specific targets and timelines, India's higher education system can improve its standing on an international scale.

Future of Work and Skill Development

While the nation sets its Vision clear for 2047, the vision applies to every sector right from defense, production, economy, agriculture, tourism etc. It is imperative for each sector to derive their own vision document from the broad national vision based on which their strategic planning will be done. The strategic planning coming from various sectors will chalk out a roadmap for achieving the vision. This roadmap will point out the resources that would be required to achieve the vision in the form of infrastructure, new skilled manpower, expertise, and skills required, upskilling requirements, capital etc. Higher education will derive its vision from here.

India's vision for higher education is drawn from the industry requirement, from national priorities and global rankings.

Focus Sectors as per Vision *Viksit Bharat*

The vision of developed nation applies to all sectors, some key sectors that Higher Education may focus on include:

Infrastructure Development: Building world-class infrastructure in areas like roads, railways, ports, airports, urban infrastructure, and digital connectivity.

Manufacturing and Industrialization: Boosting the manufacturing sector to increase its contribution to GDP, create jobs, and achieve self-reliance in strategic sectors.

Clean Energy and Climate Action: Transitioning to clean and renewable energy sources, promoting energy efficiency, and taking measures to combat climate change.

Education and Skill Development: Improving access to quality education, promoting vocational training, and skill development to create a skilled workforce.

***Healthcare and Well-being*:** Strengthening healthcare infrastructure, promoting preventive care, and ensuring access to affordable healthcare for all.

Agriculture and Rural Development: Modernizing agriculture, improving productivity, ensuring food security, and promoting sustainable rural development.

Technology and Innovation: Fostering research and development, promoting innovation, and leveraging emerging technologies like artificial intelligence, biotechnology, and space technology.

Governance and Institutional Reforms: Streamlining governance processes, improving ease of doing business, and undertaking administrative and judicial reforms.

Sector-wise Skills Envisioned

The future skills, coupled with a focus on lifelong learning and reskilling, will play a crucial role in driving innovation, productivity, and competitiveness across various sectors, enabling India to achieve its vision of becoming a developed nation (*Future Skilling for the Digital Economy | NASSCOM*, n.d.). According to a report by Deloitte, Business and HR leaders are shifting workforce practices to focus on skills with future improvements extending beyond skills to include preferences and motivations. Work is being performed across functional boundaries, teams, and projects outside of core job descriptions, despite job descriptions accurately describing the organization's needs. In the future, jobs will be more broadly defined, focusing on specific roles and experiences. Creative development will focus on building skills and gaining experiences, rather than ring-fenced jobs. Understanding one's purpose and desired professional experiences will help build skills for a successful career and beyond. (Building

Table 1. Desirable Skills and Traits for Future Jobs

Sector	Skills/Traits
General	• Technical abilities, • Human capabilities, • Potential, encompassing unique individuals with diverse skills, interests, motivations, work styles, and location preferences. • Agility and adaptability to work in formal and informal, beyond the job and fractionalized work setup.
Infrastructure development	• Project planning management and execution skills • Construction technology and sustainable building practices • Urban planning and smart city design
Manufacturing and industrialization	• Advanced manufacturing techniques (e.g., 3D printing, robotics, automation) • Industrial Internet of Things (IIoT) and cyber-physical systems • Supply chain management and logistics optimization. • Proficiency in analysing big data and automation technologies will be crucial for driving manufacturing efficiency and innovation.
Clean energy and climate action	• Renewable energy technologies (e.g., solar, wind, biofuels) • Energy storage and distribution systems • Environmental engineering and sustainable practices • Skills in environmental awareness, advocacy, and policy implementation will be vital for promoting climate action in India.
Education and skill development	• Digital literacy and e-learning skills • Pedagogy and instructional design for effective teaching • Soft skills (e.g., communication, critical thinking, problem-solving)
Healthcare and well-being	• Telemedicine and digital health technologies • Data analytics and healthcare informatics • Personalized medicine and genomics • Proficiency in utilizing health technology solutions and digital healthcare platforms will be crucial for advancing healthcare in India.
Agriculture and rural development	• Precision agriculture and smart farming techniques • Agri-biotechnology and genetic engineering • Rural entrepreneurship and agribusiness management • Data driven decision making. • Understanding and implementing eco-friendly farming practices will become increasingly important for rural development. • Skills involving community outreach, cooperative farming, and agritourism will be pivotal for sustainable agricultural development.
Technology and innovation	• Coding and programming skills • Artificial Intelligence (AI) and Machine Learning (ML) • Cybersecurity and data protection
Governance and institutional reforms	• E-governance and digital transformation skills • Public policy analysis and implementation • Change management and organizational development.

Source: Derived from survey reports of Deloitte, Mckinzy, NASSCOM, KPMG

Tomorrow's Skills-based Organization Jobs Aren't Working Anymore, n.d.)

Envisioning Workforce in India in the Next 25 Years and skill Development for *Viksit Bharat*

There is a need to develop a future-ready and globally competitive Indian workforce equipped with the sector specific skills to drive innovation, entrepreneurship, and sustainable economic growth. This requires planning objectively which involves the following:

- Anticipate evolving skill demands across industries.
- Enable seamless skill-upgradation access for workforce.
- Foster lifelong learning mindset
- Promote multidisciplinary capabilities.
- Build Industry-Academia skill alignment.

Role of Higher Education Institutions

A significant challenge faced by the Indian higher education system and industry is the mismatch between the number of graduates passing out and the suitable jobs available for freshers, the shortage of available skilled talent. This gap can be attributed to the rapid technological advancements, lack of industry-academia collaboration, emphasis on theoretical knowledge, inadequate career guidance, and geographic imbalances, resulting in a disconnect between the skills taught and those required by employers, thereby leading to uninformed career choices. This requires the implementation of Education 5.0 integrating cutting-edge technologies into the educational realm. FICCI and EY Parthenon's 2022 report, 'Higher Education in India Vision 2047', outlines strategic pillars for a student-centric ecosystem, research, faculty development, international mobility, and digital learning. By implementing the following strategies, India can bridge the skill gap, better align the supply of graduates with industry demand, and nurture a future-ready workforce to drive the nation's economic and social development. (Ellsworth, n.d.).

Revamp Curriculum and Pedagogy

- Embed future skills like AI, data science, and computational thinking into core curriculum.
- Adopt flexible learning models - modular courses, stackable micro-credentials, and online bootcamps.
- Move towards competency/project-based assessments vs traditional models.
- Promote multidisciplinary and experiential learning through live industry projects.

Strengthen University-Industry Linkages

- Establish Sector Skill Councils for priority industries powered by academic & industry experts.
- Create avenues for faculty exchange, internships, apprenticeships, and co-op models.
- Collaborate on curricula design, pedagogy innovation, and evaluation frameworks.

Facilitate Continuous Skill Development

- Establish remote/virtual training centers for in-service professionals.
- Offer short-term bridge courses, modular certifications matching workforce demands.
- Leverage technologies like AR/VR for immersive industry-specific simulated training.
- Develop robust alumni ecosystem for mentoring and networking support.

Bolster Innovation and Entrepreneurship

- Seed entrepreneurship curricula across streams from undergraduate level
- Set up on-campus makerspaces, accelerators, and innovation garages.
- Encourage entrepreneurial capstone projects, corporate innovation challenges.
- Promote patenting, spin-offs and tech transferring through simpler IP sharing policies.

Nurture Talent Pipeline for New-Age Jobs

- Propel research and capacity building in emerging fields like AI, IoT, blockchain etc.
- Offer specialized Masters/PhD programmes aligned with national missions.
- Partner with global universities and tech leaders in cutting-edge domains

The focus is on transforming higher education as an engine driving continuous skill development, future capabilities, and future job creation in the new economy.

Improving the Employability Linkage of Graduands from Indian higher Education Institutions

The vision is to enhance university-industry integration by fostering job-ready graduates with industry-matched skills with the following key focus areas:

- Building Robust Apprenticeship Models
- Designing Industry-led programmes and courses
- Enhancing Vocational & Professional Skills
- Focusing on Career Development & Services
- Developing Entrepreneurial mindset
- Tracking Graduate Employment Outcomes

Targets

- 6 months internship/Apprenticeship compulsory in all degree programmes
- 50% of programmes updated based on industry feedback every 2 years.
- 80% of students undergo certified professional skill programmes by industry.
- 40% courses done through MOOCs for credit transfer in each semester.
- Focus on innovation, creativity, and problem-solving skills.
- Focus on skill development as per career aspiration of students.
- 75% of students placed through campus recruitment drives & career fairs.
- Robust alumni employment database across institutions

Strategic Plans

- Incentivizing industry players for offering apprenticeship programmes .
- Setting up advisory boards having industry leaders for every academic department.
- Developing credit-based modular curriculum, allowing flexibility.
- Invest in centralized career development & training centers.
- Capture graduate employment data through surveys and collaboration.

With a focus on aligning academics to industry needs, building talent trajectories, boosting employability skills, and tracking feedback loops to strengthen university-industry linkages.

AI Integration

India can advance AI research and prepare its workforce for an AI-driven economy by introducing mandatory AI courses, setting up AI labs, and establishing global research centers. This can enhance higher education efficiency, personalized learning, and resource optimization. (Transforming Decision Making in Higher Education: The Impact of AI Interventions, n.d.)

AI Integration into the Curriculum

India with its technology talent can lead cutting-edge research in AI and prepare its workforce for an AI-driven economy.

HEIs must introduce mandatory course in AI for all disciplines; Set up sectoral AI labs in application domains; Foster high-quality indigenous AI research; Establish global AI research centers.

AI for Governance and Personalization of Education

Leveraging AI-driven insights across the education lifecycle - from admissions to learning to placements to creating a smart, responsive, and efficient higher education ecosystem is not just desirable, it is a basic need to stay UpToDate and for continuous improvement. This can enhance process efficiency, customization to learner needs, industry demand and program value.

The Focus Areas for AI Integration into the Higher Education System are:

- Adaptive and personalized Learning using AI
- Smart Program Designing
- Optimization of Resource
- Benchmarking, Evaluation and Continual Improvement
- Comprehensive Career Assistance, & Planning
- Personalized feedback and recommendations to

student and faculty

Targets

- AI-enabled learning platform used by every student.
- Designing 75% of programmes based on real-time workforce needs identified by AI.
- AI-proctored competency-based assessments for all programmes
- AI chatbots for feedback, career guidance and recommendations for improvement
- AI chatbots for feedback and suggestions to faculty for improvement

Strategic Plans

Build an Integrated Institutional Data Platform to capture information on industry skill demand, admissions, demographics, academic performance, program feedback, etc.

- Process data for predictive insights on, program ROI, learning gaps.
- Create dynamic feedback loops - course correction based on continuous student assessments.
- Develop personalized learning paths adapting to the capability and pace of each student.
- Leverage NLP for tracking sentiment across open-ended feedback surveys.
- Enable AI career chatbots providing resume building, opportunities matching based on updated skills, aptitude, and employer databases!

Industry-Academia Partnership

Higher education institutes can align their academic programmes and pedagogy with the evolving future skill requirements across industries. This can be achieved through:

- Conduct of regular industry-academia conclaves to enable two-way dialogue between experts from industry and academia on upcoming tech trends, innovations, skill demands and global best practices.
- Advisory boards having industry leaders and alumni as members to provide recommendations on modifying/designing new programmes factoring in technological disruptions in the sector.
- Subscribing to international knowledge bodies such as the World Economic Forum, Organization for Economic Co-operation and Development, National Science Forum, UNESCO, IEEE, IET etc., which publish regular research reports forecasting jobs landscape, future skills mapping across major economy sectors. Align program curriculum accordingly.
- Make internships and industry exposures integral to programmes allowing students to get on-ground project experience using the latest tech tools and building relevant skill sets.
- Expose faculty to latest technologies through sabbaticals at corporate innovation hubs, international teaching fellowships, incentivizing MOU based research projects etc. to translate into effective teaching.
- Integrate simulation software, smart classrooms, gamification, design thinking principles, problem-based and collaborative learning to equip students with skills like computational thinking, creativity.
- Establish on-campus incubation labs around upcoming domains like IoT, analytics, robotics and facilitate start-up ideas to nurture industry-readiness and entrepreneurial mindset.

Infrastructure Augmentation

Infrastructural improvements required across Indian higher education institutions to match global standards:

- ***State-of-the-art Labs and Facilities:*** Build advanced engineering, science and technology lab facilities matching scale and standards in terms of the latest equipment, computing resources, prototype development infrastructure.
- ***Futuristic Classrooms:*** Set up digitally enabled flexible classrooms integrated with technologies like artificial intelligence, virtual reality, augmented reality, data analytics tools, advanced presentation capabilities etc.
- ***Robust Digital Infrastructure:*** Upgrade digital backbone covering high speed internet connectivity, data and communication networks, digital library resources and seamless WiFi coverage across campus.
- ***Globally Benchmarked Research Centers:*** Construct interdisciplinary, integrated research

centers focusing on niche and upcoming areas like quantum computing, life sciences, advanced robotics, climate studies etc. with facilities that provide unique differentiation.

Increase Inclusivity

India can harness its diverse talent pool, including LGBTQIA+ individuals, through an inclusive environment. This boosts innovation, creativity, and productivity, leading to economic growth and development. Empowering these groups through education and equal opportunities can break down barriers, promote social progress, and enhance India's soft power and global reputation. (Ellsworth, n.d.) This approach also helps address developmental challenges more effectively. Higher education institutions can promote inclusivity, to contribute to a "Viksit Bharat" through fair and non-discriminatory admissions policies, gender-sensitive curricula, a safe campus environment, inclusive infrastructure, counseling and support services, diversity and inclusion training, increased representation of LGBTQIA+ individuals in leadership positions, research and academic programmes focused on gender studies, and collaboration with community organizations to create pathways for underrepresented groups to access higher education and employment opportunities.

Faculty Development

Institutes need to ensure that faculty across different age groups can stay updated with the latest developments in their respective domains.

- Conduct periodic skill upgradation workshops and training programmes on emerging technologies and innovations tailored to different faculty groups – early career, mid-career, and senior faculty.
- Set up centralized digital learning platforms hosting latest online courses, research material, virtual labs, and tools that faculty can access flexibly as per convenience.
- Facilitate sabbaticals, paid leaves and deputations at leading organizations, industries, labs relevant to their fields for 1-2 semesters helping them return rejuvenated and updated.
- Sponsored participation in acclaimed international conferences, and summits focused around their research areas for fostering peer knowledge sharing and global outlook.
- Recognize faculties undertaking additional academic qualifications, certifications officially through career advancement during performance reviews and appraisals.
- Promote culture of Idea Labs, Open Sessions involving internal and guest expert talks to stimulate cross-learning, and idea exchange among faculty across career stages.
- Dedicated hours for self-study, personal skill development plans for every faculty should be a part of the faculty load.
- Develop mentorship channels for seasoned faculty to guide motivated early career mentees in research skills while reciprocally learning modern tools from them.

Digital Transformation

Upgrade the entire education experience through immersive technologies, personalized and adaptive solutions, data-driven insights, and wide accessibility of digital content. This requires the development of indigenous edtech solutions, online degree programmes and micro-credentialing platforms.

Short term plan: Digitize all course catalogues and records; Make online learning modules for 80% programmes ; Build open-source Digital platform.

Long-term (2047): Pioneer applications of VR/AR in teaching and learning; Automate key administrative processes through AI; Develop personalized learning solutions.

Entrepreneurship Ecosystem

Our education system is presently focused on preparing the students for the job market. Translating innovation into licensing IP, university startups, and partnerships. higher education institutions can help strengthen the entrepreneurship and startup ecosystem:

- Introduce mandatory foundational courses on entrepreneurship, business planning and freelancing for all disciplines to build entrepreneurial mindset.
- Establish dedicated incubators, innovation garages and makerspaces on campus providing infrastructure, seed funding, mentoring channels to translate student ideas into startups.

- Customize academic programmes to enable dual degrees, flexi-credits, e-learning modules enabling seamless mobility between industry jobs, startup venturing and studying options.
- Create support systems for idea validation, IP application filing, compliance management, fundraising access through panel of experts to boost investible-grade student startups.
- Facilitate credit-based capstone industry projects, startup internships for real-world problem solving resulting in entrepreneurial solutions with professors as mentors.
- Set up Industrial Innovation & Entrepreneurship Councils having CXOs of Tech Parks, VCs, Startup Founders for periodic interface with institute leadership to foster symbiotic channels.
- Conduct startup summits, challenges and business plan competitions frequently involving external stakeholders which celebrate entrepreneurial culture and bring wider visibility.

Conclusion

The *Viksit Bharat* vision encapsulates a comprehensive and transformative approach to India's development, with higher education playing a pivotal role. By fostering an inclusive, future-ready, and globally competitive higher education ecosystem that prioritizes inclusivity for women and LGBTQIA+ students, India aims to nurture a skilled, innovative, and adaptable workforce capable of driving economic growth, eradicating poverty, and addressing the nation's pressing challenges. Through strategic initiatives such as the National Education Policy 2020, seamless industry-academia collaborations with incentives for industries to offer industry-led programmes , robust digital infrastructure, establishment of skill labs, active engagement with academia, and a strong focus on emerging technologies like AI, India's higher education institutions have the potential to become engines of progress, empowering youth, promoting entrepreneurship, and contributing to the country's overall growth and prosperity. With a phase-wise and time-bound roadmap, India is poised to achieve its vision of becoming a *'Viksit Bharat'* by 2047, where higher education serves as a catalyst for churning visionary future leaders, innovators, and entrepreneurs who can propel the nation's progress.

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Future of Work and Skill Development

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The global demand for Professional Certificates is rising every year (WEF, 2023), particularly in Sub-Saharan Africa (80%), the Asia Pacific region (69%), and North America (53%). The United States tops in overall Professional Certificate enrolment with 1.3 million enrolments followed by India (654,000), and Nigeria (142,000). The low-income countries seem to experience more enrolment growth, while high income countries experience the highest overall enrolments. Europe is the frontrunner for the global skill rankings with eight of the top ten countries in the list followed by Indonesia and Japan.

The fastest growing skills presently are business skills, team building and management, digital marketing, Artificial Intelligence (AI), cyber security and information security, data visualization, programming efficiency, embedded systems design, renewable energy, signal processing, robotics and automation, and the skills necessary to march towards the sustainable development goals.

With nearly one fifth of the human population living in India, our country holds a significant position in the world education sector and it is expected that 1 in every 4 graduates would be graduating from India. With around 27 percent of population in the 0-14 age group, skilling through higher educational institutions become vital (IBEF, 2023). As per the report, India has 49,385 colleges in FY24 (as of September 13, 2023) as against 43,796 in FY21 and 42,343 in FY20. The number of universities went up to 1,196 in FY24 up from 760 in FY15. Students enrolled in HEIs are also on the rise, with 41.38 million enrolled in 2020-21 with 21.2 million male and 20.1 million female students, while it was 38.5 million in 2019-20, with 19.6 million male and 18.9 million female students, respectively. This amounts to Gross Enrolment Ratio (GER) of 27.3% in higher education.

The education sector growth in India estimated to be US$ 117 billion in FY20 is expected to reach around US$ 225 billion by FY25. The Indian Edtech market is also anticipated to reach US$ 30 billion by 2031, rising from US$ 700-800 million in 2021 (IBEF 2023). The large English-speaking population in the country is an additional catalyst for the growth.

There is and will always be fierce competition for talent across industries. Additionally, the anticipated demographic status of the declining workforce in major developed countries will further intensify over the next year.

The digitization and changing technologies create fundamental disruption on businesses. This necessitates them to adopt to the shortening skill-life cycles, identifying new market environment, rethink their organizational structures that reflect in adoptable organizational structures with scope of flexible availability of skills. The re-designing of work thus happens globally and re-organized and adoptable work place will unleash the human potential to a larger extent.

The future of learning will have to be learner centric and it should allow the diversity of learners, leading to personalized, integrated, lifelong and, to the extent possible, hybrid learning in nature. 85% of HR executives plan to or consider redesigning the way work is organized, such that skills can be ported across work during the next three years (Deloitte, 2023).

Demographic Dividend: A Boon or a Bane?

The biggest tertiary age population of the country is a natural boon for the country. However, skilling India is an urgent imperative if we are to avoid converting the demographic boon to a bane. This goal can be achieved through close cooperation between private, public and civil society organisations. It needs majorly the pertinent upskilling of the working age population and make them industry ready. Multifaceted efforts are required to make them future fit, even while anticipating increasingly newer job roles that can emerge due to the disruption in all areas, thanks to the technology evolution that includes Artificial Intelligence (AI). Skilling and upskilling is well supported by the positive governmental policies, in addition to the strongly growing service sectors and

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digital technologies including digital and virtual twins, and metaverse.

Analytical and Creative thinking, inherently cognitive in nature topped-up by motivation, resilience, curiosity to learn and lifelong learning, in addition to flexibility and eligibility are the important traits required for the future man power. Additionally, empathy and compassionate listening by leadership roles while taking care of quality control are also necessary. Thus, the future workforce needs to be resilient with an amalgamation of both digital and human skills, to reap the benefits of automation even while taking care of any possible negative repercussions. While the digital skills offer great promise of enhanced income with plush career opportunities, the AI powered future jobs find the analytical and judgemental skills of human becoming quintessential. Choosing the right benevolent choices, emotional integrity and intelligence, and the ensuing flexibility thereof, are significant for future workforce who would be thriving in AI-powered future. Hence, the higher education institutions are to model the skill development programmes considering both these aspects.

Future of Work

The impetuses on learning and development on the part of employees by unlearning existing mental model and behavior are important in industry. Targeted intervention by management and their open mindedness to ideas and suggestions presented by employees are necessary along with due recognition and rewards by the industries.

Though the use of technology in learning has become a success, the challenge of selecting and adopting the particular technology which fits the best for their target groups remains the challenge to be addressed by the organizations. The learning then, naturally becomes a critical business investment with both work and learning becoming more and more interconnected and complementing.

As per (WEF, 2023), 44% workers' skill will become disruptive in nature by 2027. Every 6 out 10 workers will need reskilling / upskilling training with only half of such workers expected to have the access to any skilling opportunity as of today. This bring forth the top priority needed for analytical thinking, creative thinking and ability to explore use of AI and Big Data. As per the report, around 65% of companies are expected to have the Return-on-Investment from reskilling / upskilling training realized within a year of investment. Such businesses also seek the investment in skills training as an efficient intervention from governments who strive to align talent with employment. 79% of companies prioritize women, 68% identified youth and 51% to persons with the disability as part of their BEI programmes. Investing in learning and on-the-job training and process automation are the majorly preferred workforce development strategies by companies across the globe.

The pace of automation anticipated in 2020 survey was not met (WEF, 2023). However, there have been technology evolutions in sustainability and digitization areas, viz., AI, information security and renewable energy engineering, to name a few. Their impact has already been felt in clerical and secretarial roles, data entry clerks, traditional security and factory roles.

Skill Education in Higher Educational and Vocational Educational Institutions

Multidisciplinary Curriculum

The inter-, multi-, cross- and transdisciplinary courses are the order of the day, in preparing students for the dynamically evolving job roles, which necessitate combinations of skills from across domains. It is in line with NEP2020, and the holistic learning fosters creativity, thus enhancing critical thinking, peer learning and problem-solving abilities. Multidisciplinary curriculum in educational institutions can well prepare students for the complexities of the modern and integrated technological workplace and products. Multidisciplinary teams can holistically approach complex research problems and develop comprehensive solutions and impactful outcomes. The team can identify different aspects of a problem, which can be overlooked from one perspective. In such cases, global perspective becomes valuable for understanding and overcoming multifaceted issues. Promotion of entrepreneurship education by HEIs creates and nurtures a culture of innovation, incubation and self-employment and generation of jobs. Multidisciplinary teams are also found to be specifically well-poised to identify and take advantage on entrepreneurial opportunities. The combined skills of people from different disciplines

can lead to the creation of new cross knowledge, innovative solutions, products, services, or business models. Though select institutions support start-ups and guide in incubating and facilitating the multidisciplinary teams for their entrepreneurial skills, the numbers are to grow more, given the scale of employable manpower of the country.

Micro Credentials

Industry relevant micro-credentials embedded and integrated in undergraduate curricula which are suitable for online learning, for aspiring learners play a major role in equipping the professionals of the future. Universities are to encourage the learning of niche skills under disciplinary elective and open elective type of courses. Acknowledgement of other credentials and certifications besides the traditional degrees, allowing the diverse learning trails of individuals, to acquire their skills is imperative.

Addressing Skill Gaps

Identifying Skill Gaps by institutions in consultation with recruiting industries through regular futuristic skill gap analyses can help identify areas where the students will need skills for future roles. In this aspect, *Train-the-Trainer* models enable the teachers to get certified before handling the courses. This also results in continuous learning on their part that keeps them in tune with the changing dynamics of workplaces in enterprises. This also augments the regular teaching-learning process of the university. Professors can upload the required pre-class content in online academic portal of the University for ensuing deeper, more involved and productive discussions in the classrooms. Post class content can include the necessary student assignments targeted to bring out their accomplished learning through products, design ideas and innovations. Such innovations can lead to incubation of their proposals with a major impetus. As Ajay Kela, President & CEO, Wadhwani Foundation says "Instead of adhering to a traditional four-year programme, envision a model where individuals engage in 500 to 1,000 hours of continuous training every two to three years to adapt and evolve".

Industry-Institute-Immersion

As per (WEF, 2023), though 85 million present jobs will become obsolete by 2025, 97 million new jobs are anticipated due to the growth of AI and technology. The country holds a strong position in AI skill penetration, focusing on reaching the required demand of 1 Million by 2026, to fill the difference between demand and supply of 60-73% (Wheebox, 2024). As the life-cycle of industry relevant skills are reducing, the reskilling and upskilling of the industry personnel are becoming quintessential too, to keep them remain relevant to the requirements. This is where the institute immersion of the employees can take place, which serves both the University and industry. On the other hand, the faculty can undergo industry exposure regularly to get exposure to the industrial requirements, work with them to identify the possible avenues of collaboration, solve the industry problems through research at the institutions through the undergraduate, graduate and doctoral students. This is perceived to be greatly augmenting the industry institute immersion. Additionally, instead of researching for and creating solutions to address hypothetical problems, taking up real problems from industry and society can hugely help and justify the resources and time spent on hypothetical research resulting in journal publications devoid of any application.

Such industry-institute connect can also lead to Centres of Excellence and R & D laboratories in the niche areas with the state-of-the-art research facilities funded by and catering to the need of both the HEI and the industry. Closer ties between the two will enable fundamental research to extend to the applied research and technology development. It will enable industries to focus on futuristic R & D using optimal resources. The industry employees can also pursue their higher education from the HEI in custom designed programmes designed by both the stakeholders that is currently relevant to the industry.

Upskilling and Reskilling in the Industry

Both the public and private sectors are to focus on creating flexible and accessible reskilling pathways, so that the displaced workers successfully transition to the new jobs of the future. The hiring will focus on *skill based talent search* rather than the academic qualifications for the incoming talent. At the same time, it is also important that necessary reskilling of the present employees are offered to get adapt to the dynamically changing workforce

requirement. This shall lead to lifelong learning at the work place. It hence becomes quintessential to identify the skill gaps and close them to address the man power shortage.

AI and Big Data

Majority of companies, around 60% realize that AI and Big Data Analytics will grow in importance, thus proactively and strategically prioritizing and skilling employees in that direction. Though it is expected that, the generative AI has the potential to displace jobs, the utilization of AI and Big Data will only create larger number of new roles that can achieve enhanced business goals. With AI heavily dependent on data, the data literacy skills among workers grow by day. Employees will be expected to be work with and interpret the data for making informed decisions and contribute to AI-based processes.

Given this fact, the prime responsibility of organizations is in identifying the skill gaps in the company, anticipating and addressing the skills necessary for the future, and finding workforce with suitable talent. This leads to safer strategy of investing in learning and training in addition to automated processes. Having skill gaps in labor force ignored is rather seen as a greater barrier to transformation than the significance of investment capital of companies in every industry.

Leadership Development

Leadership development by identifying high-potential employees and offering specialized leadership training programmes to prepare future leaders for managerial roles remains a pertinent mechanism in a thriving industry. The leaders mentor and support their peers in learning new skills with periodical valuation and feedback mechanisms.

Skilling Women

Women Workforce

Women are increasingly becoming the major workforce and talent pool of choice for Electronic manufacturing, assembling and testing industries. Electronics market is being valued at more than $150 billion, out of which the domestic production accounts for around 65%. “The mobile phone manufacturing industry employs about 12 Lakh direct and indirect workers. In south India where 50% of manufacturing happens, the women workforce is more than 70%” says Mr. Pankaj Mohindroo, Chairman ICEA. Bharat FIH, the Foxconn Group of company has over 20,000 women at its 3 manufacturing units. Women are more suitable in assembly lines due to their innate learning ability and perseverance in providing quality output. The average age of women workers is around 22 years as per the input from the then Managing Director-Josh Foulger.

Equality

According to Mr. Aditya Narayan Mishra CEO, CIEL HR Services, the Electronic manufacturing sector in India is witnessing a progressive shift with 62-65% of the total workforce constituted by women, thanks to their dexterity and precision demonstrated by women. With tenacity ingenuity and determination, women transform sector and advocate for diversity and inclusion. The country’s Female Labour Force Participation Rate has significantly risen to 37% in 2023 compared to 32.8% in 2022. Women acting as a catalyst for social progress, education and skill development, financial literacy, employment and driving force of a family, the women’s day theme of the year 2024 “Investing Women: Accelerate Progress” justifies. Bloomberg’s study report says closing the employment gap between men and women could facilitate India’s GDP by 1/3 by 2050 (Bloomberg, 2021).

However, workplaces need to foster equal pay and job opportunities and enhance the upskilling of women workforce to unlock the India’s corporate potential. The Gig economy assisted by the digital technologies has the potential to expand women’s employment through remote and online work platforms with necessary training and skill development. Reskilling becomes essential, particularly in areas such as computer programming and relevant digital technologies. Technology adoption and leveraging the technology enabled online courses and virtual sessions for training requirements can indeed facilitate a flexible and more accessible skilling opportunities for women.

Future Work Paradigms

Cyber Security and Risk Management

With the 21st century identified as the information era, the demand for experienced cyber

security professional is on increasingly rising trend. The cyber security market in the country has reached around $6 Billion in 2023 and it is expected to account for 5% of the global market by 2028, growing at a Compound Annual Growth Rate (GAGR) of more than 30% during 2019 to 2023. As per India Cyber Security Domestic report 2023 (DCSI, 2023), Banking Financial Services and Insurance (BFSI) and IT / ITeS are the leading demand creators for cyber security with 97% of organizations investing in AI/ML and around 84% investing in Cloud. Gartner's reported the Global spending on information security and risk management reaching $188 Billion in 2023 raising from $169 Billion in 2022 growing at 11.3%. Additionally, the government's commitment to digitization fosters an environment leading to increased cyber security investment. In 2023, global security and risk management end-user spending is estimated to reach $188.1 billion. Worldwide end-user expenses on security and risk management is expected to total $215 billion in 2024, an increase of 14.3% from 2023 (Gartner, 2023).

In this scenario, quintessential talent gaps are to be identified for which training in the state of art technologies to make them readily employable are essential. Plush careers in cyber security are possible through tailored curricula integrated with HEIs and also with relevant industries through upskilling and reskilling. The cyber security education is considered as an important factor for the present transformative industrial environment dealing with huge quantities of data.

5G/6G Technologies:

India will need 22 million skilled workers to work in 5G related industries by 2025, in areas of Robot, Cloud Computing and the Internet of Things (IoT) as per the report by the Telecoms sector skill council (TSSC, 2023). The report released at the seventh edition of the India Mobile Congress says that, India is the only country anticipated to have skilled labour surplus in numbers with 1.5 Million worker by 2030. India presently needs 2.41 Million more workers with the main challenge that only 40% of India's graduates in CSE, IT and Maths are found suitable in the technology sector, due to the mismatch between what academia produces and industry requires. Proper reskilling, training and hiring strategies can close widening demand-supply gap by 2030. Added to that, more powerful 6G network technology will emerge sooner than later, and the telecom and technology sector are set to make significant additions.

Green Skills

The Council on Energy, Environment and Water predicts that India will potentially create 3.4 million jobs in solar and wind energy by 2030, 1.2 million through electric vehicle evolution by 2030, and 1.8 million in sustainable cooling solutions by 2037. And, India is poised to create a staggering 35 million green jobs by 2047 Biofuels, circular economy of waste and nature-based solutions also have high potential. The GSDP has also recognized 80 diverse green skills required for India. Skills such as biodiversity protection, environmental management, energy efficiency, waste management, sustainable agriculture, sustainable building designs and sustainable construction, climate change mitigation, sustainable water management, eco-tourism are identified for training (Sattva, SCGJ, & J.P. Morgan, 2023).

Professor of Practice

The initiative by University Grants Commission (UGC) to bring in the professional expertise from industry and other non-teaching professions is towards bringing in professional expertise into the HEI, through 'Professor of Practice (PoP)'. This will cater to learning the real world experiences in the class rooms by students and researchers. It can augment the graduates with industry relevant skills even while doing their academic degree. The contribution by PoPs also enables the curriculum to be in tune with the industry and societal requirements, thriving industry-institute-immersion and conduct of mutually beneficial joint research projects and consultancy mechanisms. This aspect has found a major push in National Educational Policy 2020 (NEP 2020) that seeks to transform higher education through focus on skill based education to cater to the requirements of the industry and the resulting economy. NEP recommends aligning vocational education with HEI and strengthen the collaboration between academia and the industry.

PoPs involve in the design and development of courses and curriculum with their understanding of the industry needs, involving with students, encouraging

them towards innovation and entrepreneurial activities with focused mentorship, offering training and workshops on the state-of-the-art developmental activities in industries. This hugely enhances the learning climate of the universities. This practice in higher educational institutes enables possibility of joint research projects, intellectual property generation, entrepreneurship and consultancy services as a teamwork with the faculty members of the HEI.

Micro Credentials and Online Learning

Micro Credentials

Online teaching from HEIs and industry directed micro credentials reach more people than ever before, thanks to the digital evolution phase of COVID-19. Online teaching can augment the university's own teaching and learning processes considerably enough for certain areas of learning. Additional experiential learning component which can transform the knowledge obtained in the online class into applied knowledge is of prime importance.

Given the increasingly shorter life time of required skills in the ever changing job requirements, academic and industry must partner together on a continuous basis. Identification, design and offer of such micro credentials by employers that are aligned to the key deliverables by HEIs need to go together. In addition to the academic credentials, a candidate's human skills are necessary that can make the employee be resilient, creative and capable of critical thinking and decision making even while working under pressure. This needs micro-credentials in topics such as management and leadership. Enabling a flexible model such as blended learning, with facility for employee to learn, upskill and reskill themselves in their own flexible hours.

The pandemic has enabled the HEIs become more equipped than ever to offer online courses in addition to physical classes. Such learnings will have to be applied practically and verified for their anticipated outcomes with feedback from all stake holders.

To summarize, with the industry and society leading the academia for their requirements, a paradigm shift is happening, which leads us to life-long learning and skilling, and greater industry-institute collaboration for larger good of the country and individuals.

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Bridging Tomorrow's Workforce: A Visionary Approach to Higher Education in 2047

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This research paper explores the trajectory of higher education in India with a futuristic lens, envisioning the landscape for 2047, aligned with the aspirations of Vikasit Bharat@2047 and the National Education Policy-2020. By synthesizing insights from recent literature and empirical data, the paper delves into key themes such as priorities outlined in the National Education Policy-2020, future trends in workforce development and skill requirements, and the impact of futuristic technologies on education and work. Through a Tree-of-Thought approach, the paper identifies challenges, opportunities, and innovative solutions for shaping a future-ready education system that fosters creativity, critical thinking, and adaptability. The findings underscore the importance of collaboration, innovation, and policy reform in realizing the vision of a vibrant and inclusive education ecosystem that equips learners with the skills and competencies needed to thrive in the digital age.

India, poised to emerge as a developed nation by 2047 under the vision of '*Viksit Bharat*@2047', faces a dynamic landscape shaped by rapid technological advancements and evolving global trends. The National Education Policy-2020 underscores the imperative of transforming the education sector to align with the needs of the future workforce. With the proliferation of futuristic technologies such as artificial intelligence, automation, and digitalization, the nature of work is undergoing profound changes, necessitating a reevaluation of higher education systems to ensure their relevance and effectiveness in preparing individuals for the jobs of tomorrow (Smith, 2023; Kumar and Singh, 2022).

Despite the aspirations for progress, India's higher education sector grapples with multifaceted challenges. One of the primary concerns is the mismatch between the skills imparted by traditional educational institutions and the demands of the modern job market. Furthermore, issues such as access to quality education, employability of graduates, and inclusive development persist, hindering the nation's ability to harness its demographic dividend and achieve sustainable growth (Choudhury et al., 2021; Sharma & Agarwal, 2023). Addressing these challenges is crucial to realizing the vision of a developed India by 2047 and ensuring the future prosperity of its citizens.

This research aims to explore innovative strategies and approaches to higher education that can effectively bridge the gap between India's education system and the evolving needs of the workforce in the context of 2047. The specific objectives include:

1. To critically analyze the key provisions and implications of the National Education Policy-2020 in the context of future workforce requirements.
2. To examine the impact of futuristic technologies on higher education delivery and skill development in India.
3. To identify best practices and successful initiatives that align higher education with the demands of the future job market.
4. To propose actionable recommendations and policy interventions for enhancing the effectiveness and relevance of higher education in India towards achieving the goals of *Viksit Bharat*@2047.

This study holds significant implications for various stakeholders, including policymakers, educators, employers, and students. By providing insights into the challenges and opportunities inherent in India's higher education system, it offers a roadmap for fostering innovation, inclusivity, and excellence in education delivery. Moreover, the findings of this research can inform evidence-based decision-making and policy formulation aimed at advancing India's socio-economic development agenda and realizing the vision of a developed nation by 2047 (Das & Dutta, 2022; Gupta & Sharma, 2023).

Literature Review

Evolution of Higher Education in India

The evolution of higher education in India

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reflects the nation's journey towards progress and development, marked by significant milestones and transformations. Historically, higher education in India was characterized by a focus on traditional disciplines and a limited reach, catering primarily to the elite class (Patel & Shah, 2021). However, post-independence, the government recognized the importance of democratizing access to education and expanding the higher education sector to meet the growing demands of a burgeoning population (Rao & Reddy, 2022). This led to the establishment of premier institutions such as the Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs), which played a pivotal role in raising the standards of education and research in the country (Mishra & Singh, 2023). Over the years, there has been a gradual shift towards inclusivity, excellence, and innovation in higher education, with efforts being made to enhance access, equity, and quality across the education spectrum.

Key Themes and Priorities of the National Education Policy-2020

The National Education Policy-2020 represents a landmark initiative aimed at transforming India's education landscape to meet the challenges and opportunities of the 21st century. Rooted in the principles of accessibility, equity, quality, and accountability, the policy envisions a holistic and flexible education system that nurtures the intellectual, emotional, and ethical development of learners (Government of India, 2020). Key themes and priorities of the policy include promoting foundational literacy and numeracy, ensuring universal access to education, fostering critical thinking and creativity, and enhancing vocational education and skills training (Jha & Pandey, 2021). Additionally, the policy emphasizes the importance of leveraging technology for personalized and inclusive learning experiences, as well as promoting multilingualism and cultural diversity in education (Mishra & Rathore, 2022). By addressing the diverse needs and aspirations of learners, the National Education Policy-2020 aims to lay the foundation for a knowledge-driven society and a vibrant economy.

Future Trends in Workforce Development and Skill Requirements

The future of workforce development in India is shaped by a confluence of factors, including technological advancements, demographic shifts, and evolving market dynamics. Automation, artificial intelligence, and digitalization are reshaping the nature of jobs and skill requirements, leading to a growing demand for workers with a combination of technical expertise and soft skills (Singh & Kapoor, 2023). In this context, there is an increasing emphasis on cultivating skills such as critical thinking, problem-solving, communication, and collaboration, alongside technical competencies, to thrive in the digital age (World Economic Forum, 2021). Moreover, the gig economy and remote work arrangements are redefining traditional employment models, creating new opportunities for entrepreneurship, freelancing, and flexible work arrangements (Dwivedi et al., 2022). To remain competitive in the global market and address the emerging challenges, India needs to invest in lifelong learning, upskilling, and reskilling initiatives that empower individuals to adapt to evolving job requirements and navigate complex career pathways.

Impact of Futuristic Technologies on Higher Education and Work

Futuristic technologies such as artificial intelligence, augmented reality, and blockchain have the potential to revolutionize higher education and reshape the future of work in India. In higher education, these technologies offer opportunities for personalized learning, adaptive assessment, and immersive educational experiences (Huang and Chen, 2021). Virtual labs, simulators, and online collaboration platforms enable students to engage with complex concepts and practical applications in innovative ways, transcending traditional classroom boundaries (Chatterjee and Ghosh, 2023). Similarly, in the workplace, technologies like automation and machine learning are streamlining processes, enhancing productivity, and creating new job roles and opportunities (Varshney and Saini, 2022). However, they also raise concerns about job displacement, digital divide, and ethical implications, underscoring the need for ethical frameworks and inclusive policies to harness their potential responsibly (Liu and Li, 2023). To harness the full potential of futuristic technologies, India needs to invest in digital infrastructure, digital literacy, and workforce development initiatives that prepare individuals for the jobs of tomorrow while ensuring equitable access and ethical use of technology.

Research Design

This research employs a qualitative research design to delve into the multifaceted landscape of higher education in India and its intersection with the evolving needs of the workforce in the context of the nation's aspirations for development by 2047. Through a systematic review of existing literature, policy documents, and scholarly articles, this study aims to synthesize insights and perspectives from diverse sources to inform the analysis and discussion (Das & Dutta, 2022; Mishra & Rathore, 2022).

Data Collection Methods

The primary data collection method for this study involves a comprehensive review of secondary sources, including academic journals, government reports, and reputable publications, to gather data on key themes, trends, and challenges related to higher education and workforce development in India. By leveraging existing knowledge and insights from established sources, this approach ensures the utilization of validated and authenticated information in the analysis process (Gupta & Sharma, 2023; Patel & Shah, 2021).

Data Analysis Techniques

Data analysis in this research will primarily involve thematic analysis of the collected secondary data. Through a systematic process of coding and categorization, key themes and patterns emerging from the literature will be identified and analyzed to gain a deeper understanding of the issues under investigation (Mishra & Singh, 2023; Rao & Reddy, 2022). Additionally, comparative analysis and synthesis of findings from different sources will be conducted to provide a comprehensive overview and insights into the dynamics of higher education and workforce development in India.

By employing a rigorous qualitative research design and leveraging secondary data sources, this study aims to contribute valuable insights and knowledge to the field of higher education and workforce development in India, with implications for policy, practice, and future research endeavors.

Bridging Tomorrow's Workforce: A Visionary Approach

Reimagining Higher Education for 2047

As India strides towards its vision of becoming a developed nation by 2047, reimagining higher education becomes imperative to meet the evolving needs of the workforce and society. Higher education institutions must transition from being mere providers of knowledge to becoming hubs of innovation, entrepreneurship, and lifelong learning. This transformation entails a shift towards learner-centered pedagogies, interdisciplinary approaches, and experiential learning opportunities (Jha and Pandey, 2021). Embracing a culture of creativity, critical thinking, and problem-solving will empower students to adapt to the dynamic demands of the future workplace and contribute meaningfully to societal development (Mishra and Rathore, 2022).

Aligning Education with Future Workforce Needs

To ensure the relevance and effectiveness of higher education in preparing students for the jobs of tomorrow, there is a pressing need to align educational curricula with emerging workforce trends and skill requirements. The National Education Policy-2020 lays the foundation for this alignment by emphasizing the integration of vocational education, internships, and apprenticeships into academic programmes (Government of India, 2020). Additionally, fostering industry-academia collaborations and facilitating hands-on learning experiences can bridge the gap between theoretical knowledge and practical application, enhancing graduates' employability and job readiness (Sharma & Agarwal, 2023).

Leveraging Technology for Enhanced Learning and Skill Development

Futuristic technologies such as artificial intelligence, augmented reality, and blockchain offer unprecedented opportunities to revolutionize higher education and skill development. By harnessing the power of digital platforms, virtual reality simulations, and adaptive learning algorithms, educators can personalize learning experiences, cater to diverse learner needs, and foster deeper engagement and retention (Huang & Chen, 2021). Moreover, technology-enabled assessment tools and digital badges can provide real-time feedback on student performance and competencies, enabling continuous improvement and recognition of skills beyond traditional credentials (Chatterjee & Ghosh, 2023).

Policy Implications and Recommendations

Policy interventions play a pivotal role in shaping the future of higher education and workforce

development. Building upon the principles outlined in the National Education Policy-2020, policymakers must prioritize investments in infrastructure, faculty development, and research and innovation to create a conducive environment for educational excellence and innovation (Mishra & Singh, 2023). Furthermore, policies promoting lifelong learning, upskilling, and reskilling initiatives are essential to empower individuals to thrive in a rapidly changing labor market (Rao & Reddy, 2022). Embracing agile and flexible regulatory frameworks that encourage experimentation and innovation while ensuring quality and accountability will be crucial in fostering a vibrant ecosystem of higher education and workforce development in India (Varshney & Saini, 2022).

By adopting a visionary approach to higher education, aligning educational offerings with future workforce needs, leveraging technology for enhanced learning, and enacting supportive policies, India can pave the way for a future-ready workforce capable of driving the nation's development and prosperity.

Examples

Successful Initiatives in Higher Education and Workforce Development

Several successful initiatives in higher education and workforce development exemplify innovative approaches to addressing the evolving needs of the future workforce in India. One such initiative is the Skill India Mission launched by the Government of India, which aims to provide skill training to over 400 million people by 2022, emphasizing the importance of vocational education and industry-relevant skills (Government of India, 2015). Through schemes like the Pradhan Mantri Kaushal Vikas Yojana (PMKVY), Skill India has facilitated the upskilling and reskilling of individuals across diverse sectors, fostering employability and entrepreneurship opportunities (Singh & Kapoor, 2023). Similarly, initiatives like the Atal Innovation Mission (AIM) promote innovation and entrepreneurship among students by establishing Atal Tinkering Labs (ATLs) in schools and colleges, providing access to advanced technologies and mentorship for young innovators (NITI Aayog, 2016). These initiatives underscore the importance of practive government interventions and multi-stakeholder collaborations in shaping the future of education and work in India.

Innovative Practices and Partnerships

Innovative practices and partnerships between higher education institutions, industries, and government agencies are essential for fostering a future-ready workforce. One notable example is the establishment of industry-academia collaboration centers and research parks within university campuses, facilitating knowledge exchange, technology transfer, and collaborative research projects (Mishra & Singh, 2023). These centers serve as incubators for innovation and entrepreneurship, providing students and faculty with opportunities to work on real-world problems and solutions in collaboration with industry partners (Varshney & Saini, 2022). Furthermore, initiatives like the Technology Business Incubators (TBIs) and Centers of Excellence (CoEs) promote industry-driven research and development in cutting-edge technologies, driving economic growth and competitiveness (Department of Science and Technology, 2020). By fostering a culture of innovation, collaboration, and entrepreneurship, these initiatives contribute to building a robust ecosystem for higher education and workforce development in India, aligned with the goals of Vikasit Bharat@2047 and the National Education Policy-2020.

Challenges and Opportunities

Addressing Barriers to Future-Ready Education

In the pursuit of future-ready education, several challenges must be addressed to ensure equitable access, quality, and relevance for all learners. One significant barrier is the digital divide, which disproportionately affects marginalized communities and rural areas, hindering their access to online learning resources and opportunities (Singh & Kapoor, 2023). Additionally, the rigidities of traditional educational systems, characterized by rote learning and standardized assessments, pose challenges to fostering critical thinking, creativity, and innovation (Jha & Pandey, 2021).

Furthermore, the mismatch between educational curricula and industry demands remains a persistent challenge, leading to graduate unemployment and underemployment (Varshney & Saini, 2022). Moreover, the rapid pace of technological change necessitates continuous professional development and upskilling, posing challenges to educators and learners alike (Dwivedi, et. al., 2022).

However, these challenges also present opportunities for innovation and reform. By leveraging technology and digital platforms, initiatives such as Massive Open Online Courses (MOOCs) and digital libraries can democratize access to education and provide flexible learning pathways for learners of all backgrounds (Huang & Chen, 2021). Moreover, reimagining assessment practices through competency-based approaches and digital badges can better capture learners' diverse skills and competencies beyond academic credentials (Chatterjee & Ghosh, 2023).

Opportunities for Collaboration and Innovation

Collaboration and innovation are essential drivers of progress in higher education and workforce development. Partnerships between educational institutions, industry stakeholders, government agencies, and civil society organizations can foster the co-creation of relevant curricula, work-integrated learning experiences, and research collaborations (Mishra & Rathore, 2022). Moreover, public-private partnerships can facilitate investments in infrastructure, technology, and skills development initiatives, thereby enhancing the employability and productivity of the workforce (Sharma & Agarwal, 2023).

Furthermore, the emergence of innovation ecosystems and startup incubators provides platforms for nurturing entrepreneurial talent and fostering innovation-driven economic growth (Mishra & Singh, 2023). By promoting a culture of innovation, risk-taking, and collaboration, these ecosystems can catalyze the development and adoption of cutting-edge technologies and solutions to address societal challenges and drive sustainable development (Rao & Reddy, 2022).

In conclusion, while challenges exist in realizing future-ready education, opportunities for collaboration and innovation abound. By addressing barriers to access, quality, and relevance, and embracing collaborative approaches to innovation, India can chart a course towards a vibrant and inclusive education system and a skilled workforce poised to thrive in the digital age.

Conclusion

Summary of Findings

Through an exploration of the future landscape of higher education and workforce development in the context of India's aspirations for development by 2047, this research paper has shed light on several key insights. It has highlighted the need for a visionary approach to higher education, emphasizing learner-centered pedagogies, interdisciplinary learning, and the integration of technology to foster future-ready skills and competencies. Additionally, the paper has underscored the importance of aligning educational offerings with the evolving needs of the workforce, promoting collaboration between academia and industry, and leveraging technology for enhanced learning experiences.

Implications for Policy and Practice

The findings of this study have significant implications for policy and practice in the field of education and workforce development. Policymakers are urged to prioritize investments in infrastructure, faculty development, and research and innovation to create an enabling environment for educational excellence and innovation. Furthermore, there is a need for agile and flexible regulatory frameworks that promote experimentation and innovation while ensuring quality and accountability. Additionally, initiatives promoting collaboration between educational institutions, industry stakeholders, and government agencies are essential to bridge the gap between education and employment and foster a culture of innovation and entrepreneurship.

Future Directions for Research and Action

Moving forward, there are several avenues for future research and action in the realm of higher education and workforce development. Further research is needed to explore the impact of emerging technologies such as artificial intelligence, blockchain, and virtual reality on education delivery and workforce dynamics. Additionally, longitudinal studies tracking the trajectories of graduates and their career outcomes can provide valuable insights into the effectiveness of educational interventions and workforce development initiatives. Moreover, action-oriented research focusing on the implementation and evaluation of innovative practices and policies is essential to inform evidence-based decision-making and drive meaningful change in the education sector.

In conclusion, by embracing a visionary approach to higher education, fostering collaboration and innovation, and addressing barriers to access and

quality, India can pave the way for a future-ready workforce capable of driving the nation's development and prosperity in the years to come.

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The Future of Work and Skill Development: Navigating the Evolving Landscape

Rajiv Mathur* and Sanjay Srivastava**

This article explores the transformative shifts shaping the future of work, driven by technological advancements and demographic changes. It highlights the crucial role of continuous skill development in navigating this evolving landscape and achieving career success. The article examines various skill development strategies, including formal education, informal learning, and employer-provided training. It analyses the challenges and opportunities associated with skill development, including accessibility, affordability, and keeping pace with change. Additionally, the article discusses the multifaceted initiatives undertaken by the Government of India to equip its workforce with future-oriented skills. The article concludes by emphasizing the significance of continuous adaptation, ethical considerations, and collaborative efforts across sectors in shaping a future of work that benefits all.

The contemporary global work environment is undergoing a paradigm shift driven by technological advancements (Brynjolfsson and McAfee, 2014), particularly in Artificial Intelligence (AI) and automation (Frey and Osborne, 2017). This transformation termed the 'future of work', presents a dual spectrum of challenges and opportunities (WEF, 2020). It underscores the imperative of continuous skill development as the linchpin for achieving career success (World Bank, 2018), as emphasized in the National Education Policy (NEP) 2020 of India (Ministry of Education, 2020).

Trends Shaping the Future of Work

Several key trends are shaping the future of work:

- ***Automation and AI:*** Automation is rapidly supplanting human labor in repetitive tasks across diverse sectors (Manyika, et. al., 2017), necessitating the development of programming and data analysis competencies alongside adept collaboration with AI systems (Brynjolfsson and McAfee, 2014). AI is revolutionizing various industries, from healthcare (Esteva, et. al., 2017) to customer service (Chatbots Magazine, 2023). The NEP 2020 recognizes this shift and emphasizes integrating computational thinking and artificial intelligence into the school curriculum **(**Govt. of India, 2020).
- ***Rise of the Gig Economy and Remote Work:*** The traditional 9-to-5 office layout is yielding ground to a more flexible work ecosystem facilitated by platforms like Internshala and Freelancer. in (Internshala, n.d.; Freelancer, n.d.). These platforms connect individuals with freelance opportunities in writing, graphic design, and web development, catering to the growing demand for self-motivation and adept time management skills (De Menezes et al., 2020). This trend is driven by factors like enhanced technological accessibility, talent acquisition imperatives in competitive markets, and escalating employee aspirations for work-life equilibrium (Bloom, et. al., 2015).
- ***Importance of Soft Skills:*** While technical acumen retains significance, the NEP 2020 recognizes the crucial role of soft skills in the future of work (Ministry of Education, 2020). For instance, effective teamwork in marketing campaign development hinges on critical thinking and problem-solving abilities to analyse market trends and discern customer needs (American Psychological Association, 2020). Creativity assumes centrality in ideating campaign strategies, while communication emerges as paramount in pitching campaigns to stakeholders and fostering effective team collaboration (World Economic Forum, 2016).
- ***Emerging Technologies****:* Beyond automation and AI, emerging technologies like Big Data, cloud computing, and the Internet of Things (IoT) will exert profound impacts on future employment landscapes (Manyika et al., 2017). Proficiency in

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comprehending the principles and applications of these technologies becomes indispensable for individuals adapting to the evolving work terrain.

The Need for Continuous Skill Development & Integrating Future Skills in Higher Education

The swift pace of technological evolution necessitates a paradigm shift towards continuous skill development and lifelong learning (World Bank, 2018), as emphasized by the NEP 2020 (Govt. of India, 2020). Individuals must proactively engage in acquiring new skills and updating their knowledge repertoire throughout their careers, leveraging avenues like formal education, informal learning, and employer-sponsored training initiatives (Brynjolfsson & McAfee, 2014).

Higher education institutions bear the responsibility of equipping graduates with the competencies requisite for success in the future of work by seamlessly integrating future skills into their curricula (World Economic Forum, 2016) with a focused emphasis on areas encompassing:

- **Critical Thinking and Problem-Solving**: The ability to dissect complex information, discern patterns, and devise innovative solutions to challenges (American Psychological Association, 2020).
- **Creativity and Innovation**: The capacity to generate novel ideas, exhibit lateral thinking, and adapt to evolving circumstances (World Economic Forum, 2016).
- **Digital Literacy and Adaptability**: Proficiency in harnessing technology effectively, swiftly assimilating new tools and platforms, and staying abreast of technological advancements (DeGagne, 2019).
- **Communication and Collaboration**: Proficiency in effective verbal and written communication, coupled with adeptness in collaborating with diverse individuals and teams (World Economic Forum, 2016).
- **Lifelong Learning:** The inclination and commitment to perpetually acquire and refine skills throughout one's professional trajectory (World Bank, 2018).

Building a Future-Ready Workforce: Government of India Initiatives

Recognizing the critical role of a skilled and adaptable workforce in a dynamic global environment, the Government of India actively promotes skill development and future proofs its human capital through various initiatives aligned with the NEP 2020 (Ministry of Education, 2020).

Leading the Charge

- **Ministry of Skill Development and Entrepreneurship (MSDE):** Spearheads the Skill India Mission, encompassing programmes like the Pradhan Mantri Kaushal Vikas Yojana (PMKVY), which offers industry-aligned training (MSDE, n.d.). The National Skill Development Corporation (NSDC) facilitates partnerships between government, private sector, and training providers (NSDC, n.d.).

- **Empowering Universities**

i. ***University Grants Commission (UGC*)**: Promotes schemes within universities, encouraging:

a) Integration of skill development courses: Equipping students with employable skills alongside academic pursuits (UGC, n.d.).

b) Fostering industry partnerships: Bridging the theory-practice gap through internships and projects (UGC, n.d.).

c) Nurturing innovation and entrepreneurship: Encouraging students to develop innovative ideas and pursue entrepreneurial endeavours (UGC, n.d.).

- **Future-Proofing Technical Education**

i. ***All India Council for Technical Education (AICTE):*** Prioritizes the overhaul of technical education curricula, aligning it with industry needs and ensuring graduates possess in-demand technical and soft skills (AICTE, n.d.).

- **Early Skilling in Schools**

i. ***Ministry of Education (MoE):*** Infuses future-oriented skills into the K-12 school curriculum, advocating for subjects like coding and computational thinking (Ministry of Education, 2020).

Key Government Initiatives

- ***Funding***

i. PMKVY: Offers financial assistance for skill training and certification (MSDE, n.d.).

ii. Skill Loan Scheme: Provides subsidized loans for skill development courses (MSDE, n.d.).

iii. Additional funding programmes offered by various ministries specific to their sectors.

- ***Training and Apprenticeship***

i. NSDC: Facilitates partnerships to create and deliver quality skill training programmes (NSDC, n.d.).

ii. Apprenticeship Mission: Promotes industry-led apprenticeship programmes (MSDE, n.d.).

iii. Sector Skill Councils: Define skill standards, develop training modules, and assess skill proficiency (NSDC, n.d.).

- ***Scholarships and Grants***

i. Scholarships and grants are offered to meritorious students pursuing skill development courses in specific high-demand sectors

ii. *Pradhan Mantri Kaushal* Kendra (PMKK): Provides scholarships for identified skilling courses (PMKK, n.d.).

- ***Digital Literacy Initiatives***

i. Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA): Aims to make rural India digitally literate (PMGDISHA, n.d.).

ii. Skill India Digital Platform: Provides online skill development courses, resources, and information (Skill India, n.d.).

iii. Digital literacy modules are integrated into existing skill development programmes .

These multifaceted initiatives aim to equip the Indian workforce with the necessary skills to navigate the evolving landscape, enhance employability, and contribute to the nation's economic and social progress (MSDE, n.d.).

Strategies for Skill Development

Formal Education

- *Universities:* Offer bachelors, masters, and doctoral degrees in various disciplines, providing both theoretical knowledge and practical skills. However, traditional university curricula may need to adapt to integrate future-oriented skills more effectively (World Economic Forum, 2016).
- *Vocational Schools*: Focus on equipping individuals with job-ready skills for specific trades or occupations through certificate programmes or diplomas. These institutions can play a crucial role in providing targeted training aligned with industry needs (World Bank, 2018).
- *Online Platforms*: Offer a flexible and accessible way to learn new skills through MOOCs (Massive Open Online Courses), micro-credentials, and online degree programmes . This option caters to individuals seeking to fit learning around their existing schedules and commitments (DeGagne, 2019).

Informal Learning

- Self-directed learning: This approach empowers individuals to take charge of their learning by utilizing online resources like tutorials, blogs, and e-books. MOOC platforms often offer self-paced learning opportunities, allowing individuals to progress at their own convenience (DeGagne, 2019).
- Workshops and conferences: These events offer intensive learning opportunities, often in a hands-on environment, and provide valuable networking opportunities with industry professionals. Attending events relevant to one's field can help individuals stay updated on industry trends and acquire new skills (World Economic Forum, 2016).
- Online communities: Participating in online forums and groups can be a valuable source of peer-to-peer learning. These communities allow individuals to share knowledge, ask questions, and stay updated on industry trends (DeGagne, 2019).

Employer-Provided Training

- ***Online Learning Platforms***: Organizations may provide access to subscription-based platforms offering a vast library of courses on various topics relevant to their industry or specific employee needs. This allows employees to learn at their own pace and convenience (DeGagne, 2019).
- ***Sponsorship of Workshops and Conferences***: Employers can invest in their employees' professional development by sponsoring their attendance at industryspecific events. This allows employees to gain exposure to the latest trends and innovations in their field (World Economic Forum, 2016).
- ***Internal Training Programmes*** : Organizations can develop and implement in-house training programmes tailored to their specific needs and the skills required for various roles within the company. This ensures that employees are equipped with the

skills necessary to excel in their current positions and prepare for future opportunities within the organization (World Bank, 2018).

Additional Considerations

The 70:20:10 rule suggests that individuals acquire 70% of their learning through practical experience on the job, 20% through informal learning like networking and conferences, and 10% through formal training activities (Corporate Learning Network, n.d.). Understanding this rule can help individuals and organizations develop a balanced approach to skill development.

Challenges and Opportunities

While skill development presents numerous benefits, it is not without its challenges:

- **Accessibility**: Disparities in access to resources such as high-speed internet, affordable education, or training programmes can exacerbate existing inequalities, potentially amplifying the skills gap (World Bank, 2018).
- **Affordability**: The costliness of formal education and training programmes erects barriers for individuals hailing from economically disadvantaged backgrounds.

  Exploring alternative funding models like scholarships, grants, and income-sharing agreements is crucial to address this challenge (World Bank, 2018).
- **Keeping Pace with Change**: The rapid evolution of technology and job demands poses challenges for individuals endeavouring to keep their skill sets up-to-date. Cultivating a culture of lifelong learning, promoting adaptability and continuous upskilling, and fostering collaborative partnerships between educational institutions and employers are required to overcome this challenge (World Economic Forum, 2016).

  However, the future of work also unfurls tantalizing opportunities:
- **Increased Flexibility**: Remote work and the gig economy furnish individuals with enhanced flexibility and autonomy over their work schedules, facilitating a harmonious balance between professional commitments and personal pursuits (De Menezes, et. al., 2020).
- **New Career Trajectories**: Emerging technologies herald the advent of novel and exciting job opportunities, necessitating the acquisition of innovative skill sets and catalysing innovation. For instance, the burgeoning metaverse is poised to engender fresh job prospects in realms like virtual world design, user experience (UX) design, and AI integration (WEF, 2023).
- **Lifelong Learning Odyssey**: The accentuation on lifelong learning fosters personal and professional growth, nurturing a milieu of adaptability and resilience. With an abundance of online resources and diverse learning avenues at their disposal, individuals can continually expand their knowledge and skill sets over the course of their careers (World Bank, 2020).

Conclusion

The future of work demands constant adaptation, and the key lies in prioritizing continuous skill development for both individuals and organizations. Upskilling and reskilling initiatives are crucial alongside integrating future-oriented skills into education to prepare the workforce for evolving demands. However, ethical considerations regarding automation and AI are paramount, requiring transparency, fairness, and responsible development to mitigate potential biases and negative impacts (Brynjolfsson & McAfee, 2014). Additionally, the future of work will impact diverse demographics unevenly, necessitating tailored support for the aging population and individuals with disabilities (WEF, 2020).

Through collaborative efforts across sectors, including government, industry, and educational institutions, we can create a future of work that harnesses the power of technology and human ingenuity to build a prosperous, equitable, and sustainable world for all (World Bank, 2018).

This paper has explored the transformative shifts shaping the future of work, the imperative of continuous skill development, and various strategies for upskilling and reskilling. It has also analysed the challenges and opportunities associated with skill development and highlighted the crucial role of ethical considerations and collaboration in shaping a future of work that benefits everyone.

Further research could delve deeper into specific aspects of the future of work, such as the impact of automation on specific industries, the ethical considerations surrounding AI development and deployment, or the policies and initiatives required to

ensure an equitable and inclusive future of work for all.

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India's Demographic Dividend: A Pathway of Skill Development for Future Work

Manoj Kumar* and Gitika Nagrath**

India is witnessing the demographic dividend phase wherein 68 per cent of its total population comprises of the working population i.e. within the age slab of 15-64 years with a median age of 28 years and is expected to enjoy this window of opportunity up to 2055 (Inclusive India 2047: empowering the demographic dividend, 2023). The Economic Survey 2018-19 records the pinnacle of India's young demographic dividend by around 2041 (Ministry of Finance, 2019). It implies that India is amongst one of the largest destinations for the pool of workforce at the national and international front and continue to remain so for the next around 20 years.

Considering these numbers, it is pertinent to understand the current status of employability of the youngsters in terms of their present skill status and the requirements of the industry in this direction. India ranks 60th internationally in terms of comprehensive skill requirements and employers stated that about 78 per cent of Indian youth lack practical skills (Jha, 2023). Another survey by aspiring minds reflected that only 7 per cent of engineering graduates were found to be employable out of the total respondents who participated in the survey (Choudhary, 2019). It reflects that employment opportunities for the young workforce are not an issue rather employability is the concern that needs to be addressed. The current skill ecosystem of the country is uncoordinated, disjointed, and overlapped which demands the transition in education towards skill-based work and employability-oriented interventions with significant industry involvement (Khare and Arora, 2023). Rapid changes in social structures, information technology (Bakay, 2022), and modernization (Ismail, et. al., 2021) lead to the requirement of a specific skill set among youngsters by enhancing the ways of their thinking, working, learning, surviving and sustaining in the 21st century (Binkley et al., 2012). Various authors and institutions have identified the checklist of skill set needed by the youth for making them employable in present century.

National Education Association (NEA), 2012 referred the framework of 4C's for outlining the 21st century skills which are discussed as below:

Creativity and Innovation

According to NEA (2012), meaning of creativity and innovation is being open and responsive to new ideas and the efforts of creative workforce of a nation decides the development of a country (Alshammari & Thomran, 2023). Robert Sternberg explained creativity as a combination of skill and attitude about emerging up with new ideas which are significant for the accomplishment of target (Language Arts Staff, 2015). This quality can be enhanced through small successes along with repeated mistakes with the adoption & use of various techniques like mind mapping, doodling, brainstorming, diagrams, flow charts etc. (Germaine, Richards, Koeller, & Irastorza, 2016) and the incorporation of technological tools helps in enhancing creativity & innovation (Alshammari & Thomran, 2023). Digitisation is one of the biggest fears at workplace for employers and employees which is not being addressed wholeheartedly and lead to anxious and weary feeling among the employees and results in quitting from the workplace (PWC, 2022).

Critical Thinking and Problem Solving

It is one of the important skills that plays a key role in helping students to deal with higher-order thinking skills i.e. social, practical and scientific problems (Miterianifa, Ashadi, Saputro & Suciati, 2020), and mediates the relationship of other 21st century skills like computational skills, creativity, digital literacy with problem-solving (Kocak, Coban, Aydin & Cakmak, 2021). Development of these skills is important for the students because it allows them to understand the complexity of the information given to them rather than simply retaining information (Dwyer, Hogan, & Stewart, 2012). Critical thinking means to reason effectively, recognizing connections between systems, concepts, and disciplines to solve problems

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and make decisions. This skill can be developed with critical reading as there is a positive correlation between the stated variables (Sari & Wardhani, 2020). The ways to hone these skills among students include letting them ask questions, participate in discussions, opportunity to practice active learning, the inclusion of real-life examples, presenting them with open-ended questions, give students observation-based assignments or projects, and providing diverse perspectives related to a problem.

Collaboration

The emergence of service and knowledge economy shifted the work pattern from individual oriented to team oriented and in the world where youth is nurturing; collaboration and teamwork becomes essential (Andain & Murphy, 2008). This skill requires the students to respect the differences in each other and work together with the set of their individual personality and thus with the understanding of this facilitate them to work on the problems collectively and thinking of novel and innovative ideas (Delp, 2011). Working in team includes communicating effectively, sharing of ideas, pooling resources with common and shared interest. Key element of this kind of involvement and sharing is willingness of the participant. It also helps in enhancing their social and emotional learning. Development of team skill effectively increase the aspirant's employment opportunities and stability in the long run because sharing and collaboration of knowledge is the key ingredient of success for 21st century learners in the global corporate setting.

Communication

It is a glue which keeps the rest of the stated C's required by 21st century learners together. It is the "ability to effectively articulate, receive, and give feedback on thoughts and ideas transmitted orally, in writing, visually, through use of technology, or via nonverbal communication" (NEA, 2012). The most coveted skills in this context are interpersonal relations, negotiation skills, and adaptability. Communicative competence increases the social and occupational potential among students and thereby determines the employability and capable workforce of young graduates (Martin, 2014). The employer also prefers a graduate aspirant who can communicate effectively without any communicative apprehensions; which means the feeling of anxiety and uncomforted while speaking with others at the workplace. The majority of the pool of graduates face the problem of communicative apprehension which acts as a barrier to employability (Adeyemi, Adekunle & Muhammad, 2017). Based on the understanding of the above-stated widely accepted 4C framework, there are possible methods of enhancing employability among the youth which are discussed below:

Align Education Programmes with Industry Skills Demands

Universities must maintain close contact with the employer which on one side helps the student's exposure to experiential learning and on the other side higher education institutions can have better access about the understanding of information on skills in demand by the industry. Further, the students can be trained in the demanded skill which will enhance their employability. Universities can keep the industry experts on the panel of board of studies which can help in introducing new industry relevant courses replacing the outdated courses within the existing curriculum of academic programmes . New industry driven programmes can also be started where the delivery of courses of the programme can be jointly undertaken by industry experts and academicians. The overall idea of offering to students must ensure the global, national and local needs of the job markets.

Establishing Centre of Excellence

Universities and other higher education institutions should focus on establishing the centre of excellence which will provide a research platform with the involvement of academia and industry. The students get the opportunity to collaborate with the industry for sharing their creative and novel ideas which may be shaped into reality with the expertise and involvement of academic and industry research & innovation. These centres are established by the industry within the higher education premises to cater the needs of specific sectors. "Centre of Excellence is a body that provides leadership, best practices, research, support, training of trainers and skill training for a specific sector/s" (Ministry of Skill Development & Entrepreneurship, 2019). It is important for academic institutions to carefully identify the sector for the establishment of a centre of excellence considering the availability of academic expertise which must align with the specific skill sector industrial partner.

Internships and Industry Projects

Universities must ensure that internships should be embedded within the curriculum for majority of its programmes and specifically for technical and professional skill-oriented programmes. It is an excellent opportunity for the students to network with the industry professionals, experiment, commit mistakes & learn and develop themselves as per their requirements before entering workforce which will help the students as well as companies for the smooth transition at workplace. In this regard, NEP 2020 guidelines strongly suggest the inclusion of internships within the curriculum in all undergraduate programmes (University Grant Commission, 2022). In addition, the industry announces real-time bound projects of specific duration from time to time which provides a chance for the students to apply classroom learnings practically and immersion of students in a professional environment. This type of exposure sensitizes the youngsters to understand the requirements and intricacies involved in professional front. It will transform them to nurture their skills, enhance their creativity and infuse a sense of confidence. Higher education institutions should keep a watch on these types of industry live projects and make the students aware and facilitate to apply these projects.

Focus on Soft Skills

It is one of the skills which determine the professional success of an individual in the long run. Soft skills are the repository which includes communication, interpersonal skills, emotional intelligence, teamwork and adaptability. Once the youngsters enter into the professional life, they will be required to present and share their hard-core technical concepts and ideas with the teams which demands soft skills. Hard skills are definitely required to land into the job whereas, soft skills are necessary for the long-term success in the job (Qizi, 2020). Different ways to acquire these skills may include membership in different student clubs, assuming leadership roles in different student activities, attending soft skills training and reading self-development books (Mwita, Kinunda, Obwolo & Mwilongo, 2023). Incorporation of soft skills in curricula by higher education institutions does not serve the intended purpose and it is recommended to include soft skills training through pedagogical assessment of each of the courses (Almeida & Morais, 2021) and faculty to ensure these skills may be instructed in tutorial, lecture or any other form of study group (Tang, 2019).

Develop Digital Literacy

Proficiency in digital know how improves the academic performance and advances the prospects of getting a higher paying career and teaching these skills to students of higher education will help them to start with better career opportunities (Khan, Sarwar, Chen & Khan, 2022). The digitally literate individual possesses the ability "to use information and communication technologies to find, evaluate, create and communicate information". Integration of Information and Communication Technology in the classroom could enhance the 21st century learning skills for both undergraduate and graduate levels significantly (Pheeraphan, 2013). Different methods to develop digital literacy include self-learning regulated strategies (Anthonysamy, Koo & Hew, 2020) and the inclusion of computers and software as a part of the curriculum (Khan, Sarwar, Chen & Khan, 2022). Assignment preparation & submission, and classroom activities can also be done through the use of digital modes.

Holistic and Multidisciplinary Education

The idea of 21st Century learning process is the acquisition of key domain knowledge with additional skills i.e. learning skills (critical thinking, communication, collaboration & creativity), life skills (social skills, leadership, initiative) and literacy skills (technology literacy, information literacy, media literacy). Curriculum plays a significant role in providing holistic, multidisciplinary, flexible and innovative education for the purpose of embedding the required 21st century skills among students. The object of this approach is to create an ecosystem where the unique capabilities of every single student can be identified and nurtured for his/her holistic development. New Education Policy (NEP) 2020 inculcates the whole idea of providing the stated type of experiences to the student during his/her formal education learning process to create lifelong learning. In the higher education system, it can be through the adoption of the choice-based credit system, creation of repositories of ability enhancement courses, skills enhancement courses, value-added courses and multidisciplinary courses, out of which the student can choose the course as per his/her personal interest and motivation abiding by the credit requirements of the programme followed by the institution. Higher education institutions need to implement the NEP

2020 framework in the true spirit to reap the benefits of creating a pool of employable youngsters.

Conclusion

India is going through its golden period of demographic dividend wherein; the proportion of the working population is higher than the non-working population and it will continue for the next two decades which implies the immense potential among the workforce who can contribute to the economic growth of a nation and serve as a large resource pool at national and international front. Globally, Information Technology (IT) and Business Process Outsourcing (BPO) sector had already witnessed the India's competitive advantage of large pool of graduates with STEM (science, technology, engineering and mathematics) backgrounds. There is a huge scope of this population to be absorbed in other sectors viz; manufacturing, construction, trade, tourism, transportation, e-commerce, etc. (ey.com, 2024). In order to take complete advantage of the rapidly changing job market of 21st century which is driven by information technology and digitalisation, youngsters are expected to hone a specific set of abilities along with the hard skills which are outlined by the National Education Association. These skills include creativity and innovation, critical thinking & problem solving, collaboration and communication for the sustainability of the students' career. However, over some time with professional experience an individual learns these skills but by the time the most productive time period of individual's career might get lost. It means it is significant to sensitise the youngsters about the relevance and learning of 21st century skills before they actually start their professional life. In light of this discussion, higher education institutions are also going through various changes for the teaching and learning and should always remain ready to understand, adapt and respond to the market driven changes and expectations through the adoption of flexible outcome-based teaching and learning processes.

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Higher Education for the *Divyang* in 2047 Bharat : Opportunities and Pathways

Trilok Kumar Jain*

This is a conceptual paper about higher education in the year 2047 with specific reference to physically challenged persons in Bharat. This paper presents different options and possibilities that may be the outcome of the present changes in the field of higher education. It is expected that the future of higher education will be much more engaging and enable students to participate in their complete transformation. The discussions revolve around different directions, which seems the outcome of the present-day changes.

A *divyang* person is a person with special needs a person who is physically challenged or a person having different abilities. This person needs some special infrastructure, a special support system, and counseling to be able to lead a normal life. These persons should get opportunities to study with normal persons and they should be able to compete with normal persons with the help of special support/ infrastructure provided to them. They should be provided required support so that they can participate like a normal person. Every institution is expected to create a supportive environment for the Divyang persons.

Higher Educational Institutions are expected to provide infrastructure and support systems to enable the *Divyang* persons to use the best resources available for education, research and skill development. There have been major changes in this sector, but these changes have been inadequate in terms of their impact. There is a hope that the future will be a better time in this sector. Higher educational institutions should induct skilled persons who can help persons with special needs in higher educational institutions (Taylor, 2005).

There has been a lot of curiosity about the pace of transformation in the field of education. Everyone is excited about the future. However, we are all contributing to this transformational journey. There have been major changes in the field of education. However, the pace of changes has not been so profound as in other industries or services. The sector of higher education has also been experiencing some resistance to these changes. Technology has enabled online education. Transformation of educational systems has enabled greater flexibility, creativity, and opportunities for innovation.

Divyang is a Hindi word meaning a person with special needs. This word is better than physical disability or any other word because it indicates respect for that person. The word Divyang is made from the word - Divya - which means God-like or something uniquely superior. Persons with disability have always faced discrimination and dejection. However, now the situation has started changing and a lot of changes are taking place. Thanks to AICTE, NAAC, NIRF and other such bodies, now almost all the institutions make a provision for disabled students. There is mandatory reporting in all these institutions. There have been major changes in the field of infrastructure support also. A few countries are already encouraging persons with special needs to actively participate in regular classes. These initiatives are already giving positive rewards (Skårbrevik, 2005).

Future Directions and Possibilities

Many options could contribute to the development of higher education in the years to come. The most likely possibilities are discussed below:

a. ***Provision of Counselling***: Better provision for counseling and mentoring will enable the students to make better decisions and remain motivated.

b. ***Greater Options for Study*** : today there are plenty of opportunities in the field of

c. ***Use of Technology***: Technology will be an important contributor to the development of the higher education sector. The use of the internet and IT has enabled the introduction of online education, online examination systems, online counseling and online projects. All these changes will substantially help and support the challenged persons.

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d. ***Better Opportunities in the Field of Sports***: There has been increased participation of challenged persons in the field of sports. This must be appreciated. This will create greater opportunities in the years to come.

e. ***Better Infrastructure***: Higher educational institutions are improving their infrastructure. They are now transforming themselves. Now we find much better romps or support infrastructure in these institutions. By 2047, every institution will be very friendly to physically challenged persons

f. ***Greater Flexibility***: Today it has become possible in many institutions for a student to take up MOOCs or other online courses and claim credits for those courses in the regular program. This is a welcome move. There will be greater freedom and great opportunities in the years to come.

g. ***Centres of Excellence***: There should be special institutions to focus on improved standards to create friendly infrastructure for persons with special needs. There is a need for many such research centres, which can develop better standards and guide others in the path of transformation.

h. ***Legal Changes:*** The government is expected to introduce required changes in laws and regulations to improve the overall situation of higher education. This point is clarified here with the example of laws relating to mentally challenged persons. For many decades, a law on lunacy was in force, this law was very negatively worded. Now this law has been replaced by new laws. The persons suffering from some mental challenges were not allowed to participate in normal activities - the laws even provided for chaining them. This type of law existed for so many decades even after independence. These changes are taking place now. We hope that by the year 2047, we will have laws and regulatory frameworks that will support the challenged persons.

Conclusion

It is expected that there will be major changes in the field of higher educational institutions, which will create a friendly environment for supporting persons with special needs. The pace of changes will be faster in the years to come to enable the development of the required infrastructure and support systems.

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Capitalising on the Potential of Collaborative Vision in Higher Education: A Win-Win Approach

Rakhi Sawlani*

In the 21st century, academic collaboration has become increasingly globalized, in terms of interdisciplinary, multidisciplinary, transdisciplinary, and inter-professional collaboration. ICT Advances have facilitated collaboration among scholars from different countries and disciplines. Throughout history, academic collaboration has played a crucial role in advancing human understanding, and knowledge, fostering innovation, and addressing complex challenges of society by harnessing the collective expertise and resources of diverse stakeholders within academia and beyond. It continues to be a cornerstone of scholarly inquiry and progress in the modern era, now leading the future eras. Collaborative projects have become commonplace, contributing to the rapid advancement of knowledge in diverse fields. All government initiatives in the form of policies, programmes and plans rely on collaboration which is much in demand nowadays for decreasing the gap, increasing practical skills, and combining theoretical knowledge with sufficient practical skills. Given that by 2035 all affiliated colleges should become degree-awarding multidisciplinary autonomous institutions, it is necessary to develop a road map to transform all affiliated colleges to attain the status, either alone or through collaboration with nearby institutions in the form of clusters or by becoming a constituent part of a university as envisioned in NEP 2020 (UGC Guidelines 2022, pg.8). Academic collaboration between institutions, through Higher Educational Institution (HEI) clusters, leading to multidisciplinary education and research in different modes.

Etymologically, word is originated in C19 from the Late Latin word collaborare, 'co' means together + 'laborare' means work. Co-labor means 'working together', when one person or group collaborates with another person or group, they work together, for a special purpose or shared goal, mat be for some activity or project. The progress of NEP 2020 is monitored through five themes, namely: Learner-centric education, Digital Learning, Industry-institute collaboration, Academic Research and internationalization, and Indian Knowledge System. UGC regulations lay down the minimum standards for academic collaboration between Indian HEIs and foreign HEIs to offer Twinning, Joint Degree and Dual Degree Programmes (The Gazette of India: Extraordinary, 2022, Part III-Sec.4).

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Academic Collaboration in HEIs

Academic collaboration refers to the collaboration between academic institutions for improving skills, increasing visibility and making a network for further growth and development. It is a systematic process by which individuals, institutions, or organizations work together to pursue common goals in research, teaching, or other scholarly activities. Effective academic collaboration often requires planning, teamwork, exchange, clear communication/discussion, mutual respect, trust, support, shared goals, and a willingness to compromise. Collaboration enhances the quality and impact of scholarly work, facilitates access to resources and expertise, and contributes to the advancement of knowledge in various fields.

Academic Research collaboration consists of three main phases (Fig-1 and 2). Each phase consists of more than one step or sub-phase. Pre-Collaboration Phase, Pre stands for preparation and describes the phase to be ready to collaborate. This phase is affected by individual efforts, which can have a qualitative impact on the collaboration. Second, there is the actual Collaboration Process that includes the interaction between the researchers. Last, there is the phase after the collaboration called as Post-Collaboration Phase and it represents activities that can influence further collaboration attempts (Tavanapour and Bittner, 2017).

Getting Partnership Ready

Academic collaboration can take various forms teacher-pupil collaboration, supervisor-assistant collaboration, researcher-consultant collaboration, collaboration among colleagues and collaboration between organisations. Broadly speaking, it may involve interdisciplinary, inter-institutional, international, or industry-academia partnerships as below:

Fig 1. Phase-wise Academic Collaboration process

Phases	Steps
Pre-Collaboration Phase	Motivation Instruction Shared Understanding Participation
Collaboration Phase	Prototyping Feedback Revise Submit
Post Collaboration Phase	Process Documentation Sharing Knowledge/ methods Learning

Fig 2. Successful Model of Academic Collaboration



Research Collaboration

Research collaboration in higher education refers to the cooperation between academicians, scholars, researchers, institutions, organizations or disciplines to conduct research activities/projects aimed at advancing knowledge, share resources, publish findings together, and addressing complex challenges. This often leads to more comprehensive and interdisciplinary studies.

Interdisciplinary Collaboration

Faculty members and researchers from different academic disciplines collaborate to combine their expertise and perspectives, transcend traditional disciplinary boundaries, leading to more comprehensive and innovative teaching, learning and research outcomes. It is particularly valuable for tackling complex, multifaceted problems that cannot be adequately addressed within the confines of a single discipline e.g. Biomedical Engineering, Urban Planning and design, Digital Humanities, Neuroscience and Psychology, Global Health, AI and Robotics, Climate change adaptation and Resilience, Environmental sustainability.

Inter-institutional Collaboration

Universities, research centres, and academic departments collaborate with each other to pool resources, expertise, infrastructure, and funding for large-scale projects or initiatives. These collaborations enable institutions to undertake ambitious research initiatives that require diverse perspectives and specialized facilities. The institution will have to enter into a written Memorandum of Understanding (MoU) with its partner institution(s) for collaboration.

International Collaboration

Academics from different countries collaborate to address global challenges, share knowledge across borders, and foster cultural exchange. The purpose is to collaborate on educational projects to leverage global expertise, resources, and perspectives. International collaborations promote cross-cultural exchange, foster networking opportunities, and facilitate access to funding sources that support collaborative research efforts.

University-Industry Collaboration

Academic institutions partner with private companies or industries to undertake research, develop technologies, provide training, expertise, and address real-world challenges. These collaborations provide access to industry insights, funding, and facilities, while industry partners benefit from academic expertise and innovative solutions to practical problems.

Government-Academia Collaboration

Government often fund research collaborations with universities and research institutions to address national priorities, such as public health, environmental sustainability, or technological innovation. These collaborations facilitate the translation of research findings into policy recommendations, practical applications, or commercial products that benefit society.

Student Collaboration

Students collaborate on research projects, group assignments, or extracurricular activities, learning

valuable teamwork and communication skills, hands-on experience, mentorship opportunities, and exposure to interdisciplinary teamwork in the process.

Conference and Workshop Collaboration

Academics organize and participate in conferences, workshops, and seminars to exchange ideas, present research findings, and network with colleagues from around the world.

Research Collaboration

The term 'collaboration' in academic research is usually thought to mean an equal partnership between two academic faculty members, pursuing mutually interesting and beneficial research and generally involving researchers of differing designation, funding status, and types of organizations (Fig-3). Even if the two principal collaborators are similarly powerful, a collaboration frequently involves several other people from the research groups of the Principal Investigators, Co-principal Investigators, post-doctoral fellows, research staff members, graduate students, and/or undergraduate students. A few distinctions in collaborations can occur:

Collaboration for a Research Project : Members of two research groups in different departments of the same institution work together on a project. No external funding is involved, and the work is divided equally between the two groups, they meet together regularly to review their progress and plan for publication of their results.

Collaboration between Academic and Non-academic Researcher : A researcher from a private company (non-academic) pursuing own project works with the research group of an academic faculty member for several months, while learning about current techniques and research questions from others in the group.

Collaboration for Research Data Collection : A senior researcher collaborates with three junior faculty members at other institutions to complete large data collection.

Collaboration for Learning New Research Technique - A graduate student travels to another institution, stays for 2-3 weeks, and participates in the research of other groups.

Collaboration for a Combined Research Analysis : A researcher familiar with laboratory analyses contacts an agricultural researcher, each carries out their own analysis on the effect of a new compound on living plants and combines the results for publication.

Collaboration between Research Collaborators : A collaboration among ten research groups in six countries is established to gain a global perspective on public health. The groups independently apply for their own funding and make the data available to the entire unit as soon as research students gather the data set and complete their research work.

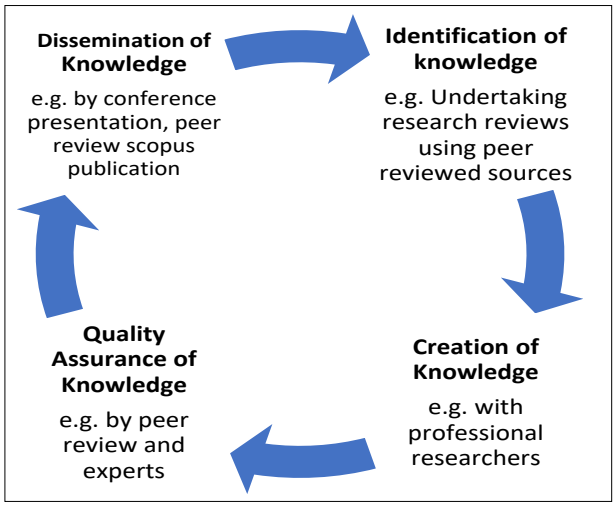
Purpose of Research Collaboration

US President, Joe Biden, and India's Prime Minister, Narendra Modi, announced a joint initiative, to prepare a satellite for a joint mission between NASA and the ISRO, to boost research collaboration in space, defense and new technologies (Nature, Vol 623, 2023). The purpose is multifaceted, aiming to leverage the collective expertise, and resources, and achieve common research goals for advancing knowledge and innovation. The key purpose of research collaboration along with examples are as below:

Access to Expertise: Collaboration allows researchers to access expertise in diverse areas, enhancing quality and scope of research. Biologists studying the effects of climate change on ecosystems collaborate with a statistician to analyse complex data sets.

Resource Sharing: Collaborating institutions can pool resources such as laboratory facilities, equipment, and funding, enabling researchers to undertake ambitious projects. Multiple universities collaborate on a large-scale astronomy project.

Fig 3. Research Collaboration Cycle



Interdisciplinary Innovation: Collaboration across different academic disciplines fosters interdisciplinary innovation by integrating insights and methodologies from various fields. For instance, researchers in biology, engineering, and computer science might collaborate to develop medical devices for personalized healthcare.

Addressing Complex Challenges: Collaborative research enables scholars to address complex societal challenges that require expertise from multiple disciplines. For instance, researchers in environmental science, economics, and public policy might collaborate to develop strategies for sustainable water management in arid regions.

Knowledge Exchange and Transfer: Collaboration facilitates the exchange of knowledge and best practices among researchers, leading to mutual learning and skill development. IIT Gandhinagar and Deakin University Australia signed MoU to bolster academic and research collaboration (TOI, Nov 2023).

Enhanced Impact and Visibility: Collaborative researches lead to higher-impact publications, increased citations, and greater visibility within the academic community and beyond. A collaborative study involving researchers from multiple countries might attract media attention and influence policymaking on global health issues.

Capacity Building**:** Collaboration can help build research capacity, particularly in developing countries or underrepresented fields, by providing training, mentorship, and access to resources. Airbus and IIT-K signed MoU to boost Indian aerospace talent, developing educational programmes and activities together (TOI).

Inter-institutional Collaboration

This is the most popular form, commonly termed as Memorandum of Understanding (MoU) used widely in international collaborations, research agreements, academic partnerships, government initiatives and non-profit collaborations. It is a formal agreement between two or more parties outlining their intentions, interests, commitments, and mutual understanding regarding a particular project, collaboration, or partnership with clarity and transparency. AICTE Collaborations (MoU) with other organizations: Meta, Microsoft, Cisco, NITs, IITs, IISERs, UNESCO, NTA, CBSE, Google India, AIR, LinkedIn. NIOS signs MoU with Ministry of Skill Development and Entrepreneurship (MSDE). The key features and uses are as under:

- Outlining the scope and objectives of the collaboration or partnership, including the goals, activities, and expected outcomes.
- Identifying the parties involved in the agreement, such as organizations, institutions, government agencies, or individuals, along with their roles and responsibilities.
- Specifying the terms and conditions governing the collaboration, including timelines, resource commitments, funding arrangements, intellectual property rights, confidentiality clauses, and dispute resolution mechanisms.
- Articulating the mutual benefits and expectations of the parties involved.
- highlighting the advantages and opportunities resulting from the collaboration.
- Allowing parties to adjust or amend the terms of the agreement as needed over time.
- Unlike contracts, it is non-binding, meaning they do not create legally enforceable obligations, and serve as expressions of intent and goodwill between parties.
- Not a final agreement, it signals the parties' intent to negotiate and work towards a formal contract or agreement in the future.
- Serving as a written record of memorialization of understanding between parties
- documenting key aspects of the collaboration for reference and clarity.
- helping manage risks and uncertainties associated with collaborations by clarifying expectations, roles, and responsibilities upfront, thereby reducing the likelihood of misunderstandings or disputes later on.

University-Industry Collaboration (UIC)

It is known by various terms, industry-academic partnership or university-industry linkage, which refers to the cooperation between academic institutions (such as universities, colleges, and research institutes) and private sector industries (such as corporations, businesses, startups and, entrepreneurships) to undertake joint research projects, technology development initiatives, or educational programmes (Fig-4). This collaboration involves leveraging the complementary strengths and resources of both academia and industry to achieve common goals. UIC plays a crucial role in bridging the gap between academic research and industrial innovation, fostering

knowledge exchange, promoting technology transfer, and driving economic growth and competitiveness.

Role of University in UIC

Research and Development (R&D) Projects: Academic researchers collaborate with industry partners to conduct joint R&D projects aimed at developing new technologies, products, or solutions. The three pivotal MoUs between Schneider Electric, CSTEP and Southern Illinois University, USA (TOI, Jan 2024).

Technology Transfer and Commercialization: Academic institutions transfer their research findings, inventions, or intellectual property to industry partners for further development, commercialization, and market deployment. The largest technology collaboration between Tejas network and IIT Madras, IIT Kanpur and SAMEER of 12 Cr to develop a 5G RAN sub-system (TOI, Dec 2023).

Internship and Work Placement Programmes : Academic institutions collaborate with industry partners to offer internships that provide students with hands-on experience, mentorship, and exposure to real-world industry practices. For instance, a computer science student may intern at a software company to gain practical programming skills.

Professor of Practice (PoP): Mangalore University and Many other such universities bring in industry experts from various fields through PoP to help groom graduates to be industry-ready by offering adequate training and skills (TOI, Aug 2023).

Role of Industry in UIC

Consulting and Expertise Exchange: Industry partners engage academic experts as consultants or advisors to provide specialized knowledge, insights, or technical assistance on specific projects or challenges. Samsung R&D Institute Noida and IIT-Kanpur established 5-year MoU to collaborate on joint research projects encompassing IIT students, faculty and Samsung engineers in key growth areas such as health, visual frameworks, B2B security, Generative AI, and cloud technologies (TOI, Jan 2024).

Continuing Education and Training**:** Industry partners collaborate with academic institutions to develop and deliver customized programmes / workshops/courses tailored to the needs of their employees/specific industry sectors. A technology company might sponsor a data analytics training program at a university to upskill its workforce.

Funding and Sponsorship: Industry partners provide financial support, grants, or sponsorships to academic researchers/research centres/academic departments to fund research projects, equipment purchases, or student scholarships. A Telecom company might sponsor a research lab at a university to explore new networking technologies.

Purpose of UIC

It serves several important purposes, each contributing to the mutual benefit of both parties as well as broader societal advancement. By working together, both sectors can achieve greater impact and contribute to positive societal outcomes. The key purposes are as below:

Innovation and Technology Development: By combining the research expertise of academia with the practical experience and resources of industry, UIC fosters innovation and the development of new technologies, products, and solutions leading to breakthroughs in various sectors. Yudiz Solutions, a digital transformation and tech service provider signed MoU with LJ Institute of Engineering and technology to leverage combined knowledge and practical applications of emerging technologies through intern projects, consultancy services etc (TOI, Feb 2024).

Knowledge Exchange and Transfer: UIC facilitates the exchange of knowledge, skills, and best practices between academia and industry. Academic researchers gain insights into real-world challenges, industry trends, and market needs, while industry partners benefit from access to cutting-edge research, specialized expertise, and novel ideas.

Addressing Real-World Challenges: Collaborative projects often focus on addressing societal challenges and needs, such as environmental sustainability, and economic development, for practical solutions with tangible benefits.

Talent Development and Workforce Training: UIC provides students and researchers with valuable hands-on experience, mentorship, and exposure to industry practices through internships, and collaborative projects. This helps prepare the next generation of professionals with the skills and knowledge needed to thrive in the workforce. Nokia and the Indian Institute of Science (IISc) opened Nokia Center of Excellence (CoE) in Networked Robotics at Bengaluru to promote inter-disciplinary research involving robotics and advanced communication technologies in 5G and AI.

Commercialization and Economic Growth: UIC can facilitate the commercialization of research findings and technologies, leading to the creation of new products, businesses, and industries. This contributes to economic growth, job creation, and competitiveness by translating academic research into tangible economic and social impact.

Building Stronger Research Ecosystems: UIC strengthens the research ecosystem by fostering partnerships between academia, industry, government, and other stakeholders. By leveraging the collective strengths and resources of multiple sectors, UIC enhances research capacity, accelerates innovation, and fosters interdisciplinary collaboration.

Long-Term Strategic Partnerships: UIC often extends beyond individual projects, leading to long-term strategic alliances, for continuity, stability, and mutual support for ongoing research, innovation, and knowledge exchange initiatives.

Government-Academia Collaboration (GAC)

It is also known as public-academic partnership, which refers to the cooperation and partnership between governmental agencies or bodies and academic institutions to undertake joint projects, initiatives, or programmes aimed at informing policymaking, and promoting public welfare by leveraging the expertise and resources (Fig-5). GAC serves several important purposes, each contributing to the research & innovation, informing evidence-based policy, societal progress, promoting economic growth and competitiveness, strengthening democratic values and accountability, and the mutual benefit of both parties. NCERT partners with Khan Academy, Curtin university, Google, Rotary India, SAAVN media for its various projects. Major government schemes for collaboration: SPARC, IMPRINT, UAY, Research Park, NCCT, IIGP. The key aspects and examples of GAC are as follows:

- Government provides research funding, grants, or contracts to academic researchers and institutions to support scientific research, innovation, and tech development in various fields. iRISE is a collaborative programme between the Department of Science & Technology (DST), IISER Pune, British Council, Royal Society of Chemistry, and Tata Technologies.
- Academicians collaborate with government agencies to conduct policy research, analyse public policy issues, and provide evidence-based recommendations for policy development and implementation. Bharti Institute of Public Policy (BIPP) at the Indian School of Business (ISB) Hyderabad signed agreements with 12 state government departments on policy formulation in education and environment (News 360, 2023).

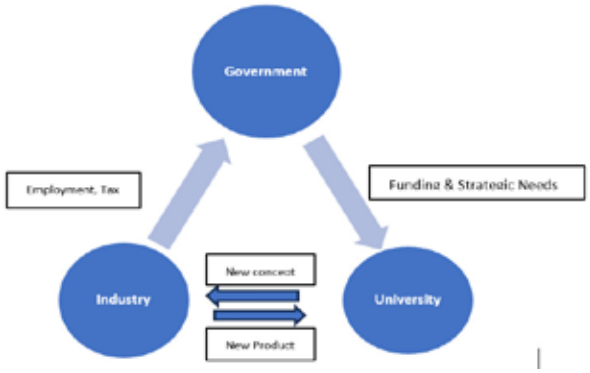
Fig 4. University Industry Collaboration



- GAC share data, information, and research findings to inform decision-making, public policymaking, and evidence-based practices e.g. Government provides access to public datasets for academic researchers to analyse and study social, economic, or environmental trends. Byju, India's most valuable ed-tech startup, collaborated with India's think tank NITI Aayog to offer free access to its tech-driven learning programmes for students across 112 "aspirational districts" across India (2021).
- GAC provides training, education, and capacity-building programmes for government officials, policymakers, and public servants. IGNOU offers ODL programmes or workshops tailored to the needs of government professionals in areas such as teacher education, and public administration/ health.
- Governments partner with academic researchers and public health institutions to conduct research, surveillance, and intervention programmes aimed at addressing public health challenges such as disease outbreaks, pandemics, and health disparities. e.g. GAC with public health agencies to study the effectiveness of vaccination campaigns.
- Governments collaborate with academic experts in fields such as urban planning, transportation, and environmental science to develop infrastructure projects, urban development plans, and sustainability initiatives. For instance, academic researchers might collaborate with municipal governments to design smart city initiatives.

- GAC conducts research, monitoring, and environmental conservation and sustainability efforts aimed at protecting natural resources, biodiversity, and ecosystems. For example, government agencies collaborate with environmental scientists to study the impact of climate change on wildlife habitats.
- Governments collaborate with academic experts in disaster management, emergency response, and crisis communication to develop preparedness plans, response strategies, and risk mitigation measures. For instance, researchers collaborate to study the effectiveness of evacuation procedures during natural disasters.

Fig 5. Government-University-Industry (Triple) Collaboration



International Collaboration (IC)

International collaboration refers to the cooperation and partnership between individuals, institutions, organizations, or countries across national borders to pursue common goals, global projects, or initiatives. It involves scholars, scientists, and researchers from different countries working together to address global challenges, and promote cross-cultural exchange, fostering innovation by leveraging the collective expertise and resources of scholars and institutions. It promotes cultural understanding, scientific cooperation, and the exchange of ideas on a global scale. The key aspects and examples are as below:

International Research Collaboration: Researchers from different countries collaborate on joint research projects, sharing expertise, resources, and data to address complex scientific challenges. Atal Innovation Mission (AIM) strategic collaborate with AICTE, NITI Aayog, UNDP, CSIRO Australia and other countries on climate-tech research.

Student Exchange Programmes : Academic institutions facilitate student exchange programmes , study abroad opportunities, and international internships to promote cross-cultural learning and collaboration. Students from different countries immerse themselves in new academic and cultural environments, gaining valuable insights and perspectives. Sri Ramachandra Institute of Higher Education and Research (SRIHER) and Colorado State University (CSU) launched their academic collaboration in engineering and biomedical sciences allowing bilateral exchange of students, faculty and academic credits (TOI news, March 2024)

International Events or Consortia: Scholars and researchers participate in events such as international conferences, workshops, and seminars to present their work, share ideas, and network with colleagues from around the world for knowledge exchange, and interdisciplinary dialogue.

Joint Degree Programmes *:* Universities offer joint degree programmes in partnership with international institutions, allowing students to earn degrees from multiple countries and benefit from diverse educational experiences. TISS formally launched 2022-2023 academic session with two new international dual degree programmes, in collaboration with Monash University, Australia, in the field of International Development Practice, and with Queen Mary University of London, UK, in Social Entrepreneurship and International Business.

International Research Networks: These events bring together researchers from different countries to collaborate on specific topics/projects for resource sharing, and collective problem-solving. A Memorandum of Cooperation (MoC) signed between Science and Engineering Research Board India (SERB), and The Swedish Foundation for International Cooperation in Research and Higher Education (STINT), Stockholm, Sweden, to promote research networking between both countries (PIB, March 2023).

International Funding and Grants: Organizations support international collaboration through grants, fellowships, and research funding opportunities. These initiatives promote cross-border collaboration, capacity building, and knowledge exchange, e.g. The European Union's Horizon Europe program and the Fulbright Scholar Program.

Cross-Border Strategic Partnerships: Academic institutions form partnerships and alliances with international counterparts to foster collaboration in research, education, and innovation

promoting faculty exchange and joint research projects. These partnerships enhance institutional capacity, academic mobility, and joint initiatives. e.g. IISER Pune and 48 Indian Universities are actively pursuing collaborations with foreign higher educational institutions in the twinning scheme.

Purpose of International Collaboration

IC serves several important purposes, each contributing to the global cooperation, global progress and mutual benefit among participating countries or entities. By working together across borders, countries and institutions can achieve greater impact and create a better future for all. Some key purposes of IC are as below:

Knowledge Exchange and Sharing Expertise: It facilitates the exchange of ideas, best practices, large project experience, higher global profile/ network among scholars, researchers, and institutions from different countries to gain new perspectives, expand their understanding, and accelerate scientific progress.

***Addressing Global Challenges*:** The world's most pressing challenges, such as climate change, public health crises, and sustainable development, are global in nature and require coordinated efforts across borders. IC enables countries to pool resources, expertise, and solutions to address them more effectively.

Promoting Cultural Understanding and Diplomacy: Collaboration between individuals and institutions from different countries fosters cultural exchange, promotes mutual understanding, and strengthens diplomatic relations. Through academic and scientific cooperation, countries can build trust, goodwill, and cooperation on shared interests.

Capacity Building and Development: IC contributes to the development of research capacity, infrastructure, and human capital in participating countries, particularly in regions with limited resources or expertise. By providing training, mentorship, and access to international networks, IC helps build skills and capabilities.

Advancing Innovation and Technology Transfer: IC facilitates the transfer of technology, innovation, and know-how across borders, leading to the development of new products, processes, and industries. By leveraging corresponding strengths and resources, countries can accelerate innovation and drive their economic growth.

***Enhancing Scientific Rigor and Quality*:** IC involves multiple countries and often undergoes rigorous peer review and validation, leading to higher-quality research outcomes. It fosters a culture of accountability, transparency, and excellence in scientific inquiry.

Tackling Complex Research Questions: Many research questions and challenges require diverse expertise, data, and perspectives to address comprehensively. IC enables researchers to tackle complex problems that transcend national boundaries, leading to more holistic and impactful solutions.

Preparing for Future Opportunities and Threats: IC helps countries and institutions prepare for future opportunities and threats by fostering resilience, adaptability, and foresight, anticipating emerging trends, leveraging emerging technologies, and responding effectively to global changes.

Student Collaboration

It is also termed as Peer collaboration, refers to the process by which students work together on academic projects, assignments, extracurricular activities, and research endeavours to foster teamwork, communication skills, critical thinking, and peer learning (Fig-6). It enhances the learning experience, promotes teamwork communication skills, and prepares students for success in their academic and professional endeavors, contributing to holistic development and academic success, a sense of community, mutual support, and shared learning goals within the university environment. The collaboration between students enhances learning outcomes, socioemotional skills, active engagement, and prepares for lifelong learning and the workplace. It provides educational experiences that are active, social, contextual, engaging, and student-owned leading to deeper learning.

The key aspects and examples of student collaboration in HEIs are as below:

Group Projects and Assignments: Students collaborate on group projects, assignments, presentations, and case studies assigned by instructors. Working in groups allows students to share ideas, distribute tasks, leverage each other's strengths, and achieve common learning objectives. For example, students in a business course might collaborate on a marketing plan for a fictitious company.

Study Groups and Peer Learning: Students form study groups to review course materials,

Fig 6. Collaboration among Students



prepare for exams, and discuss challenging concepts. Peer learning activities, such as peer tutoring, study sessions, and collaborative problem-solving, enhance understanding and retention of course content. For instance, students in a mathematics class might collaborate on solving complex equations together.

Extracurricular Activities and Clubs: Students participate in extracurricular activities, academic clubs, student government, volunteer organizations, cultural clubs, sports teams and student organizations that promote collaboration and teamwork outside the classroom. These activities provide opportunities for students to develop leadership skills, build networks, and engage in shared interests with their peers.

Undergraduate Research and Projects: Students engage in collaborative research projects, independent studies, or projects under the guidance of faculty mentors, gain hands-on research experience, and develop critical research skills. Students in a science program might collaborate on a research project investigating environmental pollution.

Internships and Work-Based Learning: Students participate in internships that involve collaboration with industry partners, employers, or community organizations.

Global and Cross-Cultural Collaboration: Students engage in global collaboration initiatives, study abroad programmes , or international exchange programmes with students from different countries. It fosters intercultural competence, cross-cultural communication skills, and an appreciation for diverse perspectives. Students collaborate on a joint research project with peers from any partner global universities.

Online Collaboration and Virtual Teams: With the increasing use of online learning platforms and digital tools, students collaborate virtually on group assignments, discussions, and projects, work together remotely, share documents, and communicate through video conferencing, and asynchronously. For instance, students in an online course might collaborate on a group presentation using collaborative software tools.

Conclusion

Collaboration has emerged as a powerful tool in the Indian Education system, enabling academicians, researchers & stakeholders to leverage each other's strengths and resources for mutual growth and success. Successful collaboration is the key to capitalise limitless possibilities. Academic collaborations can be highly beneficial for institutions, and the broader academic community. The researchers can initiate, nurture, and sustain successful academic collaborations making meaningful impacts in their respective fields of study. It is necessary to regularly evaluate the progress and outcomes of collaborative research projects, reflecting on successes, challenges, and lessons learned. Continuous evaluation and reflection can improve collaborative practices over time. Let us acknowledge the power of working together and witness the ascent to greater heights through prosperous partnerships and infinite innovation!

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Beyond the Balance Sheet: Innovating Higher Education with Accounting and Finance Perspectives

P Bhanu Sireesha*

In the heartland of a burgeoning economy lies a crucial sector that serves as the cornerstone of national development - higher education. India, with its rich heritage of learning and innovation, is poised at the cusp of transformative change in its higher education landscape. Within this vast expanse of academia, the disciplines of accounting and finance stand as stalwarts, guiding the economic narrative of the nation. As we embark on a journey to explore the future of higher education in India through the lens of accounting and finance, it becomes evident that we are not merely observers but active participants in shaping this dynamic trajectory.

The canvas upon which this transformation unfolds is painted with the vibrant hues of technological advancement. In recent years, the relentless march of technology has permeated every facet of human existence, and education is no exception. Virtual classrooms, augmented reality simulations, and AI-driven learning platforms are revolutionizing the traditional paradigms of teaching and learning in accounting and finance. As the boundaries between physical and virtual spaces blur, educators are challenged to embrace these digital tools to enhance student engagement, foster critical thinking, and nurture a culture of lifelong learning. The future of accounting and finance education in India lies at the intersection of human intellect and technological innovation, where students are empowered to harness the power of data analytics, automation, and predictive modelling to unravel the complexities of financial ecosystems.

Moreover, the symbiotic relationship between academia and industry serves as the crucible in which future-ready professionals are forged. The traditional silos that once separated academic institutions from the corporate world are fast dissolving, giving rise to a new era of collaboration and co-creation. Industry-academia partnerships, internships, and experiential learning programmes are bridging the gap between theory and practice, equipping students with the requisite skills and competencies demanded by the ever-evolving job market. As accounting and finance professionals traverse the corridors of academia and industry, they become the torchbearers of innovation, driving economic growth, and prosperity.

In the globalized milieu of the 21st century, the boundaries of education are no longer confined within national borders. Indian universities are increasingly embracing internationalization as a strategic imperative, seeking to enhance their global reputation and competitiveness. Collaborative research endeavors, joint degree programmes, and student exchange initiatives foster cross-cultural understanding and enrich the academic experience. By immersing themselves in diverse socio-economic contexts, accounting and finance students gain a global perspective that transcends geographical boundaries, preparing them to navigate the complexities of an interconnected world with finesse and agility.

Yet, amidst the winds of change blowing across the educational landscape, the compass of regulatory frameworks provides a guiding light, ensuring accountability, quality, and equity. The National Education Policy (NEP) 2020 heralds a new dawn for higher education in India, advocating for a holistic and multidisciplinary approach that nurtures creativity, innovation, and entrepreneurship. As institutions grapple with the nuances of policy reform, they are called upon to embrace autonomy, foster academic freedom, and uphold the principles of equity and inclusivity. The future of accounting and finance education in India hinges on a delicate balance between regulatory compliance and institutional autonomy, where innovation flourishes within the bounds of ethical and pedagogical integrity.

Key Trends in Higher Education in India

Technology has become an integral part of accounting and finance education in India, with institutions leveraging advancements such as Artificial Intelligence (AI), Machine Learning (ML), and data analytics to enhance learning outcomes. Virtual classrooms, interactive simulations, and

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online learning platforms are increasingly being adopted to deliver engaging and personalized learning experiences. For example, AI-powered assessment tools can provide instant feedback to students, helping them to identify areas for improvement and tailor their learning journey accordingly. Furthermore, the use of advanced software packages for financial modelling and analysis prepares students for real-world applications, ensuring they are equipped with the digital skills demanded by modern workplaces.

The alignment between academia and industry is essential for producing job-ready accounting and finance professionals. Indian universities are forging partnerships with corporate entities to develop curricula that are relevant to industry needs, integrating practical case studies, industry projects, and guest lectures into their programmes . Internship opportunities and industry certifications further bridge the gap between theory and practice, providing students with hands-on experience and exposure to real-world challenges. By nurturing strong ties with the corporate world, institutions ensure that graduates possess the requisite skills, knowledge, and professional acumen to succeed in the competitive job market.

Globalization has transformed the higher education landscape in India, with institutions embracing internationalization as a means to enhance their global standing and attract diverse talent. Joint degree programmes , exchange partnerships, and collaborative research initiatives with international universities offer accounting and finance students exposure to diverse perspectives and global best practices. Moreover, participation in international conferences, competitions, and study abroad programmes enriches the academic experience, fostering cultural awareness and cross-cultural communication skills. By preparing students for a globalized economy, Indian institutions ensure that accounting and finance professionals are equipped to thrive in an increasingly interconnected world.

Lifelong learning has become imperative in the rapidly evolving field of accounting and finance, with professionals needing to upskill and reskill continuously to stay abreast of industry trends and technological advancements. Indian universities are responding to this demand by offering continuing education programmes , executive courses, and online certifications tailored to the needs of working professionals. These flexible learning pathways enable individuals to acquire new competencies, deepen their expertise, and advance their careers without interrupting their professional commitments. By fostering a culture of lifelong learning, institutions empower accounting and finance professionals to remain agile, adaptable, and competitive in the ever-changing job market.

Ethics and social responsibility are integral components of accounting and finance education in India, with institutions emphasizing the importance of integrity, transparency, and ethical decision-making. Courses on business ethics, corporate governance, and sustainability equip students with the knowledge and skills to navigate complex ethical dilemmas and uphold ethical standards in their professional practice. Moreover, initiatives such as community service projects, social entrepreneurship programmes , and environmental sustainability initiatives instill a sense of social responsibility and civic engagement among students. By promoting ethical behavior and social consciousness, Indian institutions ensure that accounting and finance professionals contribute positively to society while creating long-term value for stakeholders.

Challenges in Higher Education in India

One of the primary challenges facing higher education in accounting and finance in India is the disconnect between academic curriculum and industry requirements. Traditional curricula often lag behind industry trends and fail to equip students with the practical skills and competencies demanded by employers. As a result, graduates may find themselves ill-prepared for the demands of the workplace, leading to a mismatch between academic qualifications and job requirements. Addressing this challenge requires regular review and updating of curriculum content to ensure alignment with industry standards, emerging technologies, and changing regulatory frameworks. Additionally, fostering closer collaboration between academia and industry through internships, guest lectures, and industry-academia partnerships can bridge the gap between theory and practice, enhancing the employability of graduates.

Another significant challenge is the quality of faculty and pedagogy. While there is no dearth of qualified faculty members in India, there is

often a lack of practical experience and exposure to current industry practices among educators. Moreover, pedagogical methods may be outdated, relying heavily on lecture-based approaches rather than interactive and experiential learning techniques. Enhancing the quality of faculty through professional development programmes , industry immersion experiences, and research collaborations can help address this challenge. Similarly, adopting innovative pedagogical approaches such as case-based learning, simulations, and industry projects can enhance student engagement and learning outcomes.

The rapid pace of technological advancement poses both opportunities and challenges for higher education in accounting and finance. While technology has the potential to enhance teaching and learning outcomes, there is a digital divide that exists, particularly in rural and underserved areas. Access to high-speed internet, digital infrastructure, and technological resources may be limited, hindering the adoption of online learning platforms and digital tools. Addressing this challenge requires concerted efforts to bridge the digital divide through infrastructure development, internet connectivity initiatives, and digital literacy programmes . Additionally, institutions must ensure that technological integration is inclusive and accessible to all students, irrespective of their socio-economic background or geographical location.

The regulatory environment governing higher education in India is complex and often fragmented, posing challenges for institutions, particularly in the context of accreditation and quality assurance. Accreditation processes may be cumbersome and time-consuming, leading to delays in program approvals and institutional recognition. Moreover, compliance with regulatory requirements, such as those set forth by professional bodies like the University Grants Commission (UGC) and the All India Council for Technical Education (AICTE), adds another layer of complexity. Streamlining accreditation processes, providing clarity on regulatory requirements, and fostering transparency in accreditation procedures can help alleviate this challenge, enabling institutions to focus on delivering quality education and research.

Ensuring adherence to ethical and professional standards is paramount in the fields of accounting and finance, given their critical role in safeguarding financial integrity and investor confidence. However, maintaining ethical standards in higher education can be challenging, particularly in light of academic misconduct, plagiarism, and unethical behavior among students and faculty. Institutions must prioritize ethics education and instil a culture of integrity, honesty, and accountability among students and faculty. Moreover, integrating real-world case studies, ethical dilemmas, and professional ethics modules into the curriculum can help students develop a strong ethical foundation and ethical decision-making skills.

Addressing these challenges requires a collaborative and concerted effort from stakeholders across academia, industry, and government. By prioritizing curriculum relevance, quality faculty, technological integration, regulatory compliance, and ethical standards, institutions can navigate the complexities of the higher education landscape and prepare future-ready professionals equipped to tackle the challenges of the 21st century economy.

Opportunities for Higher Education in India

The above-stated challenges present various opportunities for institutions to innovate, collaborate, and adapt to the changing needs of the industry and society. Following are some important opportunities which can be tapped by the higher education institutions:

The rapid advancement of technology presents immense opportunities for higher education institutions in the field of accounting and finance. By embracing emerging technologies such as Artificial Intelligence (AI), Machine Learning (ML), and blockchain, institutions can revolutionize their pedagogical approaches, enhance learning outcomes, and prepare students for the demands of the digital age. Integrating interactive learning platforms, virtual classrooms, and simulation-based exercises into the curriculum enables students to develop practical skills and analytical capabilities essential for success in the accounting and finance professions. Moreover, leveraging data analytics tools and financial modelling software empowers students to analyze complex financial data, make informed decisions, and drive business innovation in diverse sectors.

Collaboration between academia and industry offers significant opportunities to bridge the gap between theoretical knowledge and practical

application in accounting and finance education. Establishing partnerships with corporate entities, professional organizations, and financial institutions facilitates internships, industry projects, and guest lectures, providing students with real-world exposure and hands-on experience. Experiential learning opportunities enable students to apply theoretical concepts in practical settings, gain industry insights, and develop industry-relevant skills and competencies. By aligning curriculum with industry requirements, institutions can enhance the employability of graduates and foster a culture of lifelong learning and professional development in accounting and finance.

Globalization presents abundant opportunities for Indian higher education institutions to enhance their global reputation, attract international students, and foster cross-cultural exchange in the field of accounting and finance. Establishing international partnerships, joint degree programmes , and exchange programmes with reputed universities abroad enables students to gain a global perspective, develop intercultural competencies, and build international networks. Moreover, offering courses in collaboration with international accrediting bodies and professional organizations enhances the global competitiveness of Indian accounting and finance programmes . By embracing diversity, promoting academic excellence, and fostering global collaboration, institutions can position themselves as hubs of international education and research in accounting and finance.

The paradigm shifts towards lifelong learning and continuing professional development presents opportunities for higher education institutions to cater to the diverse learning needs of accounting and finance professionals at different stages of their careers. Offering executive education programmes , online certifications, and skill development courses enables professionals to upgrade their knowledge, acquire new competencies, and stay abreast of industry trends and regulatory changes. By providing flexible learning pathways, personalized learning experiences, and industry-relevant curricula, institutions can cater to the evolving needs of the workforce and enhance the employability and career advancement opportunities of accounting and finance professionals.

In an era characterized by increasing scrutiny of corporate ethics and social responsibility, there is a growing demand for accounting and finance professionals who demonstrate integrity, ethical leadership, and a commitment to sustainable business practices. Higher education institutions have an opportunity to instil ethical values, critical thinking skills, and social responsibility in students through ethics courses, case studies, and experiential learning activities. By integrating sustainability principles, environmental stewardship, and corporate governance into the curriculum, institutions can prepare graduates to navigate ethical dilemmas, promote responsible business practices, and create value for society.

Conclusion

Challenges and opportunities have illuminated the path forward, urging us to navigate educational reform with courage and creativity. We must transcend traditional pedagogy by embracing technology and industry collaboration to enrich learning experiences. Virtual classrooms, online platforms, and AI tools democratize education, breaking geographical barriers and fostering accessibility.

As India marches towards becoming a global knowledge economy, the future of higher education in accounting and finance holds immense promise and potential. By embracing technological innovation, fostering industry collaboration, nurturing global partnerships, adapting to regulatory reforms, promoting lifelong learning and upholding ethical standards, institutions can empower the next generation of accounting and finance professionals to drive economic growth, innovation and societal change. As stakeholders in this journey, it is imperative for educators, policy makers, industry leaders and students to collaborate synergistically towards realizing this vision of a dynamic and inclusive higher education ecosystem in India.

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STUDENT COLUMN

Embracing the *Viksit Bharat* Vision: India's Path to Development

Khushi Rungta* and Ashrith Lagisetty and Sharath Chandra Bonagiri*****

India stands at a pivotal juncture, poised at the crossroads of opportunity, where its rich tapestry of history and culture converge to illuminate a path toward a promising future. In recent years, the nation has witnessed remarkable strides in economic growth and social development. Yet, the journey towards achieving the status of a fully developed country remains an ongoing endeavor, necessitating concerted efforts and a unified vision.

Enter the *Viksit Bharat* vision – a comprehensive roadmap meticulously crafted to navigate India towards holistic development by 2047, synchronizing with the commemoration of the nation's 100th year of independence. This visionary roadmap is anchored on pillars encompassing economic growth, social progress, environmental sustainability, and good governance, setting forth ambitious yet achievable objectives for the nation's advancement.

At the core of the *Viksit Bharat* vision lies the imperative of economic growth. With a targeted GDP growth rate ranging from 8 to 10% per annum, India aims to catalyze job creation and uplift living standards through strategic investments in infrastructure, education, and healthcare. Simultaneously, the pursuit of social progress stands as an equally pivotal facet. Initiatives such as the Sarva Shiksha Abhiyan and the National Rural Health Mission underscore India's unwavering commitment to enhancing literacy, healthcare, and gender equality – foundational elements for fostering a flourishing society.

Furthermore, environmental sustainability assumes a non-negotiable position in the trajectory of development. Through initiatives like the National Action Plan on Climate Change and the National Solar Mission, India endeavors to synchronize economic expansion with ecological preservation, thereby ensuring a greener and more sustainable tomorrow for generations to come.

However, the realization of these aspirations hinges significantly upon the bedrock of good governance. Transparency, efficiency, and accountability emerge as paramount principles as India navigates the intricate landscape of development. Legislative measures such as the Right to Information Act and the Lokpal and Lokayuktas Act exemplify the nation's steadfast commitment to nurturing a governance framework conducive to progress.

Indeed, India confronts formidable challenges on its journey towards realizing the *Viksit Bharat* vision. Addressing entrenched poverty and bridging socio-economic disparities stand out as imperative tasks, necessitating innovative policy interventions and sustained efforts. However, the onus of steering India towards *Viksit Bharat* transcends the realm of policymakers alone. Every citizen holds a pivotal role in shaping India's destiny. Through active engagement in the political process, volunteering for social causes, and embracing sustainable lifestyles, individuals can meaningfully contribute to the collective endeavor of national development.

In essence, the *Viksit Bharat* vision epitomizes more than a mere aspiration; it embodies a collective commitment towards constructing a prosperous, inclusive, and sustainable India. As we forge ahead, let us harness our collective resolve and strive tirelessly to transmute this vision into a tangible reality, thereby ensuring a brighter tomorrow for all citizens.

Regarding *Amrit Kaal*

The essence of *Amrit Kaal*, the golden era, interweaves seamlessly into the fabric of India's

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aspirations for the future. *Amrit Kaal* symbolizes an era of abundance, enlightenment, and harmony – a time when humanity flourishes in sync with nature, embodying the ideals of prosperity and well-being for all.

In the context of the *Viksit Bharat* vision, *Amrit Kaal* serves as both an inspiration and a guiding principle. It beckons India to draw upon its ancient wisdom and timeless values to craft a future that is not only economically prosperous but also socially inclusive and environmentally sustainable.

Just as *Amrit Kaal* signifies a harmonious coexistence between humanity and nature, the *Viksit Bharat* vision strives to harmonize economic growth with ecological preservation. Initiatives aimed at environmental sustainability, such as the National Action Plan on Climate Change and the National Solar Mission, echo the ethos of *Amrit Kaal* by envisioning a future where development is inextricably linked with environmental stewardship.

Moreover, the pursuit of social progress within the *Viksit Bharat* framework resonates with the inclusive spirit of *Amrit Kaal.* By prioritizing initiatives that uplift the marginalized and empower the underprivileged, India aspires to create a society where every individual can thrive and prosper, irrespective of their background or circumstances.

In essence, *Amrit Kaal* serves as a beacon of hope, reminding India of its inherent potential to create a future that is not only prosperous but also harmonious and equitable. By embracing the essence of *Amrit Kaal,* India can chart a course towards a future where abundance, enlightenment, and harmony reign supreme, ensuring a legacy of prosperity for generations to come.

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Association of Indian Universities

Welcomes

the delegates to the

98th Annual General Meet and National Conference of Vice Chancellors—2023-24

hosted by

ICFAI Foundation for Higher Education (Deemed-to-be-University) Hyderabad, Telengana

The Role of Higher Education and Youth in Achieving the Vision of *Viksit Bharat*

B V R Subrahmanyam, Chief Executive Officer, NITI Aayog, Delhi delivered the Convocation Address at the 16th Convocation Ceremony of the Guru Gobind Singh Indraprastha University, Delhi on March 05, 2024. He said, "We must break new ground across sectors and show the path to our peers in achieving economic success with ecological commitment, balancing financial aspirations with an inclusive mindset, and transcending the traditional frontiers of knowledge along with strengthening the strong roots of ancient culture and civilisational values. Our Higher Education System must reinvent itself to nurture socially conscious leaders who take the nation forward like the ancient days. The journey ahead will have its challenges, but our institutes of higher learning must ignite a spirit of nation-building among students." Excerpts

I am honored to deliver the 16th Convocation Address of the Guru Gobind Singh Indraprastha University.

The name of this University reminds us of two illustrious sets of personalities.

First is Shri Guru Gobind Singh Ji, the 10th Guru among the illustrious pantheon of Sikh Gurus. His life has been a saga of courage and resilience and inspires us to sacrifice everything, including ourselves for the larger cause of societal welfare.

Second is the Pandavas from the great Indian epic of Mahabharata. The story of building Indraprastha, their new capital city away from Hastinapura, is a story of self-effort and commitment to creating the best despite the setbacks one has achieved in life.

The students of this University are indeed blessed to be graduating from an institution whose name itself inspires us with the finest human values.

I am doubly honored to be the Chief Guest today as this is the Silver Jubilee Year of your University. I must commend the administrators, faculty, and staff of the University for building and nurturing a fine institution in the capital of India. I wish to congratulate you for consistently ranking among the Top 100 Universities in India right from the inception of the NIRF ranks of the Ministry of Education.

You have not only excelled in achieving Top honors but have also been committed to implementing the salient recommendations of the National Education Policy 2020.

The Glory of Higher Education in Ancient India

Since times immemorial, the process of imparting and receiving Education in India has been a sacred one. The Rig Veda, one of the oldest texts of humanity, states, 'आनो भद्रा क्रतवो यन्तु विश्वतः' i.e., *let noble thoughts come to me from all directions*. This conveys the universal and inclusive approach to knowledge that has guided the *Bharatiya* culture and civilisation for thousands of years.

Ancient Bharat was a hub of institutions of higher learning attracting students from neighbouring nations. Started in 5th century AD, Nalanda had 10,000 students and 2,000 faculty members at its peak. Around the time it was destroyed by invaders in the 12th century, the first Universities in Europe emerged.

Thus, Bharat has been a *Vishwa Guru*, imparting knowledge and wisdom across diverse disciplines for many millennia. It is time to reclaim the honour. The Higher Education System can also play a pivotal role in achieving the Vision of a *Viksit Bharat* by 2047, when our nation turns 100.

The Role of *Bharat* in the 21st Century

We have reached a stage in our developmental journey where we can leapfrog to becoming a developed nation in the next 25 years just like many of our peer nations did in the last century. Germany's transformation post World War II, known as the Miracle on the Rhine, and South Korea's transformation post-Korean War, known as the Miracle on the Han River are cases in point.

Achievements of the last decade provide a strong foundation to build the superstructure of a developed nation. I would like to draw your attention to three such areas:

***Social*:** The latest paper by NITI Aayog has conveyed that between 2013-14 and 2022-23, nearly 25 crore individuals have escaped multidimensional poverty due to a variety of schemes in the areas of

sanitation, housing, drinking water, and financial inclusion.

Global: India's successful presidency of the G20 and the universal acceptance of the New Delhi Leaders' Declaration is a milestone in the country's contemporary history.

Scientific: Becoming the first country in the world to land on the South Pole of the Moon and delivering the Chandrayaan and Mangalyaan Missions at a fraction of the cost incurred by developed countries has reaffirmed India's world-class research and technological abilities.

It is rare in one's lifetime to see the world admire us not only as the leader of the Global South, and a leading space power but also achieving socioeconomic transformation at scale through speed and innovation. These achievements are through the sweat and toil of Indian talent.

We have come a long way:

- From the days of carrying the rocket parts on the rear seat of a cycle to excelling developed economies in rocket science and space research and
- From being known as the land of famines and poverty to emerging as the 5th largest economy

A huge credit for these achievements goes to our education system. If you remember the smiling faces of the ISRO scientists on TV after the feat of landing Vikram on the South Pole, the most striking feature was of Indian educated scientists and researchers who by their grit and hard work had achieved phenomenal success. It is this transformative power of higher education and the ideas and energy of crores of students and youth that can achieve the vision of a *Viksit Bharat*.

Creating a World-class Higher Education System for a *Viksit Bharat*

Bharat's Higher Education System, the second largest in the world, with nearly 1,200 Universities, over 4.25 crore students, and 15 lakh faculty, can play a vital role in our country's growth.

In the last 10 years:

- 1 university and 2 colleges were opened in *Bharat* every week.
- The Gender Parity Index in Indian Higher Education is 1.01, which means that there are more women than men studying in our Higher Education Institutions.

Individuals who complete tertiary education earn twice as much in their lifetime compared to those who only complete their education at the secondary level (World Bank). A higher income of the population contributes to the national GDP and overall standard of living in the country. Hence providing access to higher education is a vital priority.

In the last two decades, developing countries have emerged as regional hubs or international destinations of quality tertiary education. Hence, there is a necessity to develop and advance the educational infrastructure, faculty, and pedagogy to match international standards of education. It is a crucial by-product of an interconnected world.

For this reason, the National Education Policy (NEP) released in 2020 aims at improving access, quality, and future readiness of the higher education system and providing a robust framework to become the largest higher education system in the world within 15 years.

I am impressed that your university has implemented key recommendations of NEP 2020 such as establishing the Academic Bank of Credits and adopting the Choice Based Credit System.

We need to strengthen our Higher Education Institutions to nurture world-class and world-ready human capital through the following ways:

Providing Access to leverage our Demographic Dividend

- Our biggest strength is our demography. With 60 crore youth between 18 and 35 years of age, our nation has one of the youngest demography in the world. By 2030 we will be the largest contributor to the world's working population.
- This young workforce, if adequately skilled and given ample opportunities, can be the growth engine that powers India's economic rise.
- I am delighted to note that your university is imparting academic/professional education to around 90,000 students through 185 programmes.

Promoting Research and Development

- Increasing investment in our research capabilities will reduce India's dependence on other nations. This is possible if R&D is focused on encouraging

innovation and improving our manufacturing capabilities and developing sustainable technology.

- The creation of the Anusandhan National Research Foundation with an outlay of ₹ 50,000 crores is to fund competitive research, forge academia-industry linkages and help India become an innovation society. With the right mentoring and opportunities, our youth can take the country to the forefront of research and innovation globally.
- It is commendable that your university is not only planning to incorporate the 4th year research component as part of the UG programme, but also providing assistance for filing patents by the University faculty.

Creating a Culture of Innovation and Entrepreneurship

- India is now the 3rd largest startup ecosystem, with more than 1.17 lakh registered startups.
- Universities need to integrate research and innovation with a multidisciplinary curriculum and create a pipeline of entrepreneurs who can be job creators and not job seekers.
- I wish to congratulate your University on being selected for setting up the Atal Incubation Centre in the Dwarka Campus, and for setting up a Section 8 Company for boosting entrepreneurial culture among students.

Providing Holistic Education to Nurture Holistic Individuals

- Our Higher Education System must reinvent itself to nurture socially conscious leaders who take the nation forward like the ancient days. The journey ahead will have its challenges, but our institutes of higher learning must ignite a spirit of nation-building among students.
- As envisioned in NEP, Universities can focus on delivering Holistic Education through Environmental Awareness and Action, Values Inculcation, Community Engagement and Seva and Multicultural Competence and Empathy I wish to appreciate your university for espousing some of the vital elements of Holistic Education by:

i. Creating a 100% self-sustained green campus replete with solar panels, rainwater harvesting and wastewater management.

ii. Inclusion of courses on Human Values and Ethics, Entrepreneurship, and Environmental Science

iii. Fulfilling social responsibility by participating in community service and rural welfare activities

iv. Providing special facilities for Divyangjans

Today's Graduates will Create and live in a *Viksit Bharat*

We are at a unique turning point in history when we have 2 options for progressing towards the 100th year of Independence. The first is with the mindset of business as usual. The second is to prepare for the future by shaping the Vision for a *Viksit Bharat*.

Just as the freedom fighters dared to envision a *Swatantra Bharat* when the prospect seemed impossible, the youth of today can work towards realising the vision of a *Viksit Bharat.*

We must break new ground across sectors and show the path to our peers in achieving economic success with ecological commitment, balancing financial aspirations with an inclusive mindset, and in transcending the traditional frontiers of knowledge along with strengthening the strong roots of ancient culture and civilisational values.

The graduates who are receiving their degrees today and entering the world of work are indeed lucky. They will be able to invest their time and talent during the prime years of their life in not only achieving personal and professional success but also contributing to realising the vision of a *Viksit Bharat*. Your generation will not only create a *Viksit Bharat* but also live in a *Viksit Bharat*. I wish you and this University all success in this noble endeavor.

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CAMPUS NEWS

Latest Events at IFHE University, Hyderabad

The following latest Events are hosted by the IFHE University, Hyderabad, exploring various facets of design and fostering knowledge exchange.

ICFAI School of Architecture

Designing for Sustainability and Accessibility **(October 3, 2023):** This online symposium championed sustainable and accessible design practices. Renowned speakers like Ganesh Nayak, Taruna Gupta, Reeshika Vallabh, and Simba Garikai shared their expertise, sparking discussions on integrating sustainability and accessibility into contemporary architecture.

International Practices in Parametric Design and 3D Printing **(October 31, 2023):** This online guest lecture series paid tribute to Zaha Hadid. Ar. Yash Mehta and Ar. Bruno Silva, leading figures in parametric design and 3D printing, presented their insights on these groundbreaking architectural technologies, enriching the global architectural discourse.

Architectural Photography Workshop **(November 3, 2023):** Equipping students with the skills to capture architecture effectively, this workshop provided valuable hands-on experience in architectural photography techniques.

Portfolio Making Workshop for 3rd Year Architecture Students **(November 3, 2023):** Ar. Lakshmi Supriya, an architect and graphic designer, conducted this workshop, empowering 3rd-year students with the knowledge and tools to create compelling architecture portfolios to showcase their design work.

Faculty Seminar: Challenges of Minor Inland Waterway Governance**:** This faculty seminar addressed the critical challenges in governing minor inland waterways for mitigating floods in peri-urban areas of Kolkata. Prof. Sankha Subhra Nath shed light on innovative strategies for their rejuvenation.

Faculty Seminar: Redevelopment Strategies for Retaining Socio-Cultural and Traditional Values in Pochampally Village: This seminar explored the challenges of preserving the cultural heritage of Pochampally Village amidst development. Redevelopment strategies integrating cultural values into architectural design were proposed.

International Women's Day Celebration **(March 11, 2024)**: Marking International Women's Day, a screening of the inspiring documentary "Didi Contractor – Marrying the Earth to the Building" was held. The film chronicles the pathbreaking journey of architect Didi Contractor, who champions sustainable and local materials in her creations. The event ignited discussions on the vital role of women in architecture and the significance of inclusive practices.

ICFAI Business School

International Conference on Business and Finance (ICBF) - 2024

The ICFAI Business School (IBS) Hyderabad hosted its prestigious International Conference on Business and Finance (ICBF) titled 'Finance Beyond the Norm: Exploring the Paradigm Shift' on February 29, 2024 and March 01, 2024.

The conference aimed to explore innovative ideas in finance, with a focus on areas like sustainable finance, AI in financial operations, and fintech. Researchers, scholars, and practitioners were invited to submit papers on various sub-themes within business and finance.

ICBF-2024 received over 120 submissions, with 93 being accepted for presentation. The presented papers originated from prestigious institutions across India and the world, showcasing diverse perspectives on finance.

The conference featured keynote addresses, special lectures, and workshops. Renowned speakers like Dr. Mukesh Garg and Ashish Kumar shared their insights on topics like sustainable development goals and emerging challenges for CFOs. Workshops on manuscript preparation and data analysis further enriched the learning experience for attendees.

Selected high-quality papers were offered potential publication opportunities in various reputed journals. The conference concluded with an award ceremony recognizing the best research papers,

case studies, and thesis proposals. Overall, ICBF-2024 served as a valuable platform for knowledge exchange and networking among scholars and industry professionals in the field of business and finance.

ICETAO- 2024

The ICETAO 2024 conference, held on March 22-23, 2024, explored the theme of "Unlocking the Potential of Emerging Technologies: Harnessing the Data Revolution." It brought together over 130 participants from India and abroad to discuss the latest advancements in technology, analytics, and operations management.

The conference received a significant response with 226 abstracts submitted, out of which 147 high-quality papers were selected for presentation. These papers covered a wide range of topics across 25 designated tracks.

The event featured insightful keynote addresses by Prof. Vijaya Sunder M and industry leaders like Mr. K. B. Ramachandrappa and Mr. Sudarson Roy Pratihar. A thought-provoking panel discussion on 'Navigating the future of operations management' explored the integration of emerging technologies and analytics for sustainable and ethical growth.

A workshop on "Application of Advanced Analytics at Micron" provided practical insights into real-world applications of data analytics. The conference concluded with a valedictory ceremony where Prof. Santanu Roy shared his expertise on 'Blockchain Applications in International Logistics'.

Overall, ICETAO 2024 served as a valuable platform for academics, researchers, and industry professionals to share knowledge, exchange ideas, and explore the exciting possibilities of emerging technologies in shaping the future of business operations.

ICFAI Tech School

Transformational Trends in Linguistics, Literature, and Language Teaching (May 04-05, 2023)

The Department of English at ICFAI Tech organized a two-day national online conference on 'Transformational Trends in Linguistics, Literature, and Language Teaching'. This event aimed to create a platform for language enthusiasts from across India to share research findings and innovations. Renowned keynote speakers like Dr. Amol Padwad and Prof. Indranil Dutta addressed the conference, enriching discussions on contemporary trends in these fields.

The conference witnessed enthusiastic participation from over 161 individuals, representing diverse institutions like BHU, HCU, IITs, NITs, and EFL University. This national reach fostered a vibrant exchange of ideas on the evolving landscape of language studies and pedagogy. Notably, the conference also attracted participation from the United Arab Emirates, demonstrating its global appeal.

ATAL Faculty Development Programme on Metal Additive Manufacturing (December 25-30, 2023)

The Faculty of Science and Technology (FST) at ICFAI Tech secured a coveted spot among 395 institutions selected for the All India Council for Technical Education's (AICTE) Training and Learning (ATAL) scheme. This prestigious program offered a five-day Faculty Development Programme (FDP) on Metal Additive Manufacturing.

The FDP brought together a distinguished group of resource persons, including experts from IITs, NITs, ISRO, ARCI (DST), Osmania University, and Phillips machine tools. Sixty participants, meticulously chosen from a pool of applicants, received in-depth training on various aspects of metal additive manufacturing.

The program covered key areas like different 3D printing techniques, printing materials and machines, industrial applications of 3D printing, and development of new materials. Participants also gained valuable hands-on experience in developing CAD models, configuring models in slicing software, and operating FDM 3D printing machines. This immersive training equips faculty members with the expertise to integrate 3D printing technologies into their curriculum and research endeavors.

Space Science and Technology AwaReness Training (START) - ISRO (July 20-August 07, 2023)

The Department of Electronics and Communication Engineering at FST, in collaboration with ISRO and the Indian Institute of Remote Sensing (IIRS), conducted an online Space Science & Technology AwaReness Training (START)

program. This initiative aimed to spark curiosity and kindle interest in space science and technology among undergraduate students.

The program featured a series of 23 insightful sessions encompassing diverse areas like planetary science, astronomy, space weather, atmospheric science, and microgravity research. Eminent academicians, scientists, engineers, and researchers delivered lectures, providing students with a comprehensive understanding of the multifaceted world of space exploration.

Interestingly, the program witnessed a higher-than-expected turnout from second and third-year undergraduate students, demonstrating their early fascination with space science. Faculty members actively encouraged student participation, fostering a dynamic learning environment. Over 70 students from various disciplines, including electronics and communication engineering, computer science, data science, artificial intelligence, mechatronics, civil engineering, physics, and mathematics, registered for the program.

The online format ensured accessibility for students across different streams, and a significant portion achieved an 'A' grade in the online examination. This program served as a stepping stone, igniting a passion for space exploration among young minds. The possibility of future offline workshops with hands-on activities promises an even more enriching learning experience in collaboration with ISRO.

These events highlight ICFAI Tech's commitment to providing a stimulating academic environment that fosters intellectual growth and professional development for its students, faculty, and the broader academic community.

AICTE Training and Learning (ATAL): Faculty Development Program on Metal Additive Manufacturing (December 25-30, 2023)

A week-long Faculty Development Program on Metal Additive Manufacturing was held at IcfaiTech, Hyderabad from December 25th to 30th, 2023. This program, sponsored by AICTE, aimed to equip faculty members with knowledge and skills in this revolutionary technology.

Renowned experts from IIT, NIT, ISRO, and other institutions delivered lectures on various aspects of metal additive manufacturing, including its fundamentals, design principles, applications across industries, and use in space exploration. The program also covered the integration of AM technology in medical fields and the development of patient-specific implants.

In addition to lectures, participants received hands-on training in developing CAD models, using slicing software, and operating 3D printing machines. This program successfully enhanced the expertise of faculty members in metal additive manufacturing, empowering them to educate the next generation of engineers in this transformative technology.

One Day Workshop on 3D Printing (January 24, 2024)

ICFAI Tech's Department of Mechanical Engineering hosted a one-day workshop on 3D Printing, attracting nearly 100 participants from various disciplines. This immersive event offered a comprehensive introduction to the world of 3D printing, with a strong emphasis on practical learning.

The workshop kicked off with an inaugural session featuring esteemed guests and an address highlighting the growing significance of 3D printing technology in diverse industries. Throughout the day, participants gained valuable insights through a series of interactive sessions:

- *Mornings Session:* Focused on the fundamentals of 3D printing, exploring its applications and the different types of printers available. Participants even got their hands dirty by disassembling a 3D printer to understand its inner workings.
- *Afternoon Session*: Shifted gears towards the practical side of things. Participants learned to design 3D models using software and prepare them for printing. The excitement culminated in a hands-on session where they printed their own creations using the assembled 3D printers.

The workshop wasn't just about technical skills. It also fostered teamwork and a multidisciplinary approach as students from various backgrounds collaborated to assemble the printers and print their models. The positive feedback and requests for advanced workshops highlighted the event's success in igniting a passion for 3D printing among the participants.

This workshop serves as a stepping stone for ICFAI Tech, paving the way for future events that delve deeper into the world of 3D printing and equip students with the skills to become future leaders in this rapidly evolving field.

One Day Short Term Training Program- 3D Printing (March 05,, 2024)

The School of Technology and Sciences recently hosted a one-day training program on 3D printing aimed at faculty members across all disciplines. This initiative, led by Dr. K.L. Narayana and Dr. Barla Madhavi, aimed to equip participants with a foundational understanding of this transformative technology.

The program delved into the advantages of 3D printing compared to conventional manufacturing, exploring key areas like modelling and design. Dr. Narayana shed light on the entire 3D printing process, from its core principles to practical applications. Participants gained insights into the vast potential of 3D printing, including its use in creating customized medical implants for patients.

Overall, the training program provided valuable insights into the exciting world of 3D printing, its capabilities, and its potential impact on various fields. It opened doors for faculty members to explore how they can integrate this technology into their respective disciplines.

Three Day Quadcopter Drone Technical Workshop (March 27-29, 2024)

The Centre for Excellence in Robotics & Advanced Manufacturing at IcfaiTech hosted a comprehensive 3-day workshop on Quadcopter Drone Technology. This workshop provided a unique opportunity for participants from various disciplines, including engineering, physics, and computer science, to gain hands-on experience in assembling drones and delve into the technical aspects of their design and manufacturing.

The program was geared towards beginners and intermediate enthusiasts, offering a solid foundation in drone dynamics, components, and flight control. Participants explored topics like multi-rotor configurations, lift distribution, and the physics behind essential drone components like accelerometers and gyroscopes.

Beyond theory, the workshop provided a practical learning experience. Participants assembled their own drone frames, learned soldering techniques, and gained insights into selecting the right components for specific needs. This practical approach allowed them to bridge the gap between theoretical knowledge and real-world drone applications.

The Department of Mechanical Engineering at IcfaiTech conducts regular faculty seminars to promote knowledge sharing and research collaboration. Here's a glimpse into some of the recent seminars:

***Finite Element Analysis of Ultrasonic Vibratory Tool (Sonotrode*)**: Dr. K. Vivekananda's presentation on February 20th, 2024, explored the design and analysis of sonotrodes, a critical component in ultrasonic vibration assisted machining. The seminar highlighted the importance of precise design and material properties for achieving optimal performance and preventing damage to the ultrasonic system.

***Comparative Analysis of Machine Learning Classifiers for Crack Detection in Masonry Facades**:* Dr. Sarit Chanda's seminar on March 1st, 2024, compared the effectiveness of various machine learning algorithms for identifying cracks in building facades. This research is crucial for ensuring the safety and integrity of civil structures. The talk presented a methodology for evaluating different classifiers and their strengths and weaknesses in crack detection.

***Automatic Crack Classification and Segmentation on Masonry Surfaces using Convolutional Neural Networks and Transfer Learning**:* Mr. I.V.Sarma's seminar on March 5th, 2024, explored the application of deep learning techniques for automated crack detection in masonry structures. The seminar presented a novel deep learning approach achieving high accuracy in crack detection and segmentation, paving the way for automating visual inspection processes in civil engineering.

Behavior of Steel Concrete Composite Beams under Fire Loading: Parametric Study on Coping and Beam-Column Gap: Mrs. Priya S Natesh's seminar on April 1st, 2024, investigated the behavior of composite beams under fire conditions using finite

element analysis. The study explored the impact of design parameters like coping location and beam-column gap on the structural performance of these beams under fire. This research contributes valuable insights for improving fire safety in building design.

Capacity Building Programme on National Education Policy—2020

The Capacity Building Programme on 'National Education Policy 2020 Orientation and Sensitization Programme' was organized by Malaviya Mission Teacher Training Centre (MMTTC), Central University of South Bihar, Gaya, recently through online mode. About 200 participants from various states registered themselves for the programme.

During the Inaugural Session, Keynote Speaker, Prof. Harikesh Singh, Former Vice Chancellor, Jaya Prakash University (JPU), Chapra highlighted the role of constitutional values, human values, and ethics in higher education and delineated the process of how to become *Raja Dashrath* by practicing *Sanatana* values rather than ignoring the values and become *Dashanana*. Further, he highlighted the significance of the National Research Foundation (NRF) for improving the quality of frontline research in the field of education. Prof. Kameshwar Nath Singh, Vice Chancellor, Central University of South Bihar (CUSB), Gaya highlighted the importance of skills in higher education i.e., academic, professional, vocational, and life skills that help the holistic development of students. Further, he appealed for making *Viksit Bharat* keeping in mind the significance of the 4D's i.e., Decolonization of Mindset, Digitalization, Decarbonization and Decentralization to Address the Issues and Challenges of 21st Century. Further, he expressed *Bhartiya Talent* in the form of the equation that Indian Talent + Information Technology = 'India Tomorrow'.

Prof. Sudhanshu Bhushan, National Institute of Educational Planning and Administration (NIEPA), Delhi gave an overview of multidisciplinary, pluridisciplinary, interdisciplinary, transdisciplinary, cross-disciplinary curriculum, the relationship between curricular structure and curricular growth and explained restructured curriculum and its effect on employability and needs of the market.

Prof. Kopella Narayan Praduvi Raju, Banaras Hindu University, Varanasi emphasized the Bhartiya Knowledge System overview and methods of ancient sources of knowledge that were in the great texts of *Vedas, Upanishads, Puranas*, etc. and great masters such as *Charaka, Kanad*, *Bhaskara,* etc.

Prof. Pawan Kumar Sharma, Chaudhary Charan Singh University (CCS) University, Meerut pondered upon *'Bhartiya Gyan Parampara'* and cited various references like *Agastya Samhita* and *Vaimanika Shastra*, how can it be incorporated into the curricula and content writing for achieving the target of NEP—2020.

Prof. Chandra Pal Singh Chauhan, Aligarh Muslim University (AMU), Aligarh stressed the expansion and transformation of the higher education system to ensure the social relevance of higher education in *Bharat* about NEP—2020. He said that transformative and radical changes in higher education systems like multiple disciplinary and integrated education institutions, ability enhancement courses, MERUs, and research-intensive universities will be helpful to develop the research ecosystem and quality education at every level across the nation.

Prof. Kumar Suresh, Head, Department of Educational Administration (DEA), National Institute of Educational Planning and Administration (NIEPA), New Delhi described different types of leadership, like academic leadership, executive leadership, transactional leadership and creative leadership. He also discussed the skills of academic leadership and its different models.

Prof. Chandra Bhushan Sharma, Former Chairperson, National Institute of Open Schooling (NIOS), Delhi discussed the effect of globalization and internationalization of higher education on the education system and economy of *Bharat*. He also gave examples of the ancient Indian world-class universities like Nalanda, and Taxila's international education practices for understanding the purpose of the internationalization of education which is empowering and enlightening the people of the world through education.

Prof. Brajesh Kumar, CUSB explained how higher education helps to build a good, enriched, and healthy society and provides a quality of life through research, innovation, and employability. Further, he said that there is a need to increase the funds for

maintaining the standard of quality education and quality research in the field of education. Prof. Venktesh Singh, Coordinator, Internal Quality Assurance Cell, CUSB, Gaya expressed his views on research quality and networking with global bodies. He also highlighted a comparative analysis of the quality of research in *Bharat* with other countries.

Prof. Durg Vijai Singh, Director, Research and Development Cell, CUSB, Gaya spoke on research proposal development, management and quality publications. He talked about different research funding agencies, opportunities, basic considerations for preparing project proposals, procedures, and criteria for evaluating proposals. Prof. Atish Prashar, Former, CUSB Gaya stressed promoting vocational and entrepreneurial education at higher education across the country which helps to increase employability skills and even helps to make India '*Atamnirbhar Bharat'*. Prof. Nagendra Singh, Regional Institute of Education (RIE), Ajmer highlighted the significance of equity and inclusivity in higher education for promoting access and achieving excellence. Further, he discussed the different policy perspectives, Govt. as well as local level initiatives, and ancient practices to know how educational institutions can be connected with their surroundings and community.

Prof. Rajani Ranjan Singh, Dr. Shankuntala Misra National Rehabilitation University (DSMRU), Lucknow expressed his views on equitable and inclusive education in higher education and cited the different pedagogical practices for inclusion in higher education like UDL, IEP and pedagogical practices like pedagogy, andragogy and heutagogy along with diagnostic assessment.

Prof. Pradeep Kr Misra, NIEPA highlighted the significance of ICT in education in terms of access, inclusion, and quality education and emphasized that technology is a tool or technique to make the teaching-learning process conducive. Prof. Ravi Kant, CUSB Gaya discussed various teaching strategies like LMS, collaboration, inclusive practices, etc. to use in the era of today's digitally and technically sound world.

On the concluding day, Prof. Prakash Chandra Agrawal, Principal, RIE Bhubaneswar suggested reducing the course to the school level and encouraged the students to involve experiential learning, visit the local arts, Rashtriya Avishkar, visit the labs, ITI Polytechnic and higher-level education institutions to promote higher order-thinking skills. Further, he also suggested collaborative efforts to develop the career interest and holistic development of students by visiting educational institutions, industries, and Rojgar mela, integrating the local artisans and industries with school and higher education, community involvement, and linkage between academia and industries, provision of professor of practices, NMMS, NVEQF, innovation hubs, and incubation centers in the education institutions, etc. for radical change in the education system.

Prof. Kameshwar Nath Singh, Vice Chancellor, Central University of South Bihar said that the university is dedicated to *Viksit Bharat @2047* is the Motto of CUSB for the year 2024. He said that there is a need to focus on '*Panchkoshiya Shiksha'* for the holistic development of learners and focus on 'Nationalization, Indianization and Spiritualisation' and 'GYAN' (*Garib, Yuva, Annadata* and *Nari Shakti*) that leads to achieving the goal of *Viksit Bharat 2047*. The inaugural and valedictory sessions of the event started with '*Saraswati Vandana'* and 'University *Kulgeet*' and ended with the National Anthem. The programme was Coordinated by Dr. Tarun Kumar Tyagi, Director, Malaviya Mission Teacher Training Centre, Central University of South Bihar, Gaya and moderated by Lt (Dr.) Pragya Gupta, Assistant Professor, Department of Education, CUSB, Gaya.

Based on the discourse by eminent resource persons and feedback received by participants, it is concluded that Bharat-centric education, the judicious blend of '*Bhartiya Gyan Parampara'* and 'Modern Education System' will be helpful to ensure equitable and inclusive education for all, cater the need of 21st century learners and fulfill the need and aspirations of the dynamic society.

AIU News

The University Cluster Pilot Study: A Joint Initiative of AIU and Edify Online USA

The Association of Indian Universities (AIU), New Delhi, India in collaboration with EdifyOnline Corp, Birmingham, USA and participating Indian universities is preparing to enable a shared HEIs ecosystem for AIU member universities to avail highly skilled international faculty at scalable and sustainable costs and build bridges for Indian faculty to do the same for international HEIs in future. This collaboration between AIU and EdifyOnline USA aimed at promoting academic excellence, encouraging research partnerships, and facilitating knowledge exchange on a global scale. This joint University Cluster Pilot Study (UCPS) holds immense promise in leveraging the strengths of both Indian and international academic talents to create a dynamic ecosystem that nurtures talent, fosters creativity, and promotes cross-cultural understanding. Through strategic planning, capacity building, and continuous evaluation, this initiative seeks to promote a culture of excellence, innovation, and inclusivity that will position Indian universities as leaders in the global knowledge economy.

EdifyOnline, a full end-to-end provider permits the exchange of independent teaching talents from universities and communities that work together to achieve important milestones, enabling students enrolled in higher education to avoid dropout, increase enrollment in higher education, lower the cost of education, and deliver an effective learning experience for students.

The University Cluster Pilot Study (UCPS) for the Internationalisation of Higher Education marks a pivotal moment in reshaping the landscape of academia in India towards developing a 'shared ecosystem' where multiple universities, or departments of a university, or associated colleges of a mother university can share the same course lectured by international academic talents towards attaining quality of higher education at par by creating global knowledge enterprise of academic intellectuals. The purpose of UCPS initiative is to establish a cost-sharing ecosystem for shared lectures using *EdifyProfessionals* in an online modality. A group of research members and scholars from AIU, Edify Online, and participating universities will share their insights into this hands-on UCPS implementation. The data will be evaluated to establish trends, challenges, opportunities to provide recommendations for Indian Higher Education Institutions (HEIs).

The UCPS goals are raising awareness of global education standards, providing professional development opportunities for Indian faculty, promoting a service-oriented environment as per the National Education Policy 2020, and fostering joint research papers among university clusters participating in shared lectures programmes using international academic talent. This initiative not only aims to enhance pedagogical awareness and teaching methods but also to facilitate professional growth and collaboration among educators, ultimately elevating the quality of higher education in India through international partnerships and shared learning experiences. It is designed to establish collaborative clusters of universities that will work together to enhance academic programmes , research initiatives and faculty development. By pooling resources, expertise, and best practices from diverse institutions, this initiative seeks to elevate the quality of education, promote interdisciplinary learning, and prepare students for success in an increasingly interconnected world. One of the key objectives of this pilot study is to promote internationalization by encouraging mobility among students, faculty, and researchers. By facilitating cross-border collaborations and partnerships, participating universities will have access to a wealth of global perspectives, cutting-edge research opportunities, cutting-edge technologies, and innovative teaching methodologies that will enrich the academic experience and broaden horizons for all stakeholders involved. As we navigate the complexities of a rapidly changing world driven by technological advancements and economic globalization, initiatives like the University Cluster Pilot Study serve as catalysts for transformation and progress in higher education. By embracing international collaboration, strengthening innovation, and nurturing talent, we can unlock the full potential of our educational institutions and empower future generations to thrive in an increasingly interconnected world.

The University Cluster Pilot Study for the Internationalisation of Higher Education in India represents a bold step towards reimagining the future of academia through collaboration, innovation, and excellence. As we embark on this transformative journey together, let us seize this opportunity to shape a brighter future for higher education in India and beyond. This endeavour highlights the significance of the University Cluster Pilot Study for the Internationalisation of Higher Education in India and emphasizes the potential impact of this joint project by AIU and EdifyOnline USA on transforming higher education in India.

For further details on the 'Transforming Higher Education in India towards Shared Ecosystem Using International Academic Talent' reach out through E-mail: *researchaiu@gmail.com* and *edifyonlineaiu@gmail.com.*

Faculty Development Programme on Effective Teaching

A five-day Faculty Development Programme on 'Effective Teaching through Modern Technologies' is being organized by the Association of Indian Universities (AIU)- Academic and Administrative Development Centre, Integral University, Lucknow from March 04-08, 2024 through Online Mode. The primary objective of the center is to organize advanced, short-term training and capacity-building programmes for faculty members and administrative staff across universities and other Higher Education Institutions (HEIs). There were 155 participants from different states of the country reflecting the diversity among learners from various disciplines like Engineering, Management, Computer Science, Education, etc. with their diverse learning backgrounds.

Mr. Zishan Raza Khan, Dy. Director, HRDC Integral University and Nodal Officer of the event briefed the participants about the roles and responsibilities of AADC and discussed the functioning of the center.

Dr Amarendra Pani, Joint Director and Director (I/c), Research Division, AIU addressed the participants by elaborating on the history and works done by the Association of Indian Universities (AIU) for the upliftment of Faculty members of Higher Education. He also emphasised how AIU supports the faculty members to enhance the efficiency of the faculty members. The resource persons for this FDP also joined the Inaugural session and gave their brief introduction to the Participants.

Prof Gaurav Singh, CIET, NCERT was the Guest of Honour of the Inaugural event. The Secretary General, AIU, Dr (Mrs) Pankaj Mittal and Vice Chancelor, Integral University blessed the participants by giving prominence to the importance of Faculty Development Programmes on such themes.

Prof. Gaurav Singh, CIET, NCERT, New Delhi gave the introduction and overview of Modern Teaching Technologies. He discussed the varied technologies a teacher can use to make the class interactive. He informed different educational channels and applications provided by the Government of India.

Dr. Divya R Panjwani, Assistant Professor, Department of Education, Integral University gave insights to the participants about blackboards and whiteboards. A detailed explanation is given on the importance and working of Whiteboards. She has also explained the preparation of Mind maps. In the next session, the participants practiced making mind maps on a free website and submitted the assignment for the same.

Further, the lectures were on the main theme of Integrating Technology into Classroom Instruction. In the first session of Dr. Kiran Lata Dangwal, Department of Education, University of Lucknow, Lucknow on 'Tools for Interactive Teaching-Learning', a variety of free tools available on the Internet to keep the teaching-learning interactive were discussed by the Resource Person. Following this, in the Hands-on activity, the resource person made the participants practice AI-created images using Adobe Firefly.

Dr. Vinod Kumar Kanvaria, Faculty of Education, University of Delhi, Delhi spoke on 'Let Us Create PPT through Various Ways' and another session was on 'AI tools for Educational Purpose.' In his session, the resource person discussed four different ways to create PPTs which also included PPT preparation through Artificial Intelligence. During the second session, AI tools/applications for content creation, making class interactive, video creation, making PPTs, etc. were discussed by the resource person. After the session, a discussion

session was organised where the participants tried a few of the AI tools used for Educational Purposes. Furthermore, in the last session, queries pertaining to the usage of different tools for educational purposes were addressed.

The third day of the programme was on the theme of 'Assessing Student Learning Online' in which the first session was conducted by Dr. Geetika Nidhi, Assistant Professor, Department of Education, Integral University on the topic 'Online Assessment Strategies: Creating Effective and Fair Online Assessments'. The Resource Person discussed about the fair online assessment. The next session was taken up by Dr. Prerna Mandhyan, School of Education, DS College, Katiyar, Bihar on the topic 'Tools for Online Testing and Evaluation' where she discussed the tools which are freely available online for testing and evaluation by involving participants in the quizzes designed in different platforms. She also made the participants design their quizzes on different websites. The third and fourth session of the day was allotted to the topic of Security and Integrity in Online Assessment, along with its hands-on Practice by Dr. Sheeba, Department of Computer Science and Engineering, Integral University, Lucknow. In this session, important aspects of security and integrity towards online assessments were highlighted.

The fourth day of the FDP started with a lecture by Dr. Mohammed Asif, Department of Education, Tezpur University, Tezpur on the topic of 'Designing and Implementing Online Assessments' where he pointed out the methods of how a teacher can intellectually design the online assessments and implement in the classroom and at other training centres. The second session was on 'Successful Online Evaluation: Case Study' where the Resource Person, Ms. Shalini Agrawal, Assistant Professor, Balram Krishan Academy, Mohanlalganj, Lucknow discussed case studies of a few universities. Herein, she explained in detail the process of evaluation of Sharda University, Eduplus. She also highlighted the usage and benefits of online platforms for Onscreen Marking. The next session was delivered by Dr. Vimal Singh, Faculty of Education, CSJM University, Kanpur on 'ICT Mediated Teaching Methods 'where through discourse method he highlighted the various facets of teaching methods which are through ICT. The last two sessions were taken by Ms. Kavita Agrawal where she pointed out the features and benefits of the Learning Management System along with the successful LMS of Integral University and its Integration in Teaching-Learning Transaction under all the courses. The event was coordinated by Mr Zishan Raza Khan, Nodal Officer and Coordinator, Dr Divya R Panjwani. ❑

THESES OF THE MONTH

SCIENCE & TECHNOLOGY

A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of Feb-March, 2024)

BIOLOGICAL SCIENCES

Biotechnology

1. Dey, Suchanda. **Establishment of molecular mechanism behind colistin resistance in *Klebsiella pneumoniae* and identification of potential efflux pump inhibitors through in *silico* approaches**. (Dr. Enketeswara Subudhi), Department of Biotechnology, Siksha O Anusandhan University, Bhubaneswar.

2. Dixit, Sangita. **Multi-Omics based insight into bacterial community dynamics and biofuel producing potential in the Pandanus-rich multiple hot spring outflow of Odisha, India**. (Dr. Enketeswara Subudhi and), Department of Biotechnology, Siksha O Anusandhan University, Bhubaneswar.

3. George, Jenet. **Synergism of photo-biocatalytic removal of persistent chlorophenolic compounds by membrane reactor fabricated with polymeric nanocomposites**. (Dr. V Vinoth Kumar), Department of Biotechnology, SRM University, Kattankulathur, Chennai.

4. Giri, Alok Kumar. **Nutraceutical profiling and molecular characterization of underutilized wild fruits of Odisha**. (Dr. Laxmikanta Acharya), Department of Biotechnology, Siksha O Anusandhan University, Bhubaneswar.

Life Sciences

1. Pal, Ankit. **Enhancement in the production, structure-activity relationship, and chaperone assisted folding of recombinant bio-therapeutic protein human-paraoxonase 1**. (Prof. Tapan Kumar Chaudhuri), Kusuma School of Biological Sciences, Indian Institute of Technology Delhi, New Delhi.

2. Upadhyay, Saurabh. **Investigating the structural and functional implications of cancer relevant PKM2 mutations**. (Prof. Ashok Kumar Patel), Kusuma School of Biological Sciences, Indian Institute of Technology Delhi, New Delhi.

Microbiology

1. Balamurali, V. **Evaluation on anti - SARS- COV- 2 antibody titre and human genomic characterization of non-responder in the vaccinated candidates**. (Dr.K V Leela), Department of Microbiology, SRM University, Kattankulathur, Chennai.

EARTH SYSTEM SCIENCES

Atmospheric Science

1. Chandra, Varunesh. **Impact of polar sea ice melt on Indian summer and winter monsoons**. (Prof. Sandeep Sukumaran), Centre for Atmospheric Science, Indian Institute of Technology Delhi, New Delhi.

ENGINEERING SCIENCES

Biochemical Engineering

1. Dubey, Shubham. **Microbiome-based rhizosphere engineering for mitigation of salinity stress in *Vigna radiata***. (Prof.Shilpi Sharma), Department of Biochemical Engineering and Biotechnology, Indian Institute of Technology Delhi, New Delhi.

Biomedical Engineering

1. Ahalya, R K. **Deep learning and quantum computing based evaluation of rheumatoid arthritis using hand x-ray and thermal images**. (Dr. U Snekalatha), Department of Biomedical Engineering, SRM University, Kattankulathur, Chennai.

Civil Engineering

1. Jaishree, D. **Numerical study on the Bay of Bengal circulation features and its variations using high resolution model simulations**. (Dr. P T Ravichandran), Department of Civil Engineering, SRM University, Kattankulathur, Chennai.

2. Kalyani, Gurram. **Experimental and analytical investigation on concrete beam with hybrid fiber reinforced polymer laminate**. (Dr. N Pannirselvam), Department of Civil Engineering, SRM University, Kattankulathur, Chennai.

3. Khairnar, Amruta Prabhakar. **Developing a circular economy model for rural sanitation**. (Prof. V M Chariar), Centre for Rural Development & Technology, Indian Institute of Technology Delhi, New Delhi.

Computer Science & Engineering

1. Anupama, G. **Novel prediction model using efficient parallel ECLAT algorithm in GRU**. (Dr.C Lakshmi), Department of Computer Science

& Engineering, SRM University, Kattankulathur, Chennai.

2. Behera, Bibhuti Bhusana. **Optimization of industrial processes using Industrial Internet of Things (IIOT) technology**. (Prof. Binod Kumar Pattanayak and Prof.Rajani Kanta Mohanty), Department of Computer Science and Engineering, Siksha O Anusandhan University, Bhubaneswar.

3. Bhargavi, G. **Landslide mapping and susceptibility assessment with remote sensing data using deep neural networks**. (Dr.J.Arun Nehru), Department of Computer Science, SRM University, Kattankulathur, Chennai.

4. Boyanapalli, Arathi. **Ovarian cancer detection and classification using deep learning techniques**. (Dr.A Shanthini), Department of Computer Science & Engineering, SRM University, Kattankulathur, Chennai.

5. Dash, Lucy. **Optimizing wireless sensor network performance and sustainability through data correlation exploitation, and redundancy reduction**. (Prof. Binod Kumar Pattanayak), Department of Computer Science & Engineering, Siksha O Anusandhan University, Bhubaneswar.

6. Janaki, K. **Defensive model for IoT based security attacks using blockchain and deep learning approach**. (Dr.S R Ramamoorthy), Department of Computer Science & Engineering, SRM University, Kattankulathur, Chennai.

7. Krishnamoorthy, N. **Novel design and development of secure data storage in cloud computing environment using hybrid cryptographic algorithm**. (Dr. S Umarani), Department of Computer Science, SRM University, Kattankulathur, Chennai.

8. Manoharan, Harshini. **Design and development of continuous glucose monitoring system based on hierarchically recommended clustering algorithm for managing the sedentary lifestyle of diabetic patients**. (Dr.J.Dhilipan and Dr. A. Saravanan), Department of Computer Science, SRM University, Kattankulathur, Chennai.

9. Mary, A Jenita. **Leveraging machine learning methods for detection of fraudulence in health insurance**. (Dr.S P Angelin Claret), Department of Computer Science, SRM University, Kattankulathur, Chennai.

10. Usha, S. **Prognosis cardiovascular and diabetes mellitus disease using reliable optimization algorithm with CNN in deep learning techniques**. (Dr. S Kanchana), Department of Computer Science, SRM University, Kattankulathur, Chennai.

Electrical & Electronics Engineering

1. Manoj Kumar. **Exploring the reliability aspects of NVM technologies for neuromorphic and digital computing**. (Prof. Mann Suri), Department of Electrical & Engineering, Indian Institute of Technology Delhi, New Delhi.

2. Venugopal, Arvind. **Estimation and optimisation of stray parameters in laminated busbars for electric vehicle traction inverters**. (Dr.Femi R), Department of Electrical & Electronics Engineering, SRM University, Kattankulathur, Chennai.

Electronics & Communication Engineering

1. Jena, Bibekananda. **Optimal multilevel thresholding for image segmentation based on nature inspired algorithm**. (Dr. Manoj Kumar Naik), Department of Electronics & Communication Engineering, Siksha O Anusandhan University, Bhubaneswar.

2. Kumar Biswal. **Analysis and performance improvement of fractional-order filters**. (Dr. Madhab Chandra Tripathy and Dr. Sanjeeb Kumar Kar), Department of Electronics & Communication Engineering, Siksha O Anusandhan University, Bhubaneswar.

3. Monika, R. **Investigations on adaptive block compressive sensing techniques for efficient image compression**. (Dr.S Dhanalakshmi), Department of Electronics and Communication Engineering, SRM University, Kattankulathur, Chennai.

4. Nirosha, R. **Steady state and transient characterization of organic thin film transistors**. (Dr.Rajesh Agarwal), Department of Electronics & Communication Engineering, SRM University, Kattankulathur, Chennai.

5. Poovannan, E. **Early power prediction of digital VLSI circuits using machine learning**. (Dr.S Karthik), Department of Electronics & Communication Engineering, SRM University, Kattankulathur, Chennai.

6. Sahoo, Subhaluxmi. **Background modeling and model learning for moving video object detection and shadow removal**. (Dr. Pradipta Kumar Nanda), Department of Electronics & Communication Engineering, Siksha O Anusandhan University, Bhubaneswar.

7. Sanjay Kumar. **Characterization and modelling of underwater wireless optical channel and link performance improvement using ratiometric signal processing**. (Dr.Shanthini Prince), Department of Electronics and Communication Engineering, SRM University, Kattankulathur, Chennai.

8. Wunnava, Aneesh. **Multilevel image thresholding using nature inspired algorithms**. (Dr. Manoj Kumar Naik), Department of Electronics & Communication Engineering, Siksha O Anusandhan University, Bhubaneswar.

Genetic Engineering

1. Sivadharshini, R. **Insights into bacterial alginate metabolism and their applications in bioenergy production**. (Dr.M Ramya), Department of Genetic Engineering, SRM University, Kattankulathur, Chennai.

Mechanical Engineering

1. Abburi, Lakshman Kumar. **Experimental investigations on torsion, damping and machinability of fiber reinforced polymer composites using sensors signal analysis**. (Dr.M Prakash), Department of Mechanical Engineering, SRM University, Kattankulathur, Chennai.
2. Panda, Asish Kumar. **Stochastics finite element model updating using frequency response functions**. (Prof. S V Modak), Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi.
3. Sasikumar, S. **Stabilization and mechanical behavior of aluminum foams stabilized by various particles**. (Dr. G.S.Vinodkumar), Department of Mechanical Engineering, SRM University, Kattankulathur, Chennai.
4. Tauheed, Mohd. **Fracture behavior of hygrothermally aged composite adhesive joints**. (Prof. Naresh Varma Datla), Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi.

Metallurgical Engineering

1. Bairagi, Ujjawal. **Polyzwitterionic gels and nanogels for fixation and/ or release of anions and gaseous molecules and their applications**. (Prof. Josemon Jacob), Department of Materials Science, Indian Institute of Technology Delhi, New Delhi.
2. Joshi, Tina. **Surface engineering of upconversion nanoparticles with polymer chains using photoinduced electron/energy transfer reversible addition-fragmentation chain transfer polymerization**. (Prof. Leena Nebhani), Department of Materials Science, Indian Institute of Technology Delhi, New Delhi.

MATHEMATICAL SCIENCES

Mathematics

1. Hossain, Md Mouzakkir. **Dynamics and instability mechanisms of single and double-layered fluid flowmodels**. (Dr.Harekrushna Behera), Department of Mathematics, SRM University, Kattankulathur, Chennai.
2. Senthil, S. **A study on algebraic structure of right duo seminearrings and its application**. (Dr. R Perumal), Department of Mathematics, SRM University, Kattankulathur, Chennai.

MEDICAL SCIENCES

Pharmaceutical Science

1. Moka, Muralikrishna. **Study on hydroalcholic extract and alkaloid rich fraction of *Tinospora Cordifolia* Stems against continuous light induced *Polycystic ovarian* syndrome in rodent model**. (Dr.Sumithra M), Department of Pharmacy, SRM University, Kattankulathur, Chennai.
2. Sharmila Devi, V. **Phytochemical standardization and pharmacological evaluation of polyherbal formulation for the treatment of diabetic nephropathy**. (Dr.Sumithra M), Department of Pharmacy, SRM University, Kattankulathur, Chennai.

Physiotherapy

1. Suresh, J. **Efficacy of virtual reality program on motor performance in children with developmental coordination disorder: A randomized controlled trial**. (Dr. S Subash), Department of Physiotherapy, SRM University, Kattankulathur,Chennai.

PHYSICAL SCIENCES

Chemistry

1. Dhal, Kshirabdhitanaya. **Elucidation of molecular interactions of non-essential amino acids with food preservatives in aqueous medium**. (Dr. Malabika Talukdar and Dr. Sulochana Singh), Department of Chemistry, Siksha O Anusandhan University, Bhubaneswar.
2. Gawas, Prakash Pratiksha. **Design and development of donor-acceptor architectures based on hydantoin derivatives towards optoelectronic applications**. (Dr.Venkatramaiah Nutalapati), Department of Chemistry, SRM University, Kattankulathur, Chennai.
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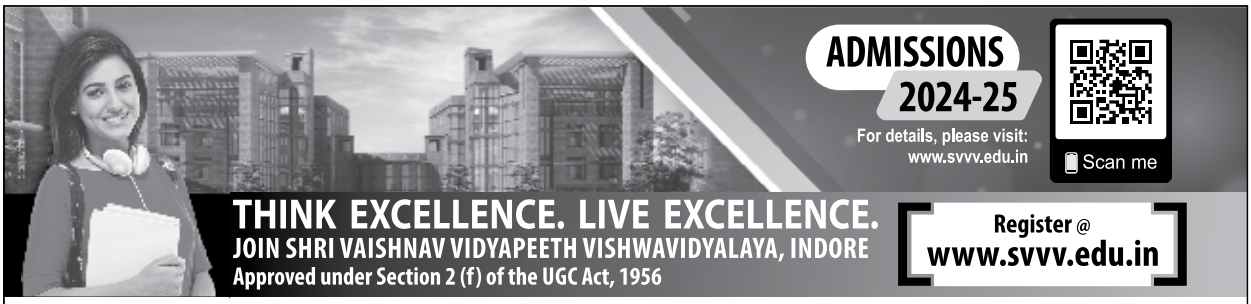
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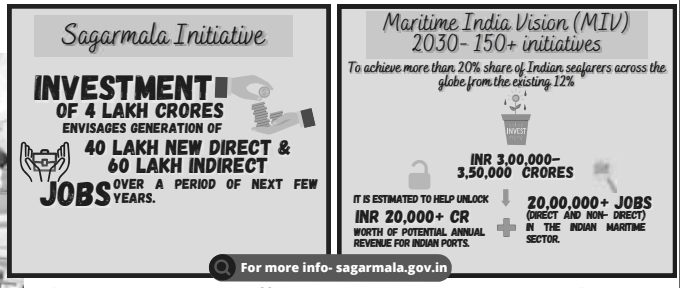
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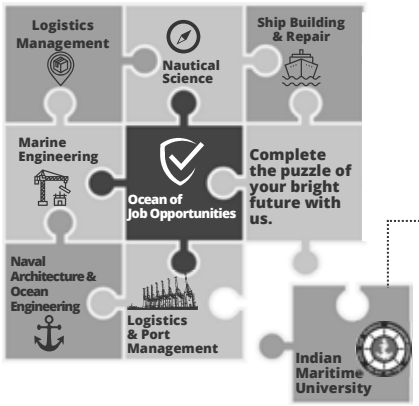
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» B.Tech. Mechatronics
» BBA
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» B.Com. (Morning shift)
» B.Com. (Finance with ICA)
» B.Com. (with ACCA)
» B.Com. (with CMA)
» B.Arch.
» Bachelor of Interior Design
» Bachelor of Interior Design (Lateral Entry)
» B.Des Fashion/Communication/ Graphic/Product Design
» BFA
» B.Sc.Physics/Chemistry/Mathematics
» BCA
» B.Sc. (IT)
» B.Sc. Botany/Zoology/Forensic Science/Forestry
» B.Sc.Bio-Technology/Bio-Chemistry/ Microbiology/Food Technology
» B.Sc. Geography
» BA Geography
» B.Sc. Geology
» BA (J&MC)
» B.Sc. (Animation and Visual Effects)
» BA Psychology
» BA Applied Psychology
» BA English
» BA Economics
» BA Sociology
» BSW
» BA Administrative Service
» BA Public Administration
» BA Political Science
» BA History
» BA LLB (H)
» BBA LLB(H)*
» LLB*
» BA /B.Sc. Hotel Management
» BA in Culinary Arts
» Bachelor of Hotel Management (BHM)
» BA /B.Sc. Travel & Tourism Management
» BTTM
» B.Pharm.
» B.Sc. Nursing
» General Nursing & Midwifery (GNM)
» B.Sc. Nursing (Post Basic)
» Bachelor of Physiotherapy (B.P.T)
» B.Sc. Dialysis Technology
» B.Sc. Operation Theatre Technology
» B.Sc. Radiography & Advance Imaging Technology
» B.Sc. Emergency & Critical Care
» B.Sc. Nutrition and Dietetics
» B.Optometry
» B.Sc. Medical Laboratory Technology (BMLT)
» D.Pharm.

POSTGRADUATE

» M.Tech. CSE
» M.Tech. CE
» MBA
» M.Com.
» M.Sc. Physics/Chemistry/ Mathematics
» MCA
» M.Sc. (IT)
» M.Sc. Botany/ Zoology
» M.Sc. Forensic Science
» M.Sc. Forestry
» M.Sc. Bio-Technology
» M.Sc. Bio-Chemistry
» M.Sc. Microbiology
» M.Sc. Food Technology
» M.Sc. Geography
» M.A. Geography
» M.Sc. Geoinformatics
» M.Sc. Geology
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» M.Sc. (Animation and Visual Effects)
» MA Psychology
» MA Clinical Psychology
» MA English
» MA Economics
» MA Sociology
» MSW
» MA Public Administration
» MA Political Science
» MA History
» M.LI.Sc.
» LLM (Morning Shift/Day Shift)
» M.Sc.- Hotel Management/MHM
» MTTM
» M.Pharm.
» M.Sc. Nursing
» Master of Physiotherapy
» M.Sc. Nutrition and Dietetics
» M.Optometry
» M.Sc. Medical Laboratory Technology (MMLT)

*Subject to approval

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Licensed to post without prepayment under WPP No. U(C)-109/2024-26

Postal Regd. No. DL (C)-05/1241/2024-26

UNIVERSITY NEWS 62 (16) April 15-21, 2024

Regd. No. RNI-7180/1963

Published on Monday: 15-04-2024 No. of Page 284 including Covers

Posted at LPC Delhi RMS, Delhi-6 on Tuesday/Wednesday every week

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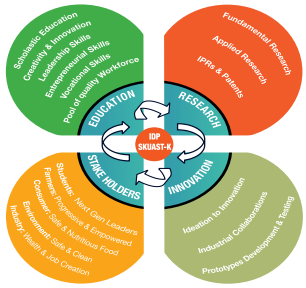
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08	59	46	70	102
UG Programs	Masters Programs	PhD Programs	Diploma & Skill Courses	Courses/ Certifications

Programmes Offered

Undergraduate Programme	Postgraduate Programme	Ph.D Programme
B.V.Sc & A.H	Master of Science in Veterinary	Ph.D in Veterinary Sciences
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B.Sc (Hons) Forestry	Master of Science in Forestry	Ph.D in Forestry
B.Sc (Hons) Sericulture	Master of Science in Sericulture	Ph.D in Sericulture
B.F.Sc	Master of Science in Fisheries	Ph.D in Fisheries
B.Tech (Agri.Engg.)	M. Tech. Agricultural Engineering	Ph.D in Agricultural Engineering
B.Tech (Food Technology)	M.Tech Food Science & Technology	Ph.D in Food Science & Technology
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- Leading in Startup Ecosystem with 13 BIRAC-BIG Grants
- First to establish Centre for AI & ML in Agriculture
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Overseas Student Placements



MADIHA KHALID
MASTERS IN ENVIRONMENTAL MANAGEMENT
University of New Brunswick, **CANADA**



MIDHAT ZULAFKAR
MASTERS IN CROP PHYSIOLOGY
Kansas State University, **USA**



YASIR NAZIR
MASTERS IN WEED SCIENCES
Kansas State University, **USA**



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Ph.D IN FISHERIES
MARIE CURIE FELLOWSHIP
University of Antwerp, **BELGIUM**



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Edited, Printed and Published by Dr Sistla Rama Devi Pani, on behalf of the Association of Indian Universities, AIU House, 16 Comrade Indrajit Gupta Marg (Kotla Marg), New Delhi-110 002. Phones: 23230059 (6 Lines). Fax: 011-23232131, E-Mail : sgoffice@aiu.ac.in, advtun@aiu.ac.in, publicationsales@aiu.ac.in, subsun@aiu.ac.in (for subscription), unaiu89@gmail.com, universitynews@aiu.ac.in, Website: http://www.aiu.ac.in

Printed by Chandu Press, D-97, Shakarpur, Delhi-110 092 Phone: 42448841, chandupress@gmail.com