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In This Issue

Multilingualism in Indian Schools: A Boon or Bane?

Sangeeta Chauhan*

India is a land of linguistic diversity, and a home to 22 officially recognized languages along with hundreds of dialects. This diversity is reflected in its schools, where students and teachers often speak multiple languages. The idea of multilingual education has gained in popularity, particularly after the NEP 2020 emphasized mother-tongue instruction in early education. However, the benefits and challenges of implementing multilingualism in schools remain debated. On one hand, multilingualism is seen as a boon that can foster cognitive flexibility, promote cultural integration, and support inclusive education. On the other hand, it presents challenges such as resource limitations, teacher preparedness, and a lack of standardized materials. This paper examines the complex role of multilingualism in Indian schools, weighing its advantages and disadvantages.

Definitions of Multilingualism

a) *Linguistic Definition*: Multilingualism refers to the ability of an individual or a community to use and understand more than two languages with varying degrees of proficiency. It includes the capacity to speak, read, write, or comprehend multiple languages.

b) *Sociolinguistic Definition:* Multilingualism is the use of two or more languages by an individual or community in social contexts. It often occurs when different languages are spoken in the same social or geographical area, and can reflect various social, cultural, or educational factors.

c) *Psycholinguistic Definition:* Multilingualism is the cognitive ability to process, switch between, and manage multiple languages in the brain. It involves not just speaking different languages but also the mental and neurological skills required for handling multiple linguistic systems simultaneously.

d) *Educational Definition:* Multilingualism in education refers to the practice of teaching and learning multiple languages. It encompasses various approaches like bilingual education, language immersion, and foreign language acquisition programs, aiming to foster proficiency in more than one language.

e) *Cultural Definition:* Multilingualism is the coexistence of multiple languages within a community, reflecting the cultural diversity of that community. It often involves interactions where individuals or groups use different languages to express identity, heritage, and affiliation to cultural groups

Advantages of Multilingualism in Schools (Boon)

Cognitive Benefits

i) Research indicates that multilingualism enhances executive functions, such as problem-solving, critical thinking, and

Professor, Guru Gobind Singh Indraprastha University, Sector- 16 C, Dwarka, Delhi-110078. E-mail: Chauhan.dr@gmail.com

multitasking. Studies by Bialystok et al. (2012) suggest that multilingual individuals often outperform monolinguals in tasks requiring cognitive flexibility, attention control, and memory retention. Studies have consistently shown that multilingual individuals demonstrate better executive functioning, which includes skills like problem-solving, attention control, and cognitive flexibility. This means that multilingual students can shift between tasks more easily, adapt to new information, and approach problem-solving from multiple perspectives. The constant need to select and switch between languages strengthens their ability to filter relevant information and ignore distractions, a skill that supports academic success.

ii) Improved Memory Retention and Recall: Learning and using multiple languages strengthens memory as the brain regularly stores and retrieves vocabulary, grammar rules, and language-specific concepts. This repeated cognitive exercise can enhance working memory, which benefits students across all subjects. A robust working memory has also been linked to improved math and science performance, as students are better able to retain and manipulate complex information.

iii) Greater Mental Flexibility: Multilingual students often demonstrate enhanced mental flexibility and creativity, as they regularly think across linguistic boundaries. Studies suggest that these students are more likely to consider alternative perspectives and find innovative solutions to problems, a benefit that can enrich collaborative projects and complex assignments in schools.

iv) Delayed Onset of Cognitive Decline: Research has shown that lifelong bilinguals may experience delayed cognitive decline in later life. Though this is a long-term effect, it highlights the role of multilingualism in keeping the brain active and healthy, potentially reducing the risk of dementia. In the immediate context, young multilingual learners display more adaptive thinking, which has positive implications for continuous learning.

v) Enhanced Metalinguistic Awareness: Multilingual students develop better metalinguistic skills, which refer to the ability to think about language itself and understand language structures more deeply, benefiting literacy development.

vi) Easier Acquisition of Additional Languages: Students who are already multilingual often find it easier to learn other languages due to their familiarity with different linguistic systems.

Socio-Cultural Integration

i) Multilingual education fosters an inclusive learning environment, where students feel represented and connected to their cultural heritage. This connection builds self-confidence and a strong cultural identity, contributing to emotional well-being.

ii) Fostering Cultural Identity and Pride: Multilingual education validates students' linguistic and cultural backgrounds, building a sense of pride in their heritage. When students see their languages represented in school, it reinforces their cultural identity, making them feel valued and respected within the educational system. This sense of belonging can be particularly impactful for minority language speakers, who may otherwise feel marginalized.

iii) Encouraging Empathy and Cross-Cultural Understanding: Exposure to multiple languages at school fosters empathy and openness, helping students appreciate linguistic and cultural diversity. Research indicates that multilingual individuals are more likely to develop an understanding of and respect for other cultures, as they are accustomed to adapting to different linguistic norms. In India, where linguistic divides can reflect cultural and regional differences, this cross-cultural understanding is vital for social cohesion. It promotes inclusivity and reduces social prejudices.

iv) Building Social Bridges: Multilingualism allows students to communicate across cultural and linguistic divides, enabling them to form relationships with peers from different backgrounds. This is particularly important in a multicultural society like India, where multilingualism can help bridge gaps and foster unity. Multilingual skills encourage students to interact beyond linguistic and social boundaries, which can be especially beneficial in a school environment that represents a microcosm of India's diversity.

v) Increased Global Competence: As India is a diverse country with a variety of languages, multilingual students often find it easier to adapt to international contexts, understand global

issues, and engage with people from different backgrounds.

vi) Improved Social Interactions: Multilingual students have the ability to communicate with a broader range of people, fostering better social interactions and relationships both within their own community and beyond.

vii) Enhanced Networking and Collaboration: Students can navigate various social groups, making them more adaptable in group settings and increasing their social capital.

Academic and Career Advantages

i) Proficiency in multiple languages can open doors to diverse career opportunities, particularly in India's multilingual job market. Multilingual students also benefit academically, as multilingualism is associated with enhanced comprehension and literacy skills across languages.

ii) Academic Benefits and Language Transfer: Research suggests that proficiency in multiple languages can positively impact literacy and comprehension skills, leading to improved performance across subjects. When students learn in multiple languages, they can transfer skills such as critical reading and analytical thinking between languages, enriching their academic abilities overall. For instance, literacy skills in one language can reinforce literacy skills in another, aiding both academic success and personal development.

iii) Increased Global Opportunities: In today's globalized world, multilingual skills are highly valued by employers. For students in India, proficiency in regional languages alongside English and possibly Hindi opens a wide array of career opportunities in fields such as translation, journalism, public administration, and tourism. : Proficiency in multiple languages opens doors to various career opportunities, especially in sectors like diplomacy, international business, tourism, media, and education. Multilingual individuals are often seen as assets, particularly in India's growing need for professionals who can communicate across linguistic barriers.

iv) Enhanced Educational Mobility: Multilingual students are often more adaptable to diverse educational contexts, both domestically and internationally. They tend to perform better when navigating educational programs or pursuing higher education in different regions. For students aiming to study abroad, multilingualism, especially proficiency in English alongside regional languages, is a distinct advantage, enhancing their adaptability and readiness for cross-cultural communication.

Challenges of Multilingualism in Schools (Bane)

Resource Constraints

Implementing multilingual education requires substantial resources, including multilingual textbooks, instructional materials, and trained teachers. In rural areas, where resources are already scarce, providing a multilingual curriculum becomes challenging. Teachers may not always be trained to teach multilingual students, and in many cases, they might struggle to address the needs of students who are not equally proficient in the language of instruction (usually English/ regional language).

Insufficient Multilingual Textbooks and Materials

Developing, printing, and distributing textbooks in multiple languages is resource-intensive. Often, schools, particularly in rural and economically challenged areas, lack sufficient textbooks and materials in regional languages, leading to a dependency on a single language, usually English or Hindi. This lack of multilingual resources limits the effectiveness of multilingual education and can disadvantage students who do not speak the instructional language at home.

Budget Limitations

Implementing a multilingual curriculum requires significant financial investment, including funding for curriculum development, teacher training, and educational resources. In India, where educational funding is already stretched thin, especially in rural areas, multilingual programs may not receive adequate support. Without sustained funding, schools struggle to provide effective multilingual education, limiting its potential benefits for students.

Challenges in Technological Support

With technology playing an increasingly important role in education, the absence of multilingual educational software, apps, and digital platforms further hinders multilingual learning. Most educational software and online resources are developed in English, limiting accessibility for students who are more comfortable learning in their native language.

Teacher Preparedness and Training

The success of multilingual education depends on well-trained educators who can effectively teach in multiple languages. Currently, many teachers lack the training or fluency required to implement multilingual instruction, leading to ineffective classroom practices.

Lack of Multilingual Training Programs: Many teachers lack formal training in multilingual pedagogy, which is crucial for effectively managing a multilingual classroom. In many cases, teachers are either monolingual or may speak the regional language fluently but lack the necessary training to teach it academically. This gap can lead to instructional challenges and may diminish the quality of education delivered.

Teacher Shortages in Specific Languages: In linguistically diverse states, there may be a shortage of qualified teachers fluent in the regional languages. This shortage creates a dependency on teachers who speak only a dominant language like Hindi or English, which can alienate students from minority linguistic backgrounds. Additionally, recruiting teachers with skills in multiple languages is often costly and challenging, further complicating multilingual education implementation.

Overburdening Teachers: Many teachers face the daunting task of teaching multiple subjects in multiple languages, which can lead to increased stress and burnout. The lack of adequate resources and support for multilingual teaching can create overwhelming responsibilities, resulting in ineffective teaching practices. Without proper support, teachers may struggle to manage the demands of multilingual instruction, which negatively impacts student learning.

Curriculum Standardization: Multilingual education poses challenges for standardizing assessments and curricula. Disparities in language proficiency levels make it difficult to evaluate students equitably and uniformly across regions.

Linguistic Diversity and Curriculum Design: India's linguistic diversity complicates the standardization of a multilingual curriculum, as students' language proficiencies and preferences vary widely across regions. Developing a standardized curriculum that accommodates regional languages without compromising educational quality is a significant challenge. A rigid curriculum that fails to account for regional linguistic differences may inadvertently disadvantage students.

Assessment and Evaluation Challenges

In a multilingual classroom, evaluating students equitably is a complex task. Standardized tests and assessments often do not reflect the linguistic diversity of the classroom, and translation may alter the meaning and difficulty of test questions. Designing assessments that are linguistically fair and culturally appropriate is a challenge that educators and policymakers must address to ensure equality in evaluation.

Inconsistent Implementation of Policies

Multilingual policies are often implemented inconsistently across states, leading to disparities in educational quality. For instance, while some states have adopted regional language instruction with success, others struggle due to limited resources or teacher shortages. This inconsistency leads to unequal educational opportunities, with students in certain states or regions enjoying better access to multilingual education than others.

Language Confusion and Interference

Language Mixing: Young learners, especially those who are still developing their language skills, may mix languages (code-switching), which can sometimes lead to confusion or a lack of fluency in any one language.

Interference in Learning: In some cases, multilingual students may face difficulties when one language's rules interfere with the grammar or structure of another language, leading to errors in speaking or writing.

Limited Proficiency in Each Language: Multilingual students may not achieve high proficiency in any one language, which can affect their academic performance, particularly in subjects that require a deep understanding of language, such as literature and writing.

Curricular Pressure: In multilingual classrooms, where students speak multiple languages, the curriculum may become more complex for teachers to design and deliver effectively, as they need to accommodate the linguistic diversity of the students.

Inadequate Resources: Schools may lack sufficient teaching materials and resources for multilingual education, such as textbooks in various languages, bilingual dictionaries, or language support staff.

Language Dominance and Hierarchies: Favoritism Toward Major Languages: In India, languages like Hindi and English often take precedence over regional languages, leading to the marginalization of students who speak minority languages at home. This may result in lower self-esteem, feelings of exclusion, or challenges in academic performance for students whose first language is not Hindi or English.

Social Inequality

Multilingual students from economically disadvantaged backgrounds may struggle with the language of instruction (e.g., English), which could affect their academic outcomes and perpetuate social inequality.

Emotional and Psychological Strain

Language Anxiety: Students who are not proficient in the primary language of instruction may experience language anxiety or embarrassment, affecting their confidence and participation in class.

Cultural Identity Conflicts: In multilingual settings, students may struggle with cultural identity issues, especially when the emphasis on one language over another leads to confusion about their identity or sense of belonging.

Case Studies in Multilingual Education in Indi

Andhra Pradesh: The Role of Mother-Tongue Education

Andhra Pradesh piloted mother-tongue instruction in rural schools. Mother-tongue-based multilingual education (MTB-MLE) was introduced in several rural schools to increase student engagement and improve educational outcomes. The Education department implemented program that emphasized instruction in students' first language in early grades, typically Telugu, while gradually introducing other languages, including English and Hindi, as students advanced through their schooling.

Studies conducted by the Regional Institute of Education (RIE) have shown that children in these programs exhibit higher levels of engagement, with attendance rates in mother-tongue-instructed classrooms often surpassing those in schools using a second language for instruction. Furthermore, dropout rates declined in regions where this model has been implemented, suggesting that students are more likely to remain in school when they are taught in their native language.

Despite these positive outcomes, the initiative faces challenges, particularly in providing adequate resources. Textbooks in the mother tongue are often limited or unavailable in rural areas, and teachers frequently lack training to implement the curriculum effectively. Additionally, transitioning students from Telugu to English and Hindi in later grades has proven challenging, as students often struggle to adapt to new languages for academic purposes.

Assam: Bridging Linguistic Diversity in Classrooms

In Assam, where multiple indigenous languages coexist, some schools successfully implemented multilingual programs that incorporated local languages.

Assam's policy incorporated languages like Assamese, and Bodo, giving indigenous students a platform for cultural preservation and self-expression. Teachers incorporate culturally relevant stories, proverbs, and oral traditions into the curriculum, which helps students feel represented and connected to their heritage. The state also runs bilingual transition programs that gradually introduce Hindi and English, helping students to become proficient in these widely spoken languages without compromising their mother tongue. This model has received positive feedback from educators who report greater student confidence and comprehension.

Despite these achievements, schools in Assam face challenges with curriculum standardization and teacher preparedness. Teachers often lack the training needed to transition students between languages smoothly, and regional disparities in implementation leave some areas less supported than others.

Karnataka: The Bilingual Education Experiment

Karnataka experimented with bilingual instruction as part of its broader educational policy, balancing Kannada as the primary language of instruction with the early introduction of English. Schools in Karnataka have implemented bilingual teaching methods that incorporate English vocabulary into Kannada instruction to familiarize students with English from an early age without overwhelming them.

This bilingual approach helps students develop basic English skills alongside Kannada, which is

crucial for students who will eventually study or work in predominantly English-speaking environments. The program has been especially effective in urban areas, where parents often prefer an English education but appreciate the inclusion of Kannada for cultural continuity.

However, this model also highlights rural-urban disparities. While urban schools have well-trained teachers and sufficient resources to implement the bilingual model effectively, many rural schools lack the necessary support. Teachers in rural areas report difficulties in accessing bilingual materials and note that students often lack foundational Kannada skills due to the need to focus heavily on English.

West Bengal: Multilingual Education in Tribal Areas

West Bengal has a considerable tribal population with unique linguistic needs, including Santali, Oraon, and Lepcha communities. Recognizing this diversity, the state has implemented multilingual education programs in tribal regions, incorporating these indigenous languages alongside Bengali and English.

The inclusion of tribal languages in the curriculum has helped foster cultural pride among students from tribal communities. Teachers report increased student participation and confidence, as students feel more connected to their schooling when their language is valued in the classroom. Additionally, local language instruction has improved parental engagement, as parents feel more involved in their children's education.

However, the program faces logistical challenges. Textbooks in indigenous languages are scarce, and there is a shortage of teachers who are proficient in these languages. Financial constraints further limit the program's reach, and in many cases, educators rely on oral instruction without the aid of written materials, affecting the consistency of language instruction.

Delhi NCR: Challenges of Multilingualism in Urban, Multicultural Schools

Delhi NCR, a region marked by rapid urbanization and migration, houses a highly diverse student population with speakers of Hindi, Punjabi, Urdu, Bengali, Tamil, and other languages. Schools in this area grapple with the complexity of providing an inclusive education to a linguistically heterogeneous student body.

Some schools in Delhi NCR have adopted multilingual policies to address the needs of this diverse population. Teachers use translanguaging techniques, allowing students to use their native languages to understand complex subjects. For example, students may read texts in Hindi and discuss them in their preferred language, which helps deepen comprehension and reduce language barriers.

Despite these efforts, schools face challenges in managing the linguistic diversity. Some parents prioritize English, seeing it as essential for future opportunities, while others prefer instruction in regional languages for cultural preservation. This lack of consensus on language preferences places pressure on schools to strike a balance, often leading to compromises that can dilute the effectiveness of multilingual education.

Rajasthan: Government's Push for English-Medium Education

In recent years, Rajasthan has experienced a shift towards English-medium instruction in government schools to improve students' job prospects. While this policy aims to make students more competitive, it has led to the marginalization of regional languages like Rajasthani and Marwari in educational contexts.

The introduction of English-medium education has increased enrollment rates in government schools, as parents perceive English proficiency as essential for economic mobility. For students from economically disadvantaged backgrounds, this shift provides an opportunity to access English language skills that are typically more accessible in private schools.

However, this policy shift has raised concerns among educators and linguists, who argue that students are losing proficiency in their native languages. Teachers report that many students struggle with comprehension in English, especially in early grades, which impacts their overall academic performance and cultural connection. Some schools are experimenting with a partial return to regional language instruction, especially in lower grades, to address these issues.

To Summarise

- Each of these case studies highlights different outcomes and challenges associated with multilingual education across India.

- Andhra Pradesh and West Bengal show how mother-tongue instruction can foster engagement and retention, though resource shortages and teacher training is a matter of concern.

- Assam and Karnataka illustrate how balancing regional languages with Hindi and English can provide both linguistic and academic benefits, though disparities in resources and teacher preparedness affect effectiveness.

- Delhi NCR and Rajasthan highlight the complex dynamics in urban and policy-driven contexts, where linguistic diversity and the emphasis on English can create barriers to both cultural preservation and academic performance.

- The experiences of these states reflect the diversity of multilingual education in India, revealing both the potential and the difficulties of implementing multilingual policies across various sociocultural landscapes. When effectively implemented, multilingual education fosters cultural pride, cognitive flexibility, and inclusive learning. However, these successes are often limited by practical constraints like resources, teacher training, and community consensus on language priorities. These case studies collectively suggest that multilingualism in Indian schools can be a significant boon, provided that policies are locally adapted, adequately funded, and inclusive of India's complex linguistic fabric.

Conclusion

The multilingual nature of India presents both opportunities and challenges in the realm of education. While multilingualism can enhance cognitive abilities, cultural connection, and academic outcomes, it also demands a high level of planning, resources, and skilled educators. Balancing these factors is crucial for making multilingual education a boon rather than a bane. With targeted reforms and sustained support, India can harness multilingualism as a valuable asset, enriching students' educational experiences and fostering a more inclusive society.

On the one hand, it offers cognitive, cultural, and social advantages that prepare students for a globalized world. On the other hand, the educational system faces challenges related to language proficiency, teacher preparation, and resource allocation. To maximize the benefits of multilingualism in Indian schools, it is essential to implement supportive policies that address these challenges, such as language-inclusive curricula.

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Concept Mapping Strategies for Effective Learning

S Prabu Shankar* and A Rajkamal**

Conceptual change is attributed to Thomas Khun's pioneering idea of a *'paradigm shift'* in the history and philosophy of science in 1962. It involves a learning process that necessitates the modification of pre-existing ideas in order to create precise and solid scientific understandings. Student's ability to comprehend an idea is significantly influenced by their prior knowledge of it. Concept mapping has been utilized extensively in education as a cognitive technique to using critical thinking skills and absorbing new information. According to Novak and Gowin (1984), concept maps are two-dimensional graphical representations of an individual's domain knowledge that are based on Ausubel's theory of meaningful learning in the classroom (Ausubel et al., 1978). Over the past thirty years, concept maps have been utilized efficiently for assessment, recording changes in perspective during development of cognition, provoking competency, facilitating meaningful learning, and even more.

Concept maps are perceived as a resource for instruction that fosters meaningful learning, improve the academic performance, facilitate the integration of theory and practice, nurture the development of critical thinking skills, encourage technology inclusion, foster student collaboration, and serve as a tool for assessment and learning progress. Enhancing learning performance can be achieved practically through concept mapping. Students typically create concept maps either prior knowledge or following studying the course material. Crucial conceptual competence can be influenced by a number of factors, including the subject matter's intricacy and complexity, the kind of resources for instruction employed, the extent of student involvement, and personal perspectives and prior knowledge. The educators ought to consider to account both how they present the subject matter along with what their students previously comprehend.

Relevance of Concept Mapping in Learning

The efficiency of concept mapping in learning is well-documented across various educational

*Associate Professor, Department of Education Institute of Advanced Study in Education Chennai – 600 015. E-mail: drsps. edn@gmail.com
**Assistant Professor, SRM School of Teacher Education and Research, SRM University, Kattankulathur, Kancheepuram District – 603203. E-mail: rajkamaa@srmist.edu.in

and cognitive research studies. Concept mapping, a technique that visually represents relationships between concepts, which has proven to be an effective tool in enhancing learning outcomes. The significant ways in which concept mapping contributes to efficient learning:

Concept mapping enhances *knowledge retention* which facilitates learning by helping students organize and structure information, leading to better retention. It allows learners to link new knowledge to existing knowledge, reinforcing connections in memory. Studies have shown that learners who engage in concept mapping retain information more effectively than those who passively study or read without organizing the content visually (Novak & Canas, 2008). By presenting information in a hierarchical structure, students can see the broader context and specific details, making it easier to recall key concepts later.

Creating a concept map requires *active engagement* from students, which promotes deeper processing of information. The process of creating connections between concepts forces students to think critically about the material, thus improving understanding. Daley & Torre (2010), reveals that active participation enhances student's ability to internalize and apply knowledge in various contexts. Concept mapping, especially when done collaboratively, encourages dialogue and exchange of ideas, further reinforcing learning.

Concept maps help learners *identify the relationships between concepts*, fostering an understanding of how different pieces of knowledge fit together. This holistic view can improve comprehension, improves comprehension and critical thinking especially for complex topics. Ruth & Donnell (2013) suggests that students who use concept mapping demonstrate stronger critical thinking and problem-solving skills because they are able to map out various perspectives and connections within a subject.

The visual nature of concept maps *facilitates self-regulation and reflection* allows students to easily reflect on their learning process. By revisiting and revising their maps, learners can

assess their understanding and make adjustments as necessary. This reflective aspect of concept mapping encourages metacognition, or thinking about one's own thinking, which is crucial for self-regulated learning (Schraw & Dennison, 1994). Students can track their progress and fill in gaps in their understanding as they continue to work on the map.

Concept Maps – A Collaborative Learning Tool

Concept maps help learners break down complex information into more manageable parts. Which encourages organization of complex information. For subjects that require the understanding of many interrelated concepts, such as biology, history, or literature, concept maps allow students to visualize how different concepts connect. This organized structure makes it easier to see cause-and-effect relationships, hierarchies, and dependencies. In this way, concept mapping reduces cognitive overload by simplifying complex topics and making them more digestible (Sweller et al., 2011). When used in group settings, concept maps can enhance collaborative learning. Group members can share their ideas, discuss relationships between concepts, and build on each other's contributions. Collaborative concept mapping has been shown to improve group cohesion and collective problem-solving skills. Donnell et al. (2002) found that group concept mapping fosters deeper discussions, encourages peer teaching, and helps participants arrive at a more comprehensive understanding of the topic.

Research indicates that concept mapping aids in the transfer of knowledge across different contexts. By mapping relationships between concepts, students are better able to apply their learning to new situations. For example, in a study by Leong & Lee (2012), students who used concept maps to study a subject demonstrated higher levels of transfer in applying learned material to new, unfamiliar problems. Computer-based concept mapping tools (e.g., MindMeister, CmapTools) are versatile and accessible that make the process even more efficient, providing the ability to easily edit, share, and integrate multimedia resources. These tools also support collaborative learning by allowing multiple users to work on the same map simultaneously. This flexibility in how concept maps are created, accessed, and modified further enhances their educational effectiveness.

Key Elements of Concept Mapping

The elements of concept mapping are the foundational components that structure the map and make it an effective tool for organizing and visualizing knowledge. These elements likely concepts, propositions, linking words, hierarchical structure, cross-links, focus question, nodes, and visual layout work together to make concept mapping an effective tool for learning and organizing information. When well-executed, concept maps not only clarify the structure of knowledge but also help students actively engage with and reflect on the material, fostering deeper understanding. These elements are crucial for creating clear and meaningful maps that facilitate learning and comprehension.

Concepts: Concepts are the fundamental ideas or pieces of knowledge that form the building blocks of a concept map. They are typically represented as nodes (or boxes) on the map. They serve as the key terms or ideas that the learner needs to understand and organize. They can range from broad topics to more specific details.

Visual Layout: The overall arrangement and design of the concept map, including the spacing and positioning of nodes and links. A well-organized layout enhances clarity and ensures that the map is easy to follow and understand. It helps to visually represent the relationships and hierarchy.

Focus Question: The focus question is a guiding inquiry or prompt that drives the creation of the concept map. It helps to keep the map focused on a particular topic or goal. This ensures that

Fig.1 – Elements of Concept Mapping
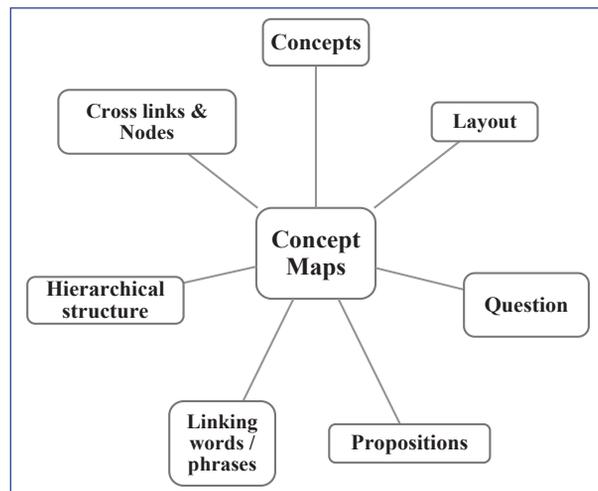
the concept map remains relevant and directly answers a specific question or objective

Propositions: Propositions are statements that describe the relationships between two or more concepts. They are usually formed by linking concepts with linking words or phrases. They connect concepts and give meaning to the map by explaining how concepts relate to each other.

Linking Words/Phrases: These are words or short phrases used to connect concepts in a map. They clarify the relationship between the concepts which help to define the nature of the relationship between concepts, turning the map into meaningful propositions.

Hierarchical Structure: The hierarchical arrangement of concepts typically places the most general or broad concepts at the top, with more specific or detailed sub-concepts below them. This structure assists to organize knowledge from general to specific, providing a clear and logical flow of information.

Cross-Links: Cross-links are connections that show relationships between different sections or domains of the map. It provides a way to integrate knowledge across different areas of the map, helping to highlight the interconnectivity between concepts that are not directly connected.

Nodes: Nodes are the individual elements or concept boxes that represent concepts in the map. These are usually connected by lines or arrows. Nodes visually present the key pieces of information and serve as the starting points for building relationships.

Computer-based Concept Mapping

In general, *computer-based concept maps* are more effective for learners who benefit from technological integration, need to collaborate with others, or are working with complex, evolving content. These tools provide more flexibility, interactivity, and opportunities for integration with other resources, making them more suited to modern educational environments. Computer-based tools, such as *CmapTools or Mind Meister*, allow learners to quickly rearrange concepts, add multimedia (images, links, notes), and make connections without worrying about spatial limitations. This allows for greater flexibility and ease in modifying and refining maps over time. Hegarty (2004), reveals that digital concept mapping

supports more efficient organization and restructuring, which can be particularly useful for complex topics.

Many computer-based tools support real-time collaboration, enabling learners to work together remotely or in groups. This has been shown to improve learning outcomes by fostering teamwork and allowing the sharing of diverse perspectives. For instance, Suthers et al. (2008) highlights that online tools can enhance collaborative learning by enabling students to co-create maps, share ideas, and provide feedback. Computer-based mapping tools often integrate with other educational technologies, such as learning management systems (LMS), allowing students to link their concept maps directly to online resources, documents, and other media. This facilitates a more comprehensive and multimodal learning experience. Computer-based tools allow users to easily save, store, and retrieve concept maps, which can be crucial for large-scale projects or long-term study. The ability to track changes over time is another advantage, as it helps learners reflect on their progress and adjust their understanding.

The interactive nature of computer-based concept mapping tools can result in better learning retention and engagement. Buzan (2010) argues that digital tools enhance the mapping experience through interactive features, making learning more engaging and helping students visualize complex relationships. In contrast, paper-pencil maps might be more effective for learners who benefit from tactile and kinesthetic engagement with the material. The flexibility of digital concept maps allows them to adapt to different learning needs, while paper-pencil maps can be more limiting. Novak (2007) a pioneer of concept mapping, noted that digital concept maps facilitate more complex, dynamic structures than paper-based ones, which are often constrained by physical space.

Paper-pencil Concept Mapping

On the other hand, *paper-pencil concept maps* are still to be highly effective, especially for individuals who prefer a more reflective, hands-on approach or for situations where technology is not accessible. They can provide a quieter, less distracted environment that might foster deeper thinking for some learners. Some studies suggest that creating concept maps on paper might encourage deeper cognitive engagement. This is because the physical act of drawing and connecting ideas by hand can help learners internalize and process information. Liu et al., (2014) found that paper-based concept maps can

help students focus more on the content rather than the technicalities of the software, fostering a more reflective learning process. Paper-pencil mapping is a simplified process that does not require technical knowledge, which makes it accessible to learners who may not be familiar with or comfortable using technology. This can help reduce the cognitive load associated with learning how to use new software.

The effectiveness of paper-pencil concept mapping versus computer-based concept mapping in learning depends on several factors, including the learner's preferences, the complexity of the task, and the context in which the maps are used. Research comparing both approaches has found distinct advantages to each method, but overall, computer-based concept mapping tends to offer more benefits in terms of flexibility, collaboration, and long-term learning outcomes. Overall, **computer-based concept mapping tools** offer greater advantages in terms of collaboration, multimedia integration, and long-term engagement, making them generally more effective for most learning contexts. However, the choice between paper-pencil and computer-based methods ultimately depends on the specific needs and preferences of the learner.

Features of Computer-Based Concept Mapping Tools

Using computer-based concept maps offers several advantages over traditional pen-and-paper mapping, particularly in terms of efficiency, accessibility, collaboration, and integration with other tools. The primary reasons to use computer-based concept mapping tools,

a) *Enhanced Interactivity and Flexibility*

Real-time Editing: Unlike paper-based maps, digital concept maps allow users to quickly add, move, or delete concepts and links with ease. This interactivity enables real-time updates, especially useful when collaborating with others. Tools like *Mind Meister* and *Lucidchart* allow teams to make instant changes and provide feedback, which is challenging in traditional formats.

Customization: Many computer-based tools offer a wide range of customization options, including the ability to adjust colors, shapes, and layouts. This flexibility ensures that the concept map can be tailored to suit specific needs and preferences, such as visual clarity or organizational style.

b) *Collaboration and Sharing*

Multi-User Collaboration: Computer-based tools facilitate collaboration by allowing multiple users to work on the same map simultaneously. *CmapTools, Lucidchart,* and other platforms support real-time collaboration, making them ideal for group projects, team brainstorming, or collaborative learning. This functionality is essential in educational settings, research groups, and business teams.

Cloud-Based Access: Many tools operate in the cloud, allowing users to access their maps from any device with internet connectivity. This makes it easier to share maps with colleagues or classmates, ensuring everyone stays updated on the latest revisions or insights. This feature is especially useful for remote teams or learners.

c) *Multimedia Integration*

Incorporation of Visuals and Links: Digital concept maps can incorporate multimedia elements like images, videos, external links, and documents. This helps enrich the map and provides context or deeper explanation of concepts. For example, in a medical or scientific concept map, links to research papers or videos explaining processes can be added directly into the map, enhancing the learning experience.

Increased Engagement: The ability to integrate rich media into the concept map can make learning more engaging, as students or users are more likely to interact with and retain information presented in a dynamic, multimodal format.

d) *Improved Organization and Structure*

Hierarchical Layouts: Computer-based concept mapping tools typically use hierarchical structures that visually represent relationships between concepts, with more general ideas at the top and specific details or examples below. This structure makes it easier for users to understand complex information in an organized way. Software like *XMind* provides automatic alignment and spacing to create well-organized maps without manual adjustments.

Automatic Layouts and Smart Features: Advanced concept mapping software offers automatic layout functions that organize the nodes and links efficiently. This can save significant time and ensure that the map maintains clarity and balance, even as it grows.

e) Better Storage and Management

Easy Storage and Retrieval: Unlike physical maps that can get lost or damaged, digital concept maps are stored in the cloud or on local drives, making them easy to retrieve and update. You can quickly organize, categorize, and search through large sets of maps without physical space limitations.

Version Control: Many digital tools track changes made to the map over time, allowing users to view previous versions and restore earlier iterations if necessary. This is particularly useful for managing large or ongoing projects where concepts evolve over time.

f) Integration with Other Tools

Seamless Integration with Other Software: Many computer-based concept mapping tools integrate with other productivity tools like Google Drive, Microsoft Office, or learning management systems (LMS). This allows users to embed concept maps into documents, share them through emails, or integrate them with course material, making them an efficient part of workflows.

Export Options: Most tools allow users to export their concept maps in various formats such as PDF, PNG, or interactive HTML, which can then be used in presentations, reports, or printed for offline use. This increases the map's utility and ensures that it can be shared in various formats.

g) Support for Complex Mapping

Handling Complex Information: Computer-based concept mapping tools can handle large amounts of information and complex relationships between concepts. They are particularly useful in areas like research, project management, or teaching complex subjects, where a visual organization of interrelated ideas or tasks can significantly aid understanding.

Dynamic Updates: As new information is gathered or developed, digital maps can be updated dynamically, allowing for a flexible approach to managing knowledge. This is especially beneficial in research or project management contexts where new data is continually added.

h) Accessibility and Remote Learning

Accessible from Anywhere: Digital concept maps can be accessed from any device with an internet connection. This feature is crucial in the era of remote learning and telecommuting. Students or professionals can create, edit, and share their maps from anywhere, making learning and collaboration more flexible and inclusive.

Assistive Features: Some digital tools provide accessibility features like text-to-speech or integration with screen readers, which can assist users with disabilities.

The use of computer-based concept maps significantly enhances the concept mapping experience by improving accessibility, collaboration, and organization. Tools like *Mind Meister, Lucidchart, and Cmap Tools* provide users with the flexibility to interact with and modify their maps easily, enrich them with multimedia, and collaborate effectively across teams or classrooms. These advantages make computer-based concept maps an invaluable resource for educational, professional, and personal use.

Concept Maps as Assessment Tool

Concept maps are suggested by Novak and Canas (2008) as an alternative evaluation technique because they give students the chance to make conceptual connections, think critically about what they have learned, and refocus their attention on grasping concepts. This evaluation is a logical outcome of the intended learning process that is created in the classroom and is primarily focused on changing student's cognitive structures in accordance with newly learned material. Teachers can determine how well their teaching tactics have developed clear knowledge among students by conducting formative assessments in the classroom. Teachers must determine the gaps and weaknesses in the learning process in order to guarantee better performance. In order to meet learning objectives, this helps teachers choose alternative tactics (Dolin et al. 2018). By carrying out formative assessments in the classroom, educators can determine how well their methods have developed student's explicit comprehension.

Concept Maps as Teaching Tool

Concept maps improve learning and encourage the use of several cognitive abilities related to critical thinking, including self-regulation, interpretation, analysis, inference, and explanation. Dolin et al.,

(2018) ascertains teachers must pinpoint the learning process's flaws and gaps in order to guarantee better performance. This encourages educators to choose alternative tactics in order to meet learning goals. Student's critical thinking skills can be assessed, and they will be ready for creative problem solution under time constraints. Concept maps can be used as an alternative or substitute of more conventional evaluation techniques in an array of situations to evaluate learning and the combined understanding of essential subjects. The educator can also utilize concept maps as a useful tool to help the students understand the concepts in an effective manner so that they can retain as long-term memory.

Exploring the Potential of Concept Maps

In the 21st century context, teaching learning process has taken new forms, multiple mediums are being used to explore the possibilities to make the process effective and feasible. Concept maps offer possibilities that are as effective as any other teaching tools, built on strong theoretical foundations, concept mapping has critically emerged over the times with innumerable research studies proving its effectiveness in the pedagogical processes. A variety of forms, arrangements, schemes and systems have come in to scaffold the already effective and proven concept mapping methods. Still the potential of concept mapping strategies are left untapped in the teaching learning process, as the ideation of concepts with respect to each and every individual differs the scope and possibilities of exploring the potentialities of concept mapping also stands inestimable.

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A Critical Examination of Foreign Universities' Presence in the Indian Market

Kandi Kamala*

In recent years, India has witnessed a significant influx of foreign educational institutions, which has contributed to the diversification and enrichment of its educational environment. The presence and impact of foreign educational institutions in India, highlighting their contributions, challenges and the evolving dynamics of the Indian education sector.

Historical Context

In 1995, the government drew up a draft law on foreign education, which had to be shelved. An attempt was made in 2006, but the bill did not pass the cabinet approval stage. In 2010, the UPA-2 government introduced the Foreign Educational Institutions Bill, which did not receive sufficient support in Parliament. The draft law lapsed in 2014. The national education policy until 2020 enabled the establishment of selected universities, such as those from the top 100 universities in the world. The UGC in January 2023 issued guidelines for setting up foreign universities. India's higher education landscape has seen significant transformation over the years, with the emergence of international higher education institutions playing a key role. This Higher Education provides a comprehensive overview of international higher education institutions operating in India and highlights their importance, challenges and contributions to the country's educational ecosystem.

Foreign universities begin by fitting the rise of international higher education institutions in India into a larger global educational framework. It examines the motivations behind the establishment of these institutions, which often include the promotion of intercultural exchange, the promotion of academic collaboration and the attraction of international students. In addition, universities are exploring the various models through which international higher education institutions operate in India. This includes branch campuses of foreign universities, twinning programs, joint study programs and collaborations with Indian educational institutions. Each model

is analyzed in terms of its benefits, challenges and impact on the Indian higher education environment. In addition, it delves into the regulatory framework governing international higher education institutions in India. It discusses the policies and regulations set by the government to ensure quality standards, promote transparency and protect the interests of students and stakeholders. challenges faced by international institutions of higher education in India such as regulatory compliance, cultural adaptation and competition with domestic institutions. It also examines the strategies adopted by these institutions to overcome these challenges and thrive in the Indian education market.

In the context of India's renewed push for academic collaboration with foreign countries and the National Education Policy (NEP) 2020, the role of the UGC in internationalizing the Indian education system is immense. As a backdrop to this, the UGC issued the "Guidelines for Internationalization of Education" in July 2021. These guidelines enumerate a wide range of activities such as internationally relevant curriculum, branding of Indian educational institutions abroad, academic and research collaboration with foreign universities, and recognition of credits in India. These include twinning arrangements, global citizenship approaches, and exchanges with international alumni. The UGC also notifies regulations for academic collaboration between Indian and foreign higher education institutions and offers twinning, joint degree and dual degree programmes. The UGC is also developing the National Higher Education Qualifications Framework (NHEQF), which will be a means of classifying and identifying qualifications based on a set of criteria for a specific level of learning achieved. These reforms are expected to significantly increase student mobility. Facilitating student mobility in an integrated way requires a strong and transparent mechanism for recognizing foreign qualifications and providing equivalent qualifications. A foreign university is an officially recognized university in a foreign country established or constituted in any legal form (trust/society/company/statutory/any other legal form, etc.) and offering academic and research programs

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*Assistant Professor, Department of Political Science, Government Degree College for Women, Begumpet, Hyderabad, Telangana- 500016. E-mail: kamala.ranu@gmail.com

at the undergraduate level or above. It provides It means a university that has been given full authority.

Levels inside and outside the home jurisdiction. "Foreign Educational Institution" means a foreign educational institution that is officially (trust/society/company/statutory/other legal forms, etc.) recognized and established or established in a foreign country, but does not provide education and training. Research programs in a foreign country means an educational institution that is duly authorized to offer a higher level than a faculty within or outside the domestic jurisdiction. Foreign Higher Education Institutions (FHEIs) to set up branch campuses in India, let's look at how these campuses will benefit us.

Global Outlook, Exposure and Employment: As per the Ministry of External Affairs, 1,324,954 Indians were studying abroad in 2022. While it's true that most prefer staying abroad for better career prospects, a large number of students do this for global exposure and an option to pursue diverse courses and specialisations, essentially opening themselves for "global jobs". The National Education Policy 2020 recognises this and has given a similar guideline to Indian universities. As our universities reorient themselves to ready students for global jobs, we need to have specialised institutions, now. This is where branch campuses of FHEIs can play a key role, by bringing in a diverse range of teaching methodologies, cultural perspectives and academic approaches that can broaden Indian students' global outlook.

Cost of Global Education: While studying abroad is expensive, the high cost of living is a real challenge for most Indian students. For example, the estimated monthly cost of living in the US is around $2,000 (or more, depending on the city of residence). This amounts to more than Rs 1.5 lakh, and this is over and above the already high tuition fees. With FHEIs in India, qualified students can find it affordable to pursue education of their choice, without the high living expense burden. This can help contain economic drain from the country. Nowadays, the number of Indian students studying abroad has grown rapidly. According to a UGC report, it's estimated that 1.8 million Indians will be spending US $85 billion on education overseas by 2024. Most of them are attracted by global professional opportunities and world-class universities.

Retaining Talent in India: The Ministry of Education noted that 750,365 students moved to foreign lands to pursue higher education in 2022 alone, up from 518,015 in 2018. Around 75% of those who study abroad prefer settling down there. This is evident from the rise in Indian diaspora in many of the popular study-abroad countries – migration often starts with a quest for better education. But this is also brain drain – these minds could have played a role in building our economy. With the setting up of branch campuses of FHEIs in India, we can contain some of this brain drain.

Attracting Talent to the Sector: The Indian higher education sector is unable to attract and retain the best talent for teaching, research and administrative roles. Sectors like technology, automotive, banking and entertainment have stolen a march over education. With FHEIs, there is a signalling value at the sector level, with these institutions hiring staff from India or abroad, collaborating with existing academic fraternity, and creating new job roles for both teaching and non-teaching staff within the country.

Destination for Global Education: India aims to enrol over half a million foreign students annually by 2047, becoming a major destination for global education. The Ministry of External Affairs noted that about 330,000 foreign students came to India for higher education from more than 160 nations during 2016-21.

In 2020, there is a growth of 14% in 2021. India is the top destination for students from Bangladesh, Sri Lanka, Nepal and Bhutan. With the FHEI campus in India, this trend is expected to increase as many students who have to choose the FHEI home campus can choose the Indian campus, if they will receive the same level of education at a lower cost and closer to their home country. More students from Africa, the Middle East and the Far East may consider India as a study destination. According to industry body ASSOCHAM, more than US$13 billion is spent annually by 450,000 Indian students on higher education abroad. More than 90% of students appearing for Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs) entrance exams are rejected simply because of capacity constraints. 40% of them study abroad (and pay). To better understand the financial implications, you should compare the tuition fees for the two options: IIT students pay an average of US$120 per month,

while students in Australia, Canada, Singapore, the US and the UK pay US$5,000 per month.

- *Market Size:* India is the most populous country and has the largest population in the world with 580 million people between the ages of 5-24. The education sector in India is expected to grow from $117 billion by 2020 to $225 billion by 2025. The online education sector in India is also growing rapidly with a CAGR of 20 percent.

- *Government's Push:* India's public expenditure on education has risen to 3 percent of Gross Domestic Product (GDP) and the government plans to raise it to 6 percent as soon as possible.

Why Do Indians Prefer to Study Abroad?

India is second only to China when it comes to international students. In addition to interesting research opportunities, many countries offer visas for international students looking for work. The main attraction is the influence of multiculturalism among the following other factors:

1. Attractive salary package (44%)
2. High quality education (33%)
3. Follow local courses (17%)
4. Gain international exposure (6%)

Which Indian State Sends the Most Students Abroad?

1. Andhra Pradesh (12%)
2. Punjab (12%)
3. Maharashtra (11%)
4. Gujarat (8%)
5. Tamil Nadu (7%)
6. Karnataka (5%)

Which Country is the Most Popular for International Students From India?

In January 2024, there are 1.39 million Indian students studying in 85 countries. Most of them love the Anglophone nation.

Destination	Number of Indian students
Canada	198750
United States	193124
Australia	90918
UK	27915
China	23198
New Zealand	13015

How Much Does It Cost for Indian Students to Study Abroad?

As per Western Union's Report, budget plays a crucial factor in the decision-making process of Indian students planning to study overseas. 47% of them prefer short-duration courses, like diplomas, due to high international tuition fees.

The report shows that by 2022, Indian students will spend around US$47 billion annually on studying abroad. This includes various expenses such as tuition fees, living expenses, travel expenses and other miscellaneous expenses. Tuition was estimated at approximately $34 billion, making it the most significant expenditure.

Equivalence with Qualifications Obtained from Foreign Educational Institutions

The qualification was awarded by a foreign university that is duly recognized in its home country. The student completed the program through regular face-to-face instruction (and not through online or distance learning). Entry requirements for admission to the program are similar to the

Table 1: Segregation of Tuition Fees by Higher Education Levels and Countries

Country	Bachelor's degree (per year)	Master's Degree (per year)
Canada	$22,500-50,000	$21,014-35,000
United States	$26,000-50,000	$20,000-35,000
Australia	$14,393-32,384	$15,832-35,982
UK$	13,150-34,190	$15,030-25,050
China	$1,665-3,030	$4,200-13,760
Germany	$0-26,300	$0-36,000
France	$200-3,272	$287-4,453
Spain	$802-23,577	$1,179-23,577

corresponding program in India. The 'similarity' of the entry criteria is to be determined through due process by the Standing Committee constituted for the purpose (details below) based on the following considerations: Similarity of minimum duration of the program in India and in the foreign country; Minimum Credit Requirements Credits in different subject categories may be tested and their similarity determined (such as core courses, core disciplinary courses, disciplinary electives, interdisciplinary courses, laboratory courses, etc.)

The minimum program length is similar to the equivalent program in India. In the event of any variation in duration, the minimum credit requirement for the qualification must be the same as for the corresponding program in India. In considering this, the Commission will first examine and grant equivalence with the credit definition (number of contact hours per week, number of hours of self-study, amount of experiential learning, etc.) before establishing equivalence between programs. Up to 10% variation in total normalized credit requirements may be equivalent.

The UGC will maintain a source of what may be considered the "minimum curricular requirements" of any programme, as per the standards established in India. Equivalence awarded to a foreign degree may be granted if the curriculum of the relevant degree is determined to be similar in terms of curriculum content (and not just duration, credit hours or number of credits). The minimum content of the curriculum may be determined taking into account the basic core courses, disciplinary core courses, disciplinary elective courses, interdisciplinary courses, laboratory courses, etc., which make up the curriculum of the qualification.

A qualification obtained at an offshore campus of an Indian higher education institution will be recognized provided the campus is duly approved by the relevant authorities in India as well as in the foreign country where the campus is located. The campus' academic programs must also meet the accreditation requirements of the foreign country in which the offshore campus is located. A qualification obtained at an offshore campus of a foreign higher education institution will be recognized provided the campus is duly approved by the relevant authorities in India as well as in the country of origin. The Campus academic programs must also meet the accreditation requirements of the country in which the offshore campus is located and the accreditation requirements of the home country.

Method of Granting Equivalent

The University Grants Commission should have a dedicated online portal to receive applications for granting equivalent degrees from foreign educational institutions. The applicant must submit the online application along with the fees prescribed by the commission from time to time. If the required documents are in a language other than English, applicants must submit English transcripts duly certified by the degree-granting institution. The decision of the commission will be notified to the applicant within 15 days from the date of receipt of the application. If approved, the equivalence certificate will be uploaded to the portal. Only in the case of special review by the commission and in case the commission requests more information or additional documents, the applicant must submit the relevant documents to the commission within the prescribed period of 15 days. If the applicant is not satisfied with the commission's decision, he can file an appeal for review within 30 days from the date of receiving the notice from the commission by paying the relevant fee. Appeals must be filed with the Court of Appeals. The commission and its decision must be communicated to the applicant within 15 days from the date of receipt of the request for review.

Equivalence Certificate

The Universities in India for the purposes of admission or employment. The scope of these regulations is not to determine the disciplinary parity between different qualifications and/or suitability or adequacy of qualification for eligibility for admission to any study programme or for employment. Any Indian student, who has obtained qualification/s from a foreign higher educational institution under a collaborative arrangement in the form of a Memorandum of Understanding (MoU) or an Agreement between the Government of India or University Gants Commission and the Government of a foreign country where the qualification awarding institution is located, need not have to apply for the grant of equivalence., however, if the student in such a program requires or requests an Equivalence Certificate, the Commission may consider issuing such a Certificate on a case-to-case basis. Any Indian student, who has obtained qualification/s from a foreign higher educational institution under the provisions of the University Grants Commission

(Academic Collaboration between Indian and Foreign Higher Educational Institutions to offer Twinning, Joint Degree and Dual Degree Programmes) Regulations, 2022.

Regulations shall be decided by the Commission and its decision shall be final and binding in the matter. The Commission shall have the power to issue clarifications, to remove any doubt, difficulty, or anomaly which may arise while implementing these Regulations. An underlying consideration that needs to be emphasized is that merely the award of equivalence is not necessarily sufficient to meet eligibility requirements for specific courses at different Indian institutions/Universities. Institutions/Universities are free to set separate eligibility conditions that are over and above equivalence requirements. Quality Education: Foreign educational institutions bring with them a reputation for academic excellence and innovation, offering Indian students access to world-class education without the need to study abroad.

Cultural Exchange

These institutions serve as platforms for cultural exchange, fostering a diverse learning environment that exposes students to different perspectives and experiences. Research Collaboration: Collaboration between Indian and foreign institutions facilitates knowledge exchange and research partnerships, leading to advancements in various fields. Skill Development: Foreign universities often offer specialized programs tailored to meet the demands of specific industries, contributing to skill development and enhancing employability.

Entry of Foreign Universities

India's education system is at the cusp of a transformative phase with the entry of foreign universities, an initiative poised to reshape the academic landscape. This move, aligning with global academic standards as per India's National Education Policy 2020, promises to enhance economic growth, foster cultural exchange, and diversify educational approaches. Collectively, these translate to the globalisation of education on Indian soil. India's National Education Policy 2020 marked a historic shift, inviting top global universities to establish campuses in India. This policy aims to elevate India's educational stature globally and align with international academic standards. Among the foreign universities coming to India are Australia's

Wollongong and Deakin Universities. The two institutions are scheduled to begin functioning at GIFT City in Gandhinagar (Gujarat) next year.

Research and Innovation

Collaborations with international institutions can enhance research quality. The partnership between Monash University and the Indian Institute of Technology Bombay is an example of how such collaborations can lead to cutting-edge research. The shift can also introduce global opportunities for current and subsequent students. Indian students gain easier access to worldwide education, akin to the opportunities seen in Malaysia with foreign university campuses like Monash University Malaysia.

Partnerships and Collaborations

Successful models of partnerships, such as the collaboration between Cornell University and the Indian Institute of Technology Mumbai, illustrate the potential benefits of these relationships.

Educational Diversity & Collaborative Learning

The presence of foreign universities introduces a variety of educational approaches, enhancing the diversity of teaching methods and academic cultures. The entry of foreign institutions fosters cross-border collaborative projects, similar to the joint programs between UK and Indian universities under the UK-India Education and Research Initiative (UKIERI). To add to it, foreign universities could elevate the overall quality of education, as seen in the case of the University of Nottingham Malaysia, which has raised standards in Malaysian higher education. International campuses in India also promise a rich cultural exchange. Similar to the multicultural environment at Qatar's Education City, students in India could benefit from global perspectives and diverse cultural interactions.

Challenges and Concerns

A nuanced approach is needed to address the challenges and concerns of foreign universities coming to India, especially cultural dilution and brain drain. Cultural dilution can be reduced by ensuring that the curricula of foreign universities include elements of Indian culture, history and social values. This integration is modelled on approaches from the Middle East, where educational institutions have successfully blended local cultures with global curricula, offering an international perspective while preserving local cultural identity.

A Strong Regulatory Framework is Needed

A strong legal framework is essential for the successful integration of foreign universities into the Indian educational landscape. This framework should ensure that these institutions maintain high academic standards compared to global campuses while adapting to India's unique socio-cultural and educational norms. This includes setting up accreditation and monitoring systems to assess the quality of education provided. Furthermore, we need to develop policies that encourage collaboration and knowledge exchange while preventing any kind of academic imperialism. This balance is necessary to create an environment where foreign universities can contribute positively to the Indian education system without compromising India's core values and goals.

Education analysts and policymakers predict that India will become a major player in an increasingly interconnected global education system, similar to the dynamic evolution seen in East Asia. This vision is based on India's increasing emphasis on international cooperation in education, its large and diverse student population, and its developing technological infrastructure. The integration of foreign universities and the expansion of digital education platforms are key elements of this evolution.

Advantages of Admission to Foreign Universities

1. *Global Exposure:* Foreign institutions bring global standards of education by exposing Indian students to diverse perspectives, teaching methodologies and research opportunities.

2. *Improve Quality:* Cooperation with foreign universities often leads to an increase in the quality of education, due to experience, modern infrastructure and updated curriculum.

3. *Increase Opportunities*: Partnerships with foreign institutions enrich the learning experience and provide opportunities for students and faculty exchange programs, internships, and joint research projects.

4. *Economic Benefits*: Foreign educational institutions can contribute to the economy by investing in infrastructure, creating jobs and attracting foreign students, thereby generating revenue for the country.

5. *Benefits for Students*: The government recently told the Rajya Sabha that 11.3 million Indian students are studying abroad.

6. A recent report says India will spend $80 billion annually on studying abroad by 2024-25.

Foreign Universities Can Provide the Same Quality of Education Without Migrating Students

1. Reduce the flow of FOREX: International branches help reduce the flow of foreign currency.

2. Overcome the overall enrolment ratio problem: foreign universities in India can offer more opportunities for higher education and increase the chances of attracting more students to obtain more degrees.

3. Despite having one of the largest higher education systems in the world, India's gross enrolment ratio (GER) in higher education is the lowest in the world at just 27.1%.

4. Increasing competitiveness: With the presence of foreign universities in India, the country can become more competitive globally in terms of education and research.

5. Cultural Exchange: The presence of foreign universities in India can promote cultural exchange and understanding between India and other countries.

6. Boost Research: Entry into M.Phil. and PhD courses in India is very low. It can be expected that the recognition of foreign institutions will increase campus admissions for research courses and improve the research ecosystem in India.

Reducing Indian money drain and brain drain: There are a number of Indian students opting for foreign degrees, which means Indian money drain. A recent report by a leading consulting firm estimates that foreign spending by Indian students will grow from the current $28 billion annually to $80 billion annually by 2024. The number of Indian students opting for higher education abroad increased from 4.4 lakh in 2016 to 7.7 lakh in 2019; it is set to further grow to around 18 million by 2024, which will result in higher foreign spending on higher education.

Challenges

1. Cost: Studying at foreign institutions can be expensive, limiting accessibility for students from different socioeconomic backgrounds.

2. Cultural Adaptation: Students may face challenges in adapting to a different cultural and educational environment, which may affect their academic performance and overall experience.

3. Regulatory issues: The regulatory frameworks governing foreign educational institutions may vary, leading to administrative complexity and uncertainty in accreditation and certification processes.

4. Brain drain concerns: There is a risk of brain drain as talented individuals may choose to settle abroad after completing their education resulting in loss of skilled manpower for the country.

Regulatory Obstacles

Despite the enactment of a regulatory framework, bureaucratic red tape and ambiguity in regulations hinder the smooth functioning of foreign educational institutions in India. Infrastructure Constraints: Setting up campuses in India requires significant investment in infrastructure, which can be challenging given the country's diverse geographical and infrastructural landscape. Cultural Adaptation: Adapting to the cultural nuances and educational requirements of the Indian market poses challenges for foreign institutions that require careful localization of curricula and teaching methods. Competition with established players: Foreign institutions face stiff competition from established Indian universities and colleges, which often have strong brand awareness and networks.

Future Vision

The future of foreign educational institutions in India looks promising, albeit with some caveats. With the government's focus on initiatives such as 'Education in India' and 'New Education Policy 2020', there is a growing movement to improve the quality and access to education in the country. However, addressing regulatory bottlenecks, enhancing collaboration between foreign and Indian educational institutions, and ensuring equal access to education for all sections of the society is the potential of foreign educational institutions in India.

Current Status of Higher Education in India

With a population of over 500 million people and the largest population in the age group of 5-24 years in the world, India offers great opportunities in the education sector. India has the second largest higher education system in the world, with approximately 38 million students enrolled in 50,000 educational institutions (including 1,057 universities). India aims to double its gross enrolment rate from the current 26.3% to 50% by 2035. (NEP, 2020) India is the second largest source of international students in the world (after China). Foreign educational institutions play a vital role in shaping the future of education in India, providing opportunities for academic enrichment, cultural exchange and research collaboration. Although there are challenges, concerted efforts by stakeholders such as government, academia and industry will help create a dynamic and inclusive education ecosystem that leverages the best of Indian and global education systems. You can pave the way. Finally, Universities Abroad describes the contribution of international higher education institutions to India's educational and socio-economic development. This includes fostering academic diversity, fostering innovation and preparing students for global careers. Foreign educational institutions in India offer many benefits such as global exposure, improved quality of education and increased opportunities, but are associated with costs, cultural adaptation, regulatory issues and brain drain.

Conclusion

Access to quality education: Partnerships with foreign universities can enrich the learning experience by allowing Indian students to acquire world-class education without having to go abroad. Curriculum Diversity: Foreign universities can offer a variety of academic programs and courses, giving students greater opportunities to choose and develop extracurricular. Expanded research opportunities: Partnerships with foreign universities can stimulate research and innovation by facilitating joint research projects, sharing resources and promoting academic exchanges. Global Exposure: Collaborating with foreign universities can expose Indian students and faculty to different cultures, perspectives and teaching methodologies, improving global skills and employability. Economic development: The presence of foreign universities can attract foreign students and faculty, contributing to the economy through higher tuition fees, increased consumer spending, and job creation. Cost implications: Collaboration with foreign universities may entail significant financial costs, such as infrastructure development, faculty training and licensing fees,

which may strain the resources of Indian educational institutions. Quality control challenges: Ensuring the quality and standards of education by collaborating with foreign universities can be challenging, as regulatory frameworks and accreditation systems differ across countries. Brain problem: Talented students and teachers may choose to study or work abroad without contributing to the development of the Indian education system. Cultural disturbance: The influx of foreign universities can damage the country's cultural identity, leading to the dilution of Indian culture and values in the education system. Competition with local institutions: Indian universities, especially smaller or less established ones, may struggle to compete with the prestige and resources of foreign institutions due to unequal educational opportunities. In conclusion, while welcoming foreign universities to India can offer many benefits such as access to quality education, enhanced research opportunities and global exposure, it is important to overcome related challenges such as cost implications, quality control and cultural attrition. A carefully designed regulatory framework and strategic partnerships can maximize benefits while mitigating risks and ensure that foreign university mergers contribute positively to the growth and development of the Indian education system.

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Higher Education 5.0 for Industry 5.0: A Human-centric Vision for Future-ready Learning

Ismail Thamarasseri*

The rapid evolution of technology has ushered in a new industrial paradigm—Industry 5.0—which emphasizes not only automation and digitization but also human-machine collaboration, sustainability, and social well-being. Unlike Industry 4.0, which prioritized efficiency through cyber-physical systems, Industry 5.0 places the human being at the centre of innovation, aiming to create a balance between technological advancement and societal needs. In response to this transformative shift, the education sector must also evolve to meet emerging expectations and challenges.

Higher Education 5.0 represents this paradigm shift in academia—a reimagined framework that goes beyond traditional teaching and learning models to foster human-centric, transdisciplinary, AI-integrated, and innovation-driven ecosystems. As knowledge becomes increasingly interconnected and dynamic, higher education must empower learners not just with skills for employment, but with the resilience, creativity, and ethical grounding necessary to thrive in complex global contexts.

This paper explores how Higher Education 5.0 can serve as a catalyst for Industry 5.0 by focusing on five interrelated dimensions: Human-Centric Education, AI-Powered Personalisation, Transdisciplinary Learning, Innovation Ecosystems, and Lifelong Learning. Each of these themes reflects the need for a holistic, inclusive, and future-ready educational model that nurtures both personal growth and societal progress. By aligning educational reform with industrial evolution, we can pave the way for a more sustainable, equitable, and meaningful future for all.

Human-Centric Education

As we transition into the era of Industry 5.0, the focus is no longer solely on technological advancement or automation, but on how technology can serve humanity. At the heart of this transformation lies the principle of human-centricity, which envisions a future where innovation is driven by human values, social responsibility, and ethical consciousness. For higher education to remain relevant and impactful in this context, it must undergo a parallel evolution—towards what is now termed Higher Education 5.0. This new vision demands a shift from traditional content delivery to a more learner-centred, values-oriented, and emotionally intelligent educational experience.

Human-centric education is about placing learners and their holistic development at the centre of academic design and delivery. It goes beyond the transmission of knowledge and technical skills to include the nurturing of emotional intelligence (EQ), ethical reasoning, social sensitivity, and ecological awareness. In contrast to the industrial models of education that primarily aimed at producing a compliant workforce, Higher Education 5.0 aspires to develop empathetic leaders, thoughtful innovators, and responsible global citizens.

One of the key pillars of this approach is the development of Emotional Quotient (EQ)—the ability to understand, manage, and express one's emotions, as well as to engage constructively with others. In an age where artificial intelligence is becoming ubiquitous, it is human emotional intelligence that will distinguish individuals in both personal and professional spheres. Institutions must therefore integrate EQ training into curricula through mentoring, reflective practices, collaborative learning, and experiential projects that cultivate empathy, resilience, and self-awareness.

Ethics and integrity are also central to human-centric education. As technology expands the boundaries of what is possible—particularly in areas like AI, biotechnology, and digital surveillance—the ethical dilemmas facing society grow increasingly complex. Students must be equipped not only with domain expertise but with the moral compass to navigate ambiguous situations. Ethics should not be confined to standalone courses; rather, it should be woven across disciplines, with case studies, debates, and simulations encouraging learners to consider the social and moral consequences of their decisions.

*Associate Professor, School of Distance & Online Education, Mahatma Gandhi University, Kottayam, Kerala-686560. E-mail: ismailktkl@gmail.com

Equally important is the emphasis on sustainability—a value that aligns closely with both Industry 5.0 and the United Nations' Sustainable Development Goals (SDGs). Higher education must promote a sustainable mindset by incorporating themes such as environmental stewardship, social equity, and responsible innovation into learning experiences. This involves engaging students in community-based learning, green campus initiatives, and interdisciplinary projects that explore solutions to real-world challenges such as climate change, resource depletion, and inequality.

Furthermore, human-centric education champions inclusivity and learner autonomy. Recognizing the diversity of learner backgrounds, needs, and aspirations, institutions must design flexible and accessible learning environments. This includes adopting universal design principles, hybrid delivery models, and culturally responsive pedagogy, ensuring that education is a right and resource for all.

In short, a human-centric approach in Higher Education 5.0 is not a luxury but a necessity. It is about shaping education that values human dignity over metrics, compassion over competition, and purpose over profit. Such an approach ensures that graduates are not just job-ready, but life-ready, capable of contributing meaningfully to a rapidly evolving, interconnected world.

AI-Powered Personalisation

One of the most transformative features of Higher Education 5.0 is its ability to harness the power of artificial intelligence (AI) to create personalised, adaptive, and learner-centric educational experiences. In contrast to traditional one-size-fits-all models, AI-driven systems in education can analyse vast amounts of learner data—such as performance trends, engagement patterns, learning preferences, and even emotional cues—to deliver customized learning pathways tailored to each individual.

AI-powered personalisation involves a range of technologies that work synergistically to enhance the learning experience. Adaptive learning platforms use algorithms to dynamically adjust the difficulty, sequence, and style of content based on real-time feedback from the learner. For instance, if a student struggles with a particular concept, the system can pause, offer additional resources, or suggest remedial activities before allowing progression. Conversely, learners who master content quickly can be fast-tracked through topics, ensuring that no student is held back or left behind.

Intelligent tutoring systems go a step further by simulating the role of a human tutor. These systems can ask guiding questions, give immediate feedback, and scaffold learning based on the student's pace and comprehension. Coupled with learning analytics, institutions can use AI to identify students at risk of underperforming or disengaging, and intervene early with appropriate academic or emotional support. This allows educators to make data-informed decisions that enhance student retention, success, and satisfaction.

AI also plays a crucial role in enabling competency-based education. Instead of focusing solely on time-bound completion of courses, AI systems track a learner's mastery of specific competencies, allowing them to progress once they demonstrate required skills and knowledge. This self-paced and mastery-oriented model ensures that learning is meaningful and measurable, rather than merely fulfilling curricular formalities.

Moreover, AI personalisation opens new doors for inclusivity and accessibility. Learners with disabilities or those from non-traditional educational backgrounds can benefit immensely from AI tools that offer text-to-speech conversion, multilingual support, real-time translations, or emotion recognition to gauge learner stress and adjust interactions accordingly. This not only democratizes access to quality education but also promotes equity and fairness in learning opportunities.

Another dimension of AI-powered personalisation is its ability to cater to different learning styles and preferences—visual, auditory, kinaesthetic, or textual. Content can be delivered in various formats (videos, simulations, gamified modules, podcasts), allowing students to choose what works best for them. AI-driven recommendation engines can even suggest enrichment activities, career paths, or research opportunities based on learners' evolving interests and strengths, thus bridging the gap between learning and life goals.

However, while AI offers immense promise, it must be deployed ethically and transparently. Concerns around data privacy, algorithmic bias, and over-dependence on technology must be carefully managed. Institutions must ensure that human

oversight remains central to the process, blending the strengths of technology with the empathy and judgment of educators.

In essence, AI-powered personalisation in Higher Education 5.0 is a leap toward a future where every learner's journey is valued, supported, and optimised. It makes education more responsive, inclusive, and effective, preparing students not just for exams, but for lifelong success in an intelligent and interconnected world.

Transdisciplinary Learning

In the age of Industry 5.0—characterized by rapid technological advancement, global interconnectivity, and complex societal challenges—no single discipline can claim to have all the answers. Addressing issues like climate change, global health crises, digital ethics, and socio-economic inequality requires an educational approach that breaks down traditional academic silos and fosters transdisciplinary collaboration. Higher Education 5.0 rises to this challenge by championing transdisciplinary learning, an approach that not only integrates knowledge from various fields but also engages with real-world stakeholders—communities, industries, policymakers—to co-create actionable solutions.

Unlike multidisciplinary or interdisciplinary approaches, where disciplines might collaborate while retaining their separate identities, transdisciplinary learning transcends the boundaries of individual disciplines to generate new frameworks of understanding and innovation. It focuses on solving complex, real-world problems by integrating perspectives from the sciences, arts, technology, humanities, and social sciences. This makes learning not just holistic, but also contextual, relevant, and future-focused.

At its core, transdisciplinary education values connectivity over compartmentalization. In Higher Education 5.0, this means designing curricula that encourage students to explore intersections—such as environmental science and ethics, digital technology and sociology, or artificial intelligence and philosophy. For instance, a student investigating sustainable urban development might draw from urban planning, environmental science, economics, public policy, and cultural studies. This approach not only broadens intellectual horizons but also nurtures critical thinking, creativity, and collaborative problem-solving.

Importantly, bridging the gap between the humanities, science, and technology is central to the transdisciplinary mission. While science and technology drive innovation, it is the humanities that anchor this progress in human values, ethics, and social impact. For example, the development of AI applications should be guided not just by technical feasibility but also by ethical questions around privacy, fairness, and accountability—questions that emerge from philosophical inquiry, cultural understanding, and legal frameworks. By integrating these domains, Higher Education 5.0 ensures that technology serves humanity, not the other way around.

Transdisciplinary learning also prepares students for the fluid, non-linear career paths of the 21st century. As industries increasingly demand professionals who can adapt, synthesize diverse knowledge, and collaborate across domains, graduates must be equipped with broad intellectual agility. Fields such as data journalism, health informatics, environmental law, and digital humanities are already examples of careers that merge skills from multiple domains. Institutions must, therefore, create learning environments that foster curiosity and versatility rather than rigid specialization.

Moreover, transdisciplinary education encourages learners to engage with external knowledge ecosystems—including civil society, start-ups, NGOs, and governmental bodies. Through community-based projects, internships, policy labs, and hackathons, students learn to co-create knowledge that is both academically robust and socially impactful. This not only enhances learning outcomes but also instils a deep sense of civic responsibility and global citizenship.

In brief, transdisciplinary learning is not merely an academic trend; it is an imperative for a sustainable and inclusive future. Higher Education 5.0 must institutionalize this approach to produce graduates who are not only intellectually capable but also ethically grounded, socially engaged, and ready to tackle the multi-dimensional challenges of the modern world.

Innovation Ecosystems

In the era of Industry 5.0, innovation is no longer confined to laboratories or boardrooms—it thrives in interconnected ecosystems where academia, industry, government, and civil society collaborate to generate solutions for real-world problems. Higher Education 5.0 plays a pivotal

role in building and sustaining such innovation ecosystems, where creativity, entrepreneurship, and research converge to drive sustainable development, technological progress, and human well-being.

At the heart of this ecosystem are universities as dynamic R&D hubs. Traditionally seen as institutions for teaching and basic research, universities in the Higher Education 5.0 paradigm are increasingly transforming into innovation incubators. They host cutting-edge research facilities, technology transfer offices, start-up incubators, entrepreneurship cells, and collaborative platforms that enable translational research—the process of turning academic discoveries into socially and commercially viable products, services, and policies.

By fostering cross-disciplinary research clusters, universities can bring together expertise from fields as diverse as artificial intelligence, biotechnology, renewable energy, behavioural sciences, and the arts to tackle complex challenges. For instance, innovation in climate resilience may involve engineers designing smart infrastructure, social scientists understanding community behaviour, and policy researchers aligning innovations with governance frameworks. Such collaboration multiplies the impact of research and ensures that innovation is not only technologically feasible but also socially desirable and sustainable.

Industry-academia partnerships are a cornerstone of innovation ecosystems. Through joint research projects, internships, consultancy, and co-designed curricula, universities align their research agendas with real-world needs. Students and faculty benefit from exposure to practical challenges, while industries gain access to fresh ideas, talent, and long-term research capabilities. These partnerships also help universities stay abreast of emerging trends and technologies, ensuring that education and research remain relevant and future-ready.

In this context, universities must also nurture an entrepreneurial mindset among students and faculty. Innovation is not only about scientific discovery—it's about identifying problems, taking risks, developing prototypes, testing solutions, and bringing them to scale. Higher Education 5.0 supports this process by integrating entrepreneurship education, offering seed funding, hosting start-up competitions, and providing access to mentorship and venture capital networks. These initiatives empower students to move from job seekers to job creators.

Furthermore, innovation ecosystems thrive on openness and collaboration. Open-access journals, maker spaces, interdisciplinary labs, and digital platforms facilitate the sharing of knowledge, tools, and best practices. Universities can lead the way in promoting open science and open innovation, ensuring that breakthroughs are not locked behind paywalls or patents, but are accessible to the wider society—especially in areas such as healthcare, education, and environmental sustainability.

To remain at the forefront of innovation, universities must also embrace agility and continuous learning. This includes fostering a culture where experimentation is encouraged, failure is seen as part of the innovation process, and academic silos are dismantled in favour of collaborative synergy.

In essence, Higher Education 5.0 envisions universities not just as centres of learning but as living laboratories of innovation, embedded in wider ecosystems that catalyse progress. By evolving into R&D powerhouses, universities can anchor national and global innovation agendas and become key drivers of economic growth, social transformation, and technological leadership.

Lifelong Learning

In a world defined by rapid technological change, evolving career landscapes, and complex societal shifts, learning can no longer be confined to the early years of life or a single phase of formal education. Higher Education 5.0 embraces lifelong learning as a foundational principle—recognizing that continuous education is essential for individuals to remain relevant, productive, and fulfilled throughout their lives. In the context of Industry 5.0, where human-machine collaboration is the norm, and skills become obsolete at unprecedented speeds, lifelong learning is not just a personal asset—it is a social and economic necessity.

One of the key pillars of lifelong learning in Higher Education 5.0 is upskilling—enhancing existing skills to keep pace with emerging technologies and new work paradigms. For instance, professionals in marketing may need to learn about data analytics, AI tools, and digital storytelling, while educators may require training in virtual classrooms, learning analytics, and inclusive pedagogies. Universities must offer flexible, modular learning opportunities

that allow working professionals and alumni to return to education on their terms, without needing to enrol in full-time programs.

Reskilling is equally important. As automation and AI disrupt traditional job roles, many individuals are compelled to shift to entirely new fields. Higher Education 5.0 supports reskilling through certificate courses, micro-credentials, MOOCs, online and blended learning platforms, and industry-aligned short-term programs that provide learners with the tools to pivot careers effectively. This responsiveness to change empowers workers to navigate transitions without being left behind, fostering an inclusive and adaptive workforce.

Universities, therefore, must reposition themselves as lifelong learning hubs—not just places where degrees are earned, but learning ecosystems that remain accessible across life stages. This means designing learner-centric pathways that are customizable, stackable, and credit-earning, with a focus on competency rather than time-bound achievements. Academic calendars must become flexible, assessments more formative, and pedagogies more interactive to support learning across ages and professions.

Lifelong learning also demands a shift in mindset—from education as a means to employment, to education as a lifelong journey of growth, empowerment, and purpose. This includes learning for civic engagement, personal enrichment, digital literacy, financial awareness, emotional well-being, and environmental stewardship. Higher Education 5.0 recognizes that in an interconnected and uncertain world, adaptability, resilience, and self-directed learning are as important as technical skills.

Technology plays a key enabler in this transformation. AI-powered adaptive learning platforms, mobile learning apps, virtual classrooms, and immersive technologies like VR/AR create accessible and personalized learning environments. These tools allow learners to choose what they learn, how they learn, and when they learn—making education more democratic and inclusive.

In short, lifelong learning is the cornerstone of a human-centric, innovation-driven society. Higher Education 5.0 must evolve to support diverse learners at multiple entry and exit points, across formal and informal settings, and throughout life. By institutionalizing upskilling, reskilling,

and continuous learning, universities can prepare individuals not just for the jobs of today, but for the opportunities and challenges of tomorrow.

Conclusion and Future Directions

As the world transitions into the human-centric, technology-integrated paradigm of Industry 5.0, higher education must also evolve into its next generational phase—Higher Education 5.0. Unlike previous industrial revolutions that prioritized mechanization and digitization, Industry 5.0 reasserts the value of human judgment, creativity, and ethics alongside intelligent machines. Higher Education 5.0 responds by reimagining learning ecosystems that are not only innovative and tech-enabled, but also empathetic, inclusive, and socially responsible.

The transformation is visible across key pillars: Human-Centric Education fosters emotional intelligence, ethics, and sustainability; AI-Powered Personalisation ensures no learner is left behind by tailoring experiences to individual needs; Transdisciplinary Learning dismantles academic silos to foster integrated thinking and real-world problem solving; Innovation Ecosystems reframe universities as vibrant R&D hubs at the nexus of academia, industry, and society; and Lifelong Learning promotes upskilling and reskilling for an adaptive, future-ready workforce.

However, realizing the full potential of Higher Education 5.0 requires systemic change. Institutional inertia, rigid policy frameworks, unequal access to technology, and outdated pedagogical models can hinder this transition. Therefore, governments, universities, industry, and civil society must work together to reimagine educational frameworks that are more agile, inclusive, and forward-looking. Faculty development, digital infrastructure, open access to learning resources, and meaningful collaborations must be prioritized to ensure that the vision is not merely aspirational but actionable. Looking forward, future directions for Higher Education 5.0 include:

- *Ethical and Responsible AI in Education*: Ensuring that AI tools used for personalization are transparent, equitable, and aligned with educational ethics.
- *Integration of Sustainability in Curriculum*: Embedding UN SDGs across disciplines to foster environmental and social responsibility.
- *Global Collaborative Learning*: Encouraging borderless classrooms and global learning

networks through virtual exchange programmes and internationalized curricula.

- *Micro-Credentialing and Modular Degrees*: Recognizing informal and non-traditional learning as part of formal qualifications to enhance flexibility.

- *Human-AI Collaboration Pedagogies*: Training learners not only to use technology but to critically engage with and co-create it.

In conclusion, Higher Education 5.0 must move beyond reform to transform—from passive knowledge delivery to active knowledge creation, from rigid systems to dynamic ecosystems, and from short-term credentials to lifelong competencies. It is not just about preparing students for employment, but about empowering individuals to thrive in a world where technology amplifies human potential. As we shape this future, education must remain the most powerful tool—not only for economic progress, but for creating compassionate, creative, and conscious societies.

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A Call to Lifelong Learning and Resilience

Jagdeep Dhankhar, Hon'ble Vice President of India delivered the Convocation Address at the 45th Convocation Ceremony of the Jaipuria Institute of Management at Bharat Mandapam in New Delhi on May 17, 2025. He said, "There is nothing like failure. It is a success, maybe not fully, but partly. Never hesitate to ideate. You have to ideate. Because artificial intelligence or something may come in the future, also. It will be a very poor substitute for this mind. Don't make your mind a parking place for ideas. It is not meant to be a parking place. If you get an idea, get into innovative mode, and try to execute. And I am sure you will find that what I said was at least not wrong." Excerpts

I must recognise the very distinguished presence of the Board of Governors. They are the final strength of an institution, the very distinguished faculty that defines Institutions, members of the staff, proud parents, and dear students. There are many in the audience who qualify much better than I do to render this convocation address. I would make reference to some of them, including Shri Sudhanshu Trivedi, a senior member of Parliament. I have called him a political statesman, and no one has contradicted me so far.

Shri Susheel Nongta, who is accompanied by his wife, a former chairman of Steel Authority of India Limited. In the world of the metal industry, a global authority and a friend of six decades standing. His wise counsel has always been useful to me. I referred to Navneet Sehgal ji. His spouse is making an impact by her absence. We had such a great occasion at Lucknow. Honourable Governor Anandiben Patel, चुनौतियाँ मुझे पसंद हैं – उनकी किताब का विमोचन था, वह वहाँ पर थीं। वह सक्रिय थीं।

I remember my tenure as governor of the state of West Bengal for getting culturally enriched, economically well-informed by one who has been president of FICCI also, Shri Sudhir Jalanji. I would have made a big blunder in my life if I had not been a junior Parliamentary Affairs minister in 1990. Whose brother was with me in the Council of Ministers is here, Shri Sunil Shastriji, accompanied by his gracious wife. Sometimes these omissions are never explainable. I am a victim of these even today when I look around. I wish to be excused. It is an absolute honour and a privilege to address this unique, august gathering of the joint convocation of the Jaipur Institute of Management.

My warmest congratulations, best wishes, and greetings to all the graduating students, their faculty, and families. Convocations are very different.

Convocations are milestones in a student's life journey, a moment that is ever etched in history and memory. Most importantly, it is the culmination of the hard work, learning, and growth in celebration.

But dear students, always bear in mind that a convocation is, in Hindi, known as दीक्षांत समारोह, Yes, दीक्षांत समारोह, यह शिक्षान्त समारोह नहीं है। Your learning has to continue lifelong. It doesn't end with this momentous occasion. I'm reminded of this occasion, a great Greek philosopher in the pre-Socrates era, Heraclitus, and he reflected what is commonly all over these days.

The only constant in life is change. And you keep pace with the change with your learning. So always be a good learner, and from here on, you will have a great skill of self-learning as well. A convocation, dear students, is much beyond a formal occasion. It is not ritualistic.

You will frogleap in the larger world, you will face humanity in very severe conditions. You will be challenged. You will have highs and lows. You must be ready for that. But fortunately for you, unlike people of my generation, in the country, there is an environment of hope and possibility. You have an enabling ecosystem, affirmative government policies that facilitate your fullest exploitation of talent and potential.

You can realise your dreams and aspirations. You only have to look around. Having heard the chairperson and the Vice-Chairperson, I find it expedient to pay my tribute to the great visionary Shri M. R. Jaipuria, who was accorded Padma Bhushan by this government. His foresight and commitment established firm foundations and a bedrock on which this institution now stands. This visionary foundation now flourishes under the dynamic leadership of Chairman Srivats. I'm sorry. I called him Chairman.

Ladies and gentlemen, boys and girls, it is no slip of the tongue, and I'm sure this seamless transition will take place. It will impart greater excellence, dynamism, and will be more futuristic in line with young boys and girls. But I must applaud the vision of Shri M. R. Jaipuria Ji. He exemplified, in a sense, the spirit of our civilisational ethos, the mechanism to give back to society.

And the best way to give back to society is by way of making education available. Education, boys and girls, is the most impactful, transformative mechanism to bring about equality, to cut into inequities. It's a great leveller.

The times in which we live, our educational level will define the growth trajectory of Bharat. So, bear that in mind. I must, on this occasion, since I'm addressing the youth of the country in particular, my salutations to our armed forces and visionary leadership of Prime Minister Narendra Modi for the remarkable success of the ongoing Sindoor operation.

It was a remarkable retaliation befitting our ethos of peace and tranquillity to the barbarity that happened on April 22, Pahalgam. Deadliest attack on our civilians since the 2008 Mumbai attacks. The Prime Minister of the country, Shri Narendra Modi, sent a message from India's heartland, Bihar, to the entire global fraternity.

Those were not empty words. The world has now realised what he said is a reality. In the mechanism of war and the fight against terrorism, a new benchmark has been set.

Indian armed forces targeted Jaish-e-Mohammed at Bahawalpur, deep inside Pakistan territory, beyond the International border, the headquarters of Jaish-e-Mohammed, also Lashkar-e-Taiba's base. No one is asking for proof now. No one is asking for it. The world has seen, acknowledged, and we have seen the saga of how that country is deeply engrossed in terrorism when coffins are taken with armed forces and military power and political power accompanying them. Justice done by Bharat to Sindoor in sublimity.

Boys and girls, historically, you need to know two things. One, it is India's deepest ever cross-border strikes. A strike that was carefully, precisely calibrated to cause no damage except to the terrorists. This happened on May 2, 2011, when a global terrorist who planned, supervised, and executed the September 11 attack inside the U.S. in 2001 he was dealt with by the U.S. similarly. Bharat has done it and done it to the knowledge of the global community.

I can say without fear of contradiction that all that I am today, beyond the contribution of my wife, is education. So, accessibility and affordability of education for all in a democracy are fundamental. Democracy cannot blossom, cannot be nurtured if there is no education available, but that education has to be quality education. That education has to be beyond getting credentials or degrees, and therefore national education policy was evolved by Prime Minister Modi after a gap of more than three decades. Getting inputs from all stakeholders, and this is turning out to be a game-changer. On this occasion, my message to corporations, invest in education. If you invest in education, you are investing in your future.

You are also investing in the growth of your industry. You are investing in skill. You are investing for national gain. And on that account, I would expect that Jaipur Institute of Management should have greenfield footprints. I know it is challenging, but the time has come. When you have green field footprints, and with respect to emerging technologies, that is why I said, the Vice Chairman needs to shake off that prefix voice.

In the last few decades, we have seen good Institutions come. there has been investment in education. We have brand schools, but what is alarmingly worrisome and a matter of great concern this country cannot afford the commercialisation and commodification of Education. It is undeniable, it is present. We have to change our minds because of educational health. As per our civilisational ethos are no areas of making money; these are areas to give back to society. We have to discharge our obligation to society. Institutions will be judged on whether they are providing quality education to those who otherwise cannot avail it. if I had not got a scholarship for Sainik School Chittorgarh, I would not have got a quality education. And therefore, this can happen only when all all-pervasive approach is there, that yes, no commercialisation, no commodification, only service to humanity.

Good enough to make it self-sustaining by getting adequate assistance from Alumni. Distinguished

people are here. We will have to reflect on this moment as an occasion to celebrate our glorious historical past. I think about 1300 years ago or 1400 years ago. When Sudhanshu Trivedi is present, I am always careful about statistics. but it's a country where we had Nalanda, Vikramshila, Takshila, Valabhi, Udantpuri and many more. They were institutes of global excellence. People thronged there became there but Nalanda was destroyed in 1190. The library kept on burning for several days, several weeks. Books were destroyed by marauders.

Boys and girls, you need to know about it because you are the most vital stakeholders in governance, in future, and you have to pilot the trajectory of Viksit Bharat; therefore, the time has come now to look higher up. Let us be part of the Global best at the moment, we have to find a place among the best in Asia. Let us march towards that direction.

To young boys and girls, your placement is fine. I'm told it's about 85%, excellent, amazing. But let me address, in general, the youth of the country.

The youth of the country at the moment is in silos. It thinks only of government jobs, not beyond. Whereas the opportunity basket is ever-increasing.

It is fattening, of a nature where medical doctors don't take offence at it, not easy to notice it. Even doctors don't take notice of it. The opportunity basket for our young minds is fattening, fattening, and fattening.

Because all that is good cholesterol. And what we have is space exploration, digital governance, and disruptive technologies. These are issues in which India is dominating. We are on the front line of nations. Bharat, boys and girls, is no longer a nation with potential. We are a nation on the rise.

Our growth is incremental. The trajectory is sustainable. And our march is known to one and all in the world. Right now, we are the fourth-largest global economy. I think in a matter of a year or two, we will be the third largest. And therefore, boys and girls have to bear one thing in mind.

I salute your intelligence. You are well informed. You would be aware that the International Monetary Fund has applauded India, accoladed India, that India, Bharat, is a global centre, an important centre of investment and opportunity. Surely it is not for government jobs. You have to think about it. They are coming here for opportunities. You are very much in this country. Please do that. The India boys and girls, you will be stepping out after getting these degrees, are bold, confident, and unstoppable.

India is the envy of the world on one count. And that is our youth demographic dividend. The average age, the median age, as they call it in statistics, for India is 28, for the U.S., 38, and for China, 39. Now, in the last 10 years, India has seen economic upsurge, phenomenal infrastructure growth, deep technological penetration, and people-centric policies have rewarded the men in the last row, with a toilet, with a gas connection, with Internet connection, with road connectivity, and whatnot. So, people have tasted for the first time development on the ground. This has converted Bharat into the most aspirational nation in the world today.

And when a nation is aspirational, the youth can be restive and restless. And therefore, I appeal to the youth, it is your obligation to look around. Look for opportunities, and I have no doubt you'll find it. Let me take, for instance, disruptive technologies. These have come during your time. I'm an old man.

Artificial intelligence, Internet of Things, machine learning, and blockchain. These are challenges, but opportunities. These challenges have to be converted into opportunities. You would have read in history books about, Industrial Revolution. What a big change it was. We are at the cusp of something which is much beyond the Industrial Revolution.

There's a paradigm shift. Call it incursion, invasion, or inclusion. Artificial intelligence, disruptive technologies are with us. We have to get the opportunity out of them. And this can only be through young minds. You can handle situations through research. But on research, I have one thing to say. And I appeal to one and all. The research must be real research.

The research must be a solution. The research must make a difference on the ground. The research should not be for oneself. The research should not be for oneself in the library. And therefore, those

who engage in research need to know about it. The future belongs to those who do not fear change.

And please do not do that. Research will define where India will be in the global community of nations. Whether it is with respect to war or development. The world has come to know our Akash. Its potency, its efficacy. The world has also come to recognise our Brahmos.

And there is much more to that. And therefore, educational institutions must get fully funded by corporations. CSR fund must take it as a priority.

Because investment in research is fundamental. Gone are the days when we can wait for others for technology. If we do that, we are handicapped right from the beginning. We must avoid that. One challenge which, of course, this institute is well handling is the challenge of faculty. But technology can also greatly help in that also.

Boys and girls, it may seem slightly transgressive. It is not. Because we as a nation are unique. No nation in the world can take pride in having 5000 years of civilisational ethos. We need to bridge. I am not saying breach.

We need to bridge the divide between the East and the West. Without such a dialogue, a distorted version of the Orient is portrayed and perpetrated. How can we countenance or overlook anti-national narratives? We have to bear in mind. And now every young boy and girl has power in their hands because of smartphones. You can make a big difference. Please don't observe silence. Say something which will resonate in the future also. A word of caution that Sudhanshu Trivedi can take note. Foreign universities coming to this country are something which requires filtration.

It requires deep thinking. It is something we have to be extremely careful. It is a path pregnant with several situations that may turn out to be worrisome. We have already seen in this country with respect to some educational institutions.

I think I have taken time, but I will focus on one aspect. Every individual is empowered to help the nation in security. And trade, business, commerce and industry in particular can play a pivotal role in security issues. Can we afford to empower countries that are inimical to our interests? The time has come when each one of us must deeply think about economic nationalism. We can no longer afford to travel or import.

The economy of those countries has improved because of our participation. And those countries in times of crisis are positioned against us. And therefore, I firmly believe that we must always keep one thing in mind.

And that is the nation first. Everything has to be reckoned on the fulcrum of deep commitment, unflinching commitment, and dedication to nationalism. Because there is no other way out.

And that mindset we must teach our toddlers right from day one. Boys and girls, I am concluding. I am sure you must be tired. I am sure you are. Because you smile only when you agree with the speaker. Never fear failure. Fear of failure is a myth. There is nothing like failure. Failure is a step to real success.

There is nothing like failure. It is a success, maybe not fully, but partly. Never hesitate to ideate. You have to ideate. Because artificial intelligence or something may come in the future, also. It will be a very poor substitute of this mind.

Don't make your mind a parking place for ideas. It is not meant to be a parking place. If you get an idea, get into innovative mode, and try to execute. And I am sure you will find that what I said was at least not wrong.

Thank you so much for your patience.

Thank you so much.   ❑

Invitation to Authors

Authors are invited to contribute articles on contemporary issues in higher education in general and Indian higher education in particular for publication in the 'University News'. The articles addressing the Editor University News be sent as an e-mail attachment in MS WORD to: unaiu89@gmail.com; ramapani.universitynews@gmail.com; universitynews@aiu.ac.in.

CAMPUS NEWS

International Seminar on Achievements, Challenges and Revitalisation Opportunities

A two-day International Seminar on 'Achievements, Challenges and Revitalisation Opportunities for Micro, Small and Medium Enterprises Sector in Vision *Viksit Bharat @2047*' was organised by the New College, Chennai, Tamil Nadu, recently. The event was sponsored by the Indian Council of Social Science Research (ICSSR), Ministry of Education, Govt. of India. Dr. S Kareemulla Basha, Head of the Department delivered the welcome address and asserted that the context of Vision *Viksit Bharat@2047* presents a unique opportunity for scholars throughout India, especially those associated with academic institutions, to showcase their research findings and engage in meaningful academic discourse on critical economic issues related to employment and poverty alleviation. Dr. M Asrar Sheriff, Principal, The New College, delivered his introductory remarks. Briefed on the research themes related to national development through research and innovation. Dr. B Sudhakar Reddy, Director, ICSSR-Southern Regional Centre, Hyderabad delivered the inaugural address. In his address, he mentioned that the theme of the event is highly relevant today; this is the appropriate time to revitalise opportunities for MSMEs in achieving the vision of *Viksit Bharat@2047*. He also appreciated that the event had a wide range of attraction among the young scholars and delegates in India and abroad, where the event received more than 230 research papers.

Dr. B Sudhakar Reddy, Director, ICSSR-Southern Regional Centre, Hyderabad released the Abstract Book-cum-Souvenir of the event. A special address was delivered by Prof. Himachalam Dasaraju, Commonwealth Visiting Fellow, United Kingdom, Co-founder, Global Association for MSMEs and SDGs Research in Developing Countries, Indonesia.

Prof. A M M Mustafa, Dean and Business Economics, South Eastern University, Sri Lanka and Prof. M A C Salfiya Ummah, Head and Professor, Business Studies, Department of Management, Faculty of Management and Commerce, South Eastern University, Sri Lanka delivered The Keynote Address. Prof. A M M Mustafa insisted that the dream of a *Viksit Bharat* by 2047 requires collaboration between governments, academia, industries, and communities to support MSMEs. By adopting Industry 5.0, India's MSMEs can play a key role in a globalised and sustainable economy. Prof. M A C Salfiya Ummah explored the Indian MSME sector, which is expected to grow significantly by 2030, driven by initiatives like 'Digital India' and 'Make in India'. With opportunities in industries such as fintech, renewable energy, and IT, MSMEs are essential to India's economic future. Their resilience and innovation make them a key driver of India's entrepreneurial spirit and economic progress. The Vote of Thanks was proposed by Dr. A Abdul Raheem, Associate Professor, Department of Business Economics.

The Plenary Session was chaired by Dr. P Anbalagan, Associate Professor of Economics, Presidency College (University of Madras), Chennai, Tamil Nadu. The speaker, Prof. A. Jahfer, Professor in Commerce, Department of Accountancy and Finance, South Eastern University of Sri Lanka, Sri Lanka outlined that the MSME sector is crucial to India's economy, contributing to GDP, employment, and exports, but it faces challenges in accessing timely and adequate finance. Limited credit access, high borrowing costs, and low financial literacy hinder growth. Startups and fintech companies are stepping in to bridge this financing gap with innovative, tech-driven solutions. These emerging players are reshaping the financial landscape and promoting inclusion for underserved MSMEs.

Prof. Jeyapraba Suresh, Professor, Department of Economics, Faculty of Commerce and Management, Eastern University, Sri Lanka stressed that empowering women and youth in the MSME sector is both an economic necessity and a moral imperative, offering untapped potential for innovation, job creation, and sustainable development. These groups often lead in digital transformation, eco-friendly practices, and social entrepreneurship. Overcoming barriers like limited access to finance and education through targeted interventions and policies is essential. Initiatives like India's Mudra Yojana and Rwanda's gender-sensitive policies highlight effective solutions for empowerment. Collaborative efforts from governments, private sectors, NGOs, and

academic institutions are key to creating an inclusive ecosystem for women and youth in MSMEs.

Prof. Ravinder Rena, Professor of Economics, Durban University of Technology, South Africa, explained that the MSMEs in Africa provide vital opportunities for marginalised communities and those with limited access to formal employment. By offering affordable goods and services, they improve living standards, particularly in low-income areas. These businesses also diversify household income sources, empowering entrepreneurs from historically disadvantaged groups. Many MSME owners, including women, youth, and black South Africans, use their businesses to create wealth and uplift their families. Ultimately, MSMEs play a crucial role in fostering social and economic development within local communities.

Dr. L Venkatachalam, RBI Chair Professor, Madras Institute of Development Studies, Adyar, Chennai chaired the next session. Dr. Mohamed Ismail Mohamed Riyath, Senior Lecturer, Department of Accountancy & Finance, Faculty of Management and Commerce, South Eastern University of Sri Lanka elaborated the plan for MSME transformation includes clear milestones: digital integration of one million MSMEs by 2025, 75% digital adoption by 2030, and a 300% increase in turnover by 2035. Institutional coordination will be key, with a National MSME Mission, real-time monitoring, and State-level Implementation Units to address sector-specific needs. District-level facilitation Centers will provide grassroots support, technology access, and training.

Mr. A L Sarifudeen, Senior Lecturer, Department of Accountancy and Finance, Faculty of Management and Commerce, South Eastern University of Sri Lanka explained the Role of Financial Inclusion in Enhancing MSME Competitiveness in India by 2047. As we look toward the centenary of India's independence, empowering MSMEs through financial inclusion is not just a necessity but an imperative. By addressing credit gaps, embracing digital tools, and fostering sustainability, we can unlock their potential to achieve a Viksit Bharat by 2047.

Mr. M Farwis, Lecturer, Department of Accountancy and Finance, South Eastern University of Sri Lanka, Sri Lanka described the journey toward Vision *Viksit Bharat* @2047 presents an opportunity to transform the MSME sector into a resilient, innovative, and inclusive growth engine. By learning from the past and adopting strategic solutions, we can unlock MSMEs' full potential. Bold policies, collaboration, and sustainable development are key to success. For Sri Lanka, overcoming the economic crisis and collaborating with India will be vital. Strengthening MSMEs goes beyond economic growth; it empowers communities and fosters innovation for a more inclusive future. Dr. A. Thaha Sahad, Associate Professor, Department of Economics, Presidency College, Chennai, summarised the session.

Dr. S Chandrachud, Professor and Head, Department of Economics, Vels University, Pallavaram, Chennai chaired the technical session. Dr. V Mohanasundaram, Associate Professor and Former Head, Adjunct Professor, Department of Economics, PSG College of Arts and Science, Coimbatore delivered his Keynote Address on 'Small (MSMEs) is Beautiful: Always / At Times / Seldom'. He suggested that the productivity of labour and remunerative wages and social security measures to improve the welfare of the workers in the MSME sector should be given adequate importance not only in policy but also in practice and the rapporteurs for the session were Dr. I Chitra, Assistant Professor, Department of Economics, Thiagarajar College, Madurai and Dr. S Jaber Asan, Assistant Professor, Department of Economics, The New College, Chennai.

The next parallel session was chaired by Dr. H Yasmeen Sultana, Assistant Professor, Department of Economics, Pondicherry University, Puducherry, through virtual mode. Prof. Salah Koubaa, Professor and Vice Dean, Head of Entrepreneurship and SMEs Research Center, University Hassan II of Casablanca, Morocco delivered a Keynote Address on 'MSME and Entrepreneurial Development Model in Developing Countries'. There were eighteen papers presented by the academicians and research scholars, mostly focusing on the 'Performance of MSMEs: Challenges and Opportunities in India'.

The next technical session was chaired by Dr. G Karunamoorthy, Associate Professor and Head, Department of Economics, Pachaiyappa's College, Chennai, Tamil Nadu. The Keynote Address was delivered by Dr. D B Usha Rani, Associate Professor and Head, Department of Economics, Ethiraj College for Women, Chennai and the rapporteurs for the session were Dr. K. Suresh, Assistant Professor, RKM Vivekananda College, Chennai and Dr. S

Mohamed Nazeer, Assistant Professor, Department of Economics, The New College, Chennai. Mr. AGM. Shamil, Managing Director, Savings Supermarket, Kattankudy, Sri Lanka spoke on 'Navigating the Complex Landscape: A Comprehensive Analysis of MSMEs Challenges and Opportunities in Kattankudy, Sri Lanka'. There were sixteen papers presented by the delegates and research scholars on the role of 'FinTech in Empowering India's MSMEs'.

The second parallel session on virtual mode was chaired by Prof. Supaprawat Siripipatthanakul, Senior Faculty, Bangkok Thonburi University, Thailand. Dr. Mehak Majeed, Assistant Professor, Islamic University of Science and Technology, Jammu & Kashmir delivered a Keynote Address on 'An Endorsement of the Rural Industry in India' and the rapporteurs for the session was Dr. Subaida Begum, Assistant Professor, Department of Economics, JBAS College for Women, Chennai and Mr. R Mohammed Ali, Assistant Professor, Department of Economics, The New College, Chennai. There were twelve papers presented by the delegates and research scholars focusing on the role of FinTech in Empowering India's MSMEs.

Dr. S Chinnammai, Professor and Head, Department of Economics, University of Madras, Chennai chaired the next plenary session. Prof. M H Thowfeek, Professor of Management and IT, Department of Management and IT, Faculty of Management and Commerce, South Eastern University of Sri Lanka discoursed the 'Empowering the Future: The Role of Technopreneurship in Shaping Innovation'.

Prof. Samsudeen Sabraz Nawaz, Head and Professor, Department of Management and Information Technology, South Eastern University of Sri Lanka enlightened the Revolutionising Business with Artificial Intelligence: Empowering MSMEs for Growth. Artificial Intelligence represents a transformative opportunity for MSMEs, enabling them to innovate, compete, and grow in previously unimaginable ways. By starting small, leveraging affordable AI tools and focusing on gradual integration, MSMEs can overcome barriers to adoption and unlock the full potential of AI.

Dr. Akhilesh Kumar Sharma, Assistant Professor, Institute for Studies in Industrial Development, New Delhi, highlighted that promoting the development of the MSME sector is essential for India's Vision of *Viksit Bharat* 2047,

as it stimulates innovation, generates employment, and enhances economic empowerment. Enhancing policies, financial accessibility, and technological integration will enable MSMEs to expand and compete on a global scale. He said that this expansion would substantially enhance a self-sufficient, robust, and inclusive economy.

Dr. R Sendhil, Associate Professor, Department of Economics, School of Management, Pondicherry University, Puducherry spoke on 'Agriculture and Micro, Small, and Medium Enterprises in India: Implications for *Viksit Bharat*@2047'. Agriculture and MSMEs drive regional development and are vital sectors in India's journey toward '*Viksit Bharat@* 2047' i.e., becoming a developed nation by 2047. To underpin this synergy and capitalise on their business and trade potential in the context of economic development, actionable strategies have to be framed. These include integrating agri-based MSME clusters, increasing access to digital and financial instruments, and fostering smart business practices like circular economy models.

Dr. N Malathi, Associate Professor and Head, Department of Economics, Guru Nanak College, Chennai, Tamil Nadu chaired the session for which the rapporteurs were Dr. D Gopi, Assistant Professor, Department of Economics, SRM Institute of Science and Technology, Tamil Nadu and Mr. M Shahul Hameed, Assistant Professor, Department of Economics, The New College, Chenna. There were sixteen papers presented by the delegates and research scholars on 'The Role of FinTech in Empowering India's MSMEs'.

The second parallel session was chaired by Prof. Dhiresh Kulshrestha, Professor and Dean, Faculty of Economics Chitkara Business School, Chitkara University, Punjab, through virtual mode. There were twenty-one papers presented by the delegates and research scholars focusing on Small Business Startups, Evaluating the Effect of ICT Investment on Profitability in Indian Manufacturing MSMEs, MSMEs as Catalysts for *Viksit Bharat*@2047: Unlocking Potential through Policy and Innovation.

Dr. X Vincent Jayakumar, Associate Professor and Head, Department of Economics, Ramakrishna Mission Vivekananda College, Chennai chaired the session and Dr. J V Arun, Assistant Professor, Department of Economics, Government Arts College, Nandanam, Chennai delivered the Keynote Address on 'Micro, Small, and Medium Enterprises

(MSMEs) in India: Catalysts for Sustainable Development Goals'. The rapporteurs for the session were Dr. C Prabu, Assistant Professor, Department of Economics, Sir Theagaraya College, Chennai and Mr. R Sadique Ahmed and Mr. A Ahamed Jakith, Assistant Professors, Department of Business Economics, The New College, Chennai. There were fifteen papers presented by the delegates and research scholars focusing on 'Economic Growth and Employment through MSMEs in India and Socio-economic Conditions and Problems of Labourers'.

The next session was chaired by Prof. Susela Devi Suppiah, Honorary Professor, Universiti Selangor (UNISEL), Malaysia, through virtual mode. Keynote Address on 'Role of MSMEs in Achieving SDGs' was delivered by Prof. Md. Zahir Uddin Arif, Professor, Department of Marketing, Faculty of Business Studies, Jagannath University, Dhaka, Bangladesh and the rapporteurs for the session were Dr. B Mahammad Rafee and Mr. J Yunus Basha, Assistant Professors, Department of Business Economics, The New College, Chennai. There were fifteen papers presented by the delegates and research scholars focusing on 'Envisioning the Future of MSMEs in India: A Study of Opportunities and Challenges in Vision *Viksit Bharat*@2047'. After each technical session, there was an interactive Question and Answer session where participants had the opportunity to engage with the speakers and share their views. These discussions were valuable for deepening the understanding of the challenges faced by farmers and how stakeholders can work together to address them to find meaningful solutions.

During the Valedictory Function, Dr. S Kareemulla Basha, Head, Department of Economics, The New College, Chennai delivered the Welcome Address. Dr. M Asrar Sheriff, Principal, The New College, Chennai, Tamil Nadu presided over the function and delivered the Presidential Address. Dr. M Abdul Jamal, Associate Professor of Economics and Convener of the event, submitted the event report. Prof. Srinivasan Ramachandran, Full Time Member, State Planning Commission, Government of Tamil Nadu delivered the Valedictory Address. Finally, the Co-convenor, Dr. M Fakir Ismail, Associate Professor of Economics, The New College proposed the Vote of Thanks. Dr. M Abdul Jamal was the Organising Secretary of the event.

The event concluded that the MSMEs are the backbone of India's economy and will be key to realizing the vision of '*Viksit Bharat* 2047'. MSMEs can play a central role in achieving the Sustainable Development Goals by driving innovation, creating jobs, and fostering inclusive growth. To attain the Sustainable Development Goals, micro, small, and medium enterprises necessitate enhanced policy support, technological access, and capacity-building programs. Promoting sustainable practices, financial inclusion, and collaboration can enable MSMEs to significantly contribute to a greener, inclusive economy. By focusing on these sectors, India can harness the transformative potential of MSMEs for enduring sustainable development.

Training Programme on NEP Orientation and Sensitisation Programme

A ten-day Online Training Programme on 'NEP Orientation and Sensitisation Programme' is being organised by the UGC-Malaviya Mission Teacher Training Centre-Shri Mata Vaishno Devi University, Katra, Jammu and Kashmir from June 09-18, 2025. The faculty members in Central, State, Deemed-to-be Universities, Private Universities, Institutions of National Importance, Colleges and other HEIs, faculty members from HEIs under various Professional Councils (AICTE, NMC, BCI, INC, PCI, ICAR, etc.), contractual, Ad-hoc, guest faculty members, tutors and demonstrators in HEIs, wherever applicable, and research scholars and research associates at the Ph.D. or Post-Doctoral level in HEIs may participate in the event. The Contents of the event are:

- Holistic and Multidisciplinary Education.
- Indian Knowledge Systems.
- Academic Leadership, Governance and Management.
- Higher Education and Society.
- Research and Development.
- Skill Development.
- Student Diversity and Inclusive Education.
- Information and Communication Technology.

For further details, contact Organising Secretary, Dr. Anil K Bhardwaj, UGC-Malaviya Mission Teacher Training Centre-Shri Mata Vaishno Devi University, Katra, Jammu and Kashmir—182320, Mobile No: 09419903025. For updates, log on to: *https://smvdu.ac.in*

Workshop on Empowering Educators

A five-day Workshop on 'Empowering Educators: Student-Centric Teaching Pedagogy' is being organised by the Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat from June 09-13, 2025. The faculty members may participate in the event to transform their teaching practices, foster deeper student engagement, and improve learning outcomes in alignment with global educational standards. The Themes of the event are:

Foundations of Student-Centric Pedagogy

Theme: Understanding the Shift from Teaching to Learning, Overview of Student-Centric Pedagogy: Benefits and Challenges, Principles of Active Learning, Interactive Session: Reflecting on Current Teaching Practices, Group Activity: Mapping Traditional vs. Student-Centric Approaches.

Active Learning Strategies and Techniques

Theme: Engaging Students in the Learning Process Workshop: Implementing Active Learning in STEM Classrooms Case Studies: Successful Active Learning Models Peer Discussion: Overcoming Implementation Barriers Hands-on Activity: Designing a Student-Centric Lesson Plan.

Technology-enhanced Learning

Theme: Leveraging Digital Tools for Engagement Session: Integrating Learning Management Systems (LMS) Demonstration: Interactive Tools (e.g., Kahoot, Padlet, Mentimeter) Workshop: Blended and Flipped Classroom Models Empowering Educators: Student-Centric Teaching Pedagogy June 09-13, 2025 Panel Discussion: Best Practices for Digital Pedagogy.

Inclusive and Personalised Learning

Theme: Addressing Diverse Learning Needs Session: Universal Design for Learning (UDL) Principles Workshop: Designing Inclusive Curriculum and Assessments Role Play: Navigating Classroom Diversity Open Forum: Sharing Personal Experiences and Challenges.

Assessment and Feedback for Learning

Theme: Rethinking Evaluation in Student-Centric Classrooms Session: Formative vs. Summative Assessments Workshop: Designing Authentic Assessments Interactive Panel: Student Feedback for Continuous Improvement Closing Ceremony and Certificate Distribution.

For further details, contact the Course Coordinator, S V National Institute of Technology, Surat –395007, Gujarat, Mobile No: 09714827744 and 08320658222. E-mail: *ravi.kant@med.svnit.ac.in*. For updates, log on to: *https://www.svnit.ac.in › web › Events.php*

International Pharmacology Conference on Empowering Young Minds

A three-day International Pharmacology Conference on 'Empowering Young Minds to Transform Pharmacology for *Viksit Bharat'* is being organised by the Panjab University, Chandigarh from November 20-22, 2025. The event aims to provide a platform and opportunity for young Pharmacologists / medical Professionals/veterinarians to interact with experts in the diverse areas of pharmacology. The event will offer an ideal opportunity to develop new collaborations and partnerships with experts in the field.

Pharmacology is the foundation of healthcare innovation, holds immense potential to shape the future of a '*Viksit Bharat*' (Developed India). By empowering young minds that can unlock the creativity, knowledge, and revolutionise pharmacology to address India's unique healthcare challenges. The Topics of the event are:

- Cardiovascular Pharmacology.
- CNS / Neuropharmacology.
- Herbal or Indigenous/ Traditional Medicine.
- Cancer and Chemotherapy.
- Receptor Pharmacology.
- GIT Disorder.
- Respiratory Disease.
- Toxicology Disease.
- Metabolic Disorder.
- Miscellaneous.

For further details, contact Organizing Secretary, Prof. Anil Kumar, University Institute of Pharmaceutical Sciences, UGC-CAS Punjab University, Chandigarh–160014, Punjab, Mobile No: 94786-92293, E-mail: *ipscon2025@gmail.com*. For updates, log on to: *www.ipscon2025.co*

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THESES OF THE MONTH

AGRICULTURAL & VETERINARY SCIENCES

Biotechnology

1. Das, Bikash Kumar. **Biochemical approach for evaluation of tolerance and growth parameters of selected Oryza sativa L cultivars on hexavalent chromium contaminated soil**. (Dr. Patitapaban Dash), Department of Biotechnology, Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar.

Entomology

1. Mehta, Vasu. **Population dynamics and management of pulse beetle, *Callosobruchus chinensis* (Linn.) in Himachal Pradesh**. (Dr. R S Chandel), Department of Entomology, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

2. Patel, Payalben Rajubhai. **Symptomatology, characterizations of *Fusarium s*p causing mango malfromation and its management**. (Dr. K B Rakholiya), Department of Entomology, Navsari Agricultural University, Navsari.

Food Science & Technology

1. Parakhiya, Nikunj Vinodbhai. **Influence of biofertilizers and biostimulants on fruiting, yield and quality of mango**. (Dr. D K Sharma), Department of Floriculture and Landscape Architecture, Navsari Agricultural University, Navsari.

2. Sapna. **Characterization of starch isolated from underutilized legume crops**. (Dr. Jyotika Dhankhar and Dr. Alka Sharma), Department of Food Technology, Maharshi Dayanand University, Rohtak.

Forestry

1. Lalnunpuii, K. **Studies on biomass and nutrient accumulation pattern, carbon stock and sequestration potential of sweet orange plantation in Mizoram**. (Prof. U K Sahoo), Department of Forestry, Mizoram University, Aizawl.

Genetics & Plant Breeding

1. Patel, Harshitaben Rakeshbhai. **Genetic analysis for yield, its components and molecular characterization for bacterial leaf blight resistance in rice (*Oryza sativa L*)**. (Dr. P M Mistry), Department of Genetics and Plant Breeding, Navsari Agricultural University, Navsari.

2. Prajapati, Maulikkumar Rameshbhai. **Molecular breeding for salt tolerance in rice *(Oryza sativa L)***. (Dr. K K Patel), Department of Genetics and Plant Breeding, Navsari Agricultural University, Navsari.

3. Saini, Manoj Kumar. **Identification of restorers and potential hybrids on the basis of heterosis and combining ability using CMS lines in rice (Oryza Sativa L)**. (Dr. D P Pandey), Department of Genetics and Plant Breeding, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

4. Talatam, Ramya Vardhini. **Estimation of heterosis, inbreeding depression, combining ability and gene action for seed yield and its component traits in pigeonpea (*Cajanus cajan* (L) millsp)**. (Dr. L K Sharma), Department of Genetics and Plant Breeding, Junagadh Agricultural University, Junagadh.

Plant Physiology

1. Parmar, Mittalbahen Chaturbhai. **Effect of weather parameters and management of Guava fruit canker caused by Pestalotiopsis psidii (*Kwee and Chong)*.** (Dr. P R Patel), Department of Plant Pathology, Navsari Agricultural University, Navsari.

Soil Science

1. Katoch, Rushali. **Simulating and predicting the effect of long-term application of fertilizers and amendments for maize-wheat yield and soil fertility in an acid *Alfisol*.** (Dr. Narender K Sankhyan), Department of Soil Science, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

Veterinary Science

1. Bilawal Singh. **Effect of pre-freez supplementation of tissue derived stromal vascular functions on post thaw semen quality and conception rate in dogs**. Department of Veterinary Gynaecology and Obstetrics, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

2. Lalawmpuii, K. **Comparative prevalence and drug efficacy studies against abomasal nematodes of small ruminants**. Department of Veterinary Parasitology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

BIOLOGICAL SCIENCES

Biotechnology

1. Pradhan, Smriti. **Studies on siderophore producing and arsenic resistant bacteria isolated from agricultural soil and their role in biocontrol and bioremediation**. (Prof. Dipanwita Saha), Department of Biotechnology, University of North Bengal, Darjeeling.

2. Sonia. **In silico approaches for improving the stability of Choline oxidase**. (Dr. Rashmi Rameshwari and Dr. Shilpa S Chapadgaonkar), School of Engineering and Technology, Manav Rachna International Institute of Research and Studies, Faridabad.

3. Tanveer Kaur. **Diversity of arbuscular mycorrhizal fungi in seleniferous soils and their role in selenium sequestration and biotransformation**. (Dr. M Sudhakara Reddy), Department of Biotechnology, Thapar Institute of Engineering and Technology, Patiala.

Food Science & Nutrition

1. Shah, Alka Champaklal. **Evaluation of dietary interventions through gluten free modified atkins diet in children with autism spectrum disorder**. (Dr. N K Jain), Faculty of Science, Gujarat University, Ahmedabad.

Life Sciences

1. Ajay Kumar. **Chelator assisted phytoremediation of cadmium and lead by Indian mustard (Brassica juncea L)**. (Dr. Sunder Singh and Dr. Sunil Kumar), Department of Botany, Maharshi Dayanand University, Rohtak.

2. Asha. **Polymeric nano encapsulation of essential oils for control of storage pests**. (Dr. R K Salar and Dr. Rajesh Thakur), Department of Biotechnology, Chaudhary Devi Lal University, Sirsa.

3. Bangang, Ajum. **Status of traditional homegardens in East Kameng District of Arunachal Pradesh with emphasis on food security and livelihood enhancement**. (Prof. Sumpam Tangjang), Department of Botany, Rajiv Gandhi University, Itanagar.

4. Chimyang, Nonya. **Bryoflora of Tirap District Arunachal Pradesh, India**. (Dr. Heikham Evelin), Department of Botany, Rajiv Gandhi University, Itanagar.

5. Dai, Mariyom. **Diversity analysis of arbuscular mycorrhizal fungi across Daying Ering Wildlife Sanctuary: A Siang River Mid Channel Island**. (Dr. Oyi Dai Nimasow), Department of Botany, Rajiv Gandhi University, Itanagar.

6. Junmoni Das. **Optimization of solid state fermentation conditions for laccase production by two selected Ganoderma species**. (Prof. R K Singh), Department of Botany, Rajiv Gandhi University, Itanagar.

7. Mossang, Pherkop. **Bryolphytes of Papum Pare District, Arunachal Pradesh, India**. (Dr. Heikham Evelin), Department of Botany, Rajiv Gandhi University, Itanagar.

8. Mousikha Lala. **Medicinal and molecular profiling of selected rutaceous members with a focus on *Citrus L***. (Prof. Arnab Sen), Department of Botany, University of North Bengal, Darjeeling.

9. Tangjang, Litnya. **Studies on oyster mushroom cultivation: Effect of substrates and their treatment methods on yield, nutritional qualities and occurrence of diseases during cropping**. (Dr. Tenya Rina), Department of Botany, Rajiv Gandhi University, Itanagar.

Microbiology

1. Chauhan, Jasmitaben Bhaidas. **Purification & characterization of cellulase and xylanase from acidophilic bacillus species and its application in food processing**. (Dr. Gaurav Vinodbhai Sanghvi), Department of Microbiology, Marwadi University, Gujarat.

2. Khem Chand. **Detection of multidrug resistant biofilm forming strains of pseudomonas aeruginosa and analysis of natural compounds for their biofilm inhibition potential**. (Dr. Anita Rani Santal and Dr. Aparna Yadav), Department of Microbiology, Maharshi Dayanand University, Rohtak.

3. Surti, Hiral Sureshbhai. **Microbial degradation of dyes and effluents of textile sector in Gujarat**. (Dr. K N Rajput), Department of Microbiology, Gujarat University, Ahmedabad.

Zoology

1. Lalbiakzuala. **Taxonomic study on the elapid snakes of Mizoram, India (Reptilia: Serpentes: Elapidae)**. (Prof. H T Lalremsanga), Department of Zoology, Mizoram University, Aizawl.

2. Muni, Nending. **Plant-Insect Interaction and Entomophagy: Exploration of the most preferred edible insect, the Anomala species of Arunachal Pradesh**. (Prof. Jharna Chakravorty and Dr. Y Rajashekar), Department of Zoology, Rajiv Gandhi University, Itanagar.

ENGINEERING SCIENCES

Computer Science & Engineering

1. Bomken, Kamdak Bam. **Tonal word recognition and understanding: A context based approach with reference to languages of Arunachal Pradesh**. (Prof. Utpal Bhattacharjee), Department of Computer Science & Engineering, Rajiv Gandhi University, Itanagar.

2. Chutia, Bhaskar Jyoti. **Design and development of a robust countermeasure system for speaker verification to address the replay and speech synthesis attacks**. (Prof. Utpal Bhattacharjee), Department of Computer Science & Engineering, Rajiv Gandhi University, Itanagar.

3. Darge, Lobsang. **Identification and analysis of emotional changes in speech during a telephonic conversation**. (Prof. Utpal Bhattacharjee), Department of Computer Science & Engineering, Rajiv Gandhi University, Itanagar.

4. Kamboj, Minakshi. **Secure and robust framework for the management of cloud data centers**. (Dr. Sanjeev Rana), Department of Computer Science & Engineering, Maharishi Markandeshwar University, Ambala.

5. Kukadiya, Hirenkumar Anilbhai. **Design and development of prototype for an automatic disease detection and classification of castor oil plant, cotton and groundnut leaves using deep learning techniques**. (Dr. Divyakant Thakarshibhai Meva), Department of Computer Science, Marwadi University, Gujarat.

6. Mukherjee, Soumya. **Design of efficient forgery detection techniques in digital images**. (Prof. Arup Kumar Pal), Department of Computer Science & Engineering, Indian Institute of Technology, Dhanbad.

7. Narinder Kumar. **Model of an enhanced electronic voting machine to facilitate voters to cast votes from outside their home constituencies**. (Prof. Harish Rohil), Department of Computer Science & Engineering, Chaudhary Devi Lal University, Sirsa.

8. Nidhi Kumari. **Metaheuristic-based offloading algorithms for fog computing in Internet of Things platform**. (Prof. Prasanta K Jana), Department of Computer Science & Engineering, Indian Institute of Technology, Dhanbad.

9. Raval, Helly Yogeshkumar. **Self-learning capabilities in next generation intelligent agent**. (Dr. Satyen M Parikh), Department of Computer Science, Ganpat University, Mehsana.

10. Shobha Rani, V. **Study of DevOps in education and industry-shift left paradigm change in Agile DevOps model**. (Prof. A Ramesh Babu), Department of Computer Science, Chaitanya (Deemed To Be University), Himayatnagar, Hyderabad.

11. Taneja, Kriti. **Decision support system for early detection of cardiac health status**. (Dr. Vinay Arora and Dr. Karun Verma), Department of Computer Science & Engineering, Thapar Institute of Engineering and Technology, Patiala.

Electrical & Electronics Engineering

1. Dutta, Somenath. **Design of analog signal processing circuits using analog building blocks**. (Dr. Rajeev Kr Ranjan), Department of Electronics Engineering, Indian Institute of Technology, Dhanbad.

2. Kundan Kumar. **Comparative investigation and design of wireless signal and power transfer**. (Prof. Pradip Kumar Sadhu and Prof. Mritunjay Kumar Singh), Department of Electrical Engineering, Indian Institute of Technology, Dhanbad.

3. Pragati, Abha. **Signal processing and artificial intelligence based VSC-HVDC network protection**. (Prof. Manohar Mishra), Department of Electrical Engineering, Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar.

4. Sahw, Probeer. **Investigation and mitigation of speed control and charging issues in electric vehicles**. (Prof. Tanmoy Maity), Department of Electrical & Engineering, Indian Institute of Technology, Dhanbad.

Electronics & Communication Engineering

1. Ajay Kumar. **Bio-inspired optimization algorithms for image steganographic and cryptographic applications**. (Dr. Alpana Agarwal and Dr. Abhijeet Karmakar), Department of Electronics & Communication Engineering, Thapar Institute of Engineering and Technology, Patiala.

2. Rana, Sonu. **Design and analysis of planar microstrip antennas for 5G and IoT applications**. (Dr. Jyoti Verma and Dr. A K Gautam), School of Engineering, Manav Rachna International Institute of Research and Studies, Faridabad.

3. Sharma, Nidhi. **Artificial intelligence driven dynamic resource allocation techniques in ultra dense networks**. (Dr. Krishan Kumar), Department of Electronics & Communication Engineering, National Institute of Technology, Hamirpur.

4. Yousef, Nabhan Tawjih. **Automated detection of casting defects using machine learning**. (Dr. Amit Vinod Sata and Dr. Arjav Ambaram Bavarva), Department of Electronics & Communication Engineering, Marwadi University, Gujarat.

Mechanical Engineering

1. Amit Kumar. **Development of aluminium matrix composite using friction stir processing for its surface modification**. (Dr. Vineet Kumar), Department of Mechanical Engineering, Maharshi Dayanand University, Rohtak.

2. Choudhury, Anup. **Characterization of aluminium hybrid composites using alumina and (SCBP/DPLP) bio-waste**. (Dr. Jajneswar Nanda), Department of Mechanical Engineering, Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar.

3. Dash, Debendra Nath. **Flow and thermal analysis of mono and hybrid nanomaterials through porous media**. (Dr. Manoj Kumar Nayak), Department of Mechanical Engineering, Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar.

4. Dinesh Kumar. **Performance evaluation of cyclone separators with hyperboloid and elliptical cross-sections using CFD simulation**. (Dr. Kailash Jha), Department of Mechanical Engineering, Indian Institute of Technology, Dhanbad.

5. Jain, Prakhar. **Design and control of a knee exoskeleton with multiple actuators**. (Dr. Tarun Kumar Bera Dr. Ashish Singla and Dr. Magnus Isaksson), Department of Mechanical Engineering, Thapar Institute of Engineering and Technology, Patiala.

6. Joshi, Yagneshkumar Anilbhai. **Numerical analysis of low-reynolds number incompressible gusty flow past various two dimensional geometries**. (Dr. Rameshkumar Muljibhai Bhoraniya and Dr. Atalbihari Harichandan), Department of Mechanical Engineering, Marwadi University, Gujarat.

7. Patel, Romikumar Mahendrabhai. **Experimental investigation of scheffler reflector with thermal storage media for domestic cooking application**. (Dr. Vikram B Patel), Department of Mechanical Engineering, Ganpat University, Mehsana.

8. Sahoo, Rajesh. **Discharge characterization and its utilization to improve stability by implementing novel EDM variants**. (Prof. Nirmal Kumar Singh and Prof. Vivek Bajpai), Department of Mechanical Engineering, Indian Institute of Technology, Dhanbad.

9. Vivek Singh. **Investigation on structural mechanical and tribological characteristics of magnetron sputtered TaN coating on Ti6A17Nb alloy**. (Dr. Rajesh Kumar Sharma and Dr. Rakesh Sehgal), Department of Mechanical Engineering, National Institute of Technology, Hamirpur.

MATHEMATICAL SCIENCES

Mathematics

1. Ankit Kumar. **Development and analysis of a class of coupled deformable models: Applications to image segmentation**. (Dr. Subit Kumar Jain), Department of Mathematics & Scientific Computing, National Institute of Technology, Hamirpur.

2. Bhowmick, Aliviya. **Optimization problems in fuzzy environment**. (Prof. Subhashis Chatterjee and Prof. Snehashish Chakraverty), Department of Mathematics and Computing, Indian Institute of Technology, Dhanbad.

3. Bikash Das. **A mathematical flow modelling of Darcian and non-Darcian porous medium with heat and mass transport**. (Prof. Sahin Ahmed), Department of Mathematics, Rajiv Gandhi University, Itanagar.

4. Buragohain, Pujashree. **Investigation of arithmetic properties of partition and related functions**. (Dr. Nipen Saikia), Department of Mathematics, Rajiv Gandhi University, Itanagar.

5. Kumari Priyanka. **Sampling and interpolation in shift-invariant spaces and error estimates covering discontinuous signals**. (Prof. A Antony Selvan), Department of Mathematics and Computing, Indian Institute of Technology, Dhanbad.

6. Sharma, Aruna Suryanarayan. **A differential transform approach for solving real life problems**. (Dr. Amit K Parikh), Department of Mathematics, Ganpat University, Mehsana.

MEDICAL SCIENCES

Ayurveda

1. Ambade, Vaishali Harish. **A randomized controlled clinical study on cumulative effect of Darvyadi Kvath Gandush and Darvyadi Churna Pratisarana Versus Aloe Vera in Sarvasara Mukharoga (Oral Submucous Fibrosis)**. (Dr. Madhukar Lahankar), Faculty of Ayurved, Maharashtra University of Health Sciences, Nashik.

Biotechnology

1. Yadav, Pooja. **Generation and characterization of enamel producing Ameloblast through differentiation of Stem Cells from Human Exfoliated Deciduous Teeth (SHED)**. (Dr. Rashmi Bhardwaj), Department of Medical Biotechnology, Maharshi Dayanand University, Rohtak.

Dentistry

1. Rastogi, Sonam. **Relationship between human eye and different craniofacial skeletal pattern: A Correlative study**. (Dr. Manish Goyal), Department of Orthodontics & Dentofacial Orthopedics, Teerthanker Mahaveer University, Moradabad.

Homeopathy

1. Jaiswal, Praveen Vijay. **An observational clinical study to explore the role of susceptibility in enteric fever and its homeopathic management in adults**. (Dr. V R Kavishwar), Faculty of Homeopathy, Maharashtra University of Health Sciences, Nashik.

Immunology

1. Abida. **Study the role of signaling pathways in modulating the tumor microenvironment in ovarian cancer**. (Dr. Dil Afroze), Department of Immunology Molecular Medicine, Sher-I-Kashmir Institute of Medical Sciences, Srinagar.

Pathology

1. Dave, Gunjan Trilochan. **Age and gender determination from orthopantomography in population of Gujarat**. (Dr. Neelampari Parikh), Faculty of Medical, Gujarat University, Ahmedabad.

Pharmaceutical Science

1. Swain, Sudhansu Sekhar. **Antibacterial assessment of newly synthesized fluoroquinolone derivatives and metal complexes of thiosemicarbazones**. (Prof. P Sudhir Kumar), Department of Pharmacy, Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar.

Psychiatry

1. Sethy, Damayanti. **Task Specific Strength Training (TSST): Effect on upper extremity recovery, activity and participation in patients after stroke**. (Prof. Surjeet Sahoo), Department of Psychiatry, Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar.

PHYSICAL SCIENCES

Chemistry

1. Khakhariya, Amit Dhirajlal. **Synthesis, characterization and biological activity evaluation of some heterocyclic compounds**. (Dr. K D Ladva), Department of Chemistry, Saurashtra University, Rajkot.

2. Savaniya, Nikhil Parasotam. **Design, synthesis and characterization of nitrogen containing benzo fused heterocycles**. (Dr. K D Ladva), Department of Chemistry, Saurashtra University, Rajkot.

3. Singh, Sweta. **Synthesis, characterization, biological activity and acoustical studies of Co(II), Ni(II) and Cu(II) metal complexes**. (Dr. Dinesh Kumar Mishra and Dr. R S Nigam), Department of Chemistry, AKS University, Satna.

4. Sitapara, Sachin Maheshbhai. **Synthesis, characterization and biological evaluation of some heterocyclic entities of medicinal interest**. (Dr. Jignesh H Pandya), Department of Chemistry, Saurashtra University, Rajkot.

5. Vaishnani, Mira Jilkumar. **Synthesis, characterization and biological evaluation of some heterocyclic compounds**. (Dr. Vicky Devendra Jain), Department of Chemistry, Marwadi University, Gujarat.

Physics

1. Achi, Tame. **Some aspects of expanding universe in modified gravity**. (Dr. H S Singh), Department of Physics, Rajiv Gandhi University, Itanagar.

2. Barman, Barnali. **Studies on photoresponse characterization of chemically synthesized CIGS nanostructures for photovoltaic devices**. (Dr. Pradip Kumar Kalita), Department of Physics, Rajiv Gandhi University, Itanagar.

3. Chandni Kumari. **Development and investigation of structural and optical properties of rare-earth doped antimonate phosphors**. (Prof. Jairam Manam and Prof. Shailendra Kr Sharma), Department of Physics, Indian Institute of Technology, Dhanbad.

4. Chekke, Tani. **Development and characterization of tungsten disulphide nanostructures and its nanocomposite for potential applications**. (Dr. Upamanyu Das), Department of Physics, Rajiv Gandhi University, Itanagar.

5. Goyary, Sagar Sing. **Structural and kinematic evolution of spiral galaxy**. (Dr. H S Singh), Department of Physics, Rajiv Gandhi University, Itanagar.

6. Handique, Kshirud Chandra. **An investigation on quasi type II nature of CdSe/ZnSe core-shell nanostructure for possible optoelectronic application**. (Prof. Pradip Kumar Kalita), Department of Physics, Rajiv Gandhi University, Itanagar.

7. Lawitlang, Samuel Lalsawmliana. **Development and construction of radio frequency ion source for low energy charged particle accelerators**. (Prof. B Lalremruata), Department of Physics, Mizoram University, Aizawl.

8. Mishra, Bindhyabasinee. **Exploration of the multifaceted properties of cation doped spinel-type $ZnFe_2O_4$ and $ZnMn_2O_4$ nanoparticles**. (Prof. Jyotimayee Nanda), Department of Physics, Siksha 'O' Anusandhan Deemed to be University, Bhubaneswar.

9. Narzary, Ringshar. **Development of tin-oxide nanostructures and its composites for technological applications**. (Dr. Upamanyu Das), Department of Physics, Rajiv Gandhi University, Itanagar.

10. Pal, Charli Chinmayee. **Study of prime density through physical phenomena**. (Prof. Prasanta Kumar Mahapatra), Department of Physics, Siksha 'O' Anusandhan Deemed to be University , Bhubaneswar.

11. Pawar, Manjeet. **Transition metal co doped tungsten oxide nanostructures: Synthesis and properties**. (Dr. Sushil Kumar and Dr. M A Majeed Khan), Department of Physics, Chaudhary Devi Lal University, Sirsa.

12. Sharma, Varun Dutt. **Green synthesis and photophysical studies on fluorescent carbon quantum dots and its applications in Uv-excitable light emitting diodes**. (Dr. Milan Kumar Bera), Department of Physics, Maharishi Markandeshwar University, Ambala.

13. Vishal. **Green synthesis and photophysical studies on functionalized natural carbo-based quantum dots for biomedical applications**. (Dr. Milan Kumar Bera and Dr. Sasanka Chakrabarti), Department of Physics, Maharishi Markandeshwar University, Ambala. ❑

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02	**Assistant Professor** (Pedagogy Subjects)	(Math, Science, Social Science, English, Hindi)		04	ST-01 NT(B)- 01
03	**Assistant Professor**	Performing Art (Music/Dance/Theatre/Fine Arts)	Performing (Music/ Dance/ Drama / Theatre/Fine art with Minimum 55% Marks SET/NET/ Ph.D.	01	OBC-03 SEBC-01
04	**Assistant Professor**	Health and Physical Education	M.P. Ed with Minimum-55% Marks SET/ NET/Ph.D.	01	EWS-01

1. **Educational Qualification** : Good academic record, 55% marks at P.G. degree level and SET/NET/PHD degree as per NCTE & UGC regulations of 2009.
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6. Eligible candidate, who are already in services, should submit their application through proper channel.
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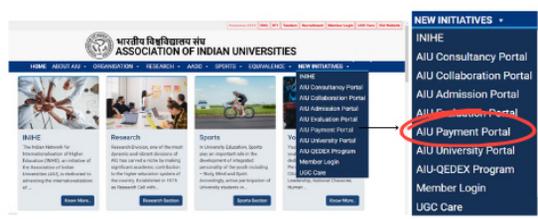
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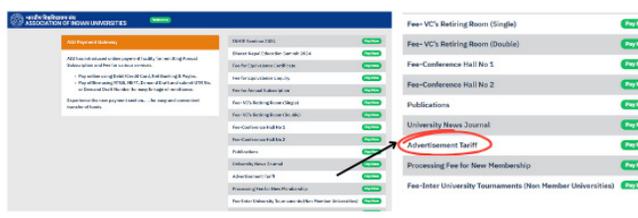
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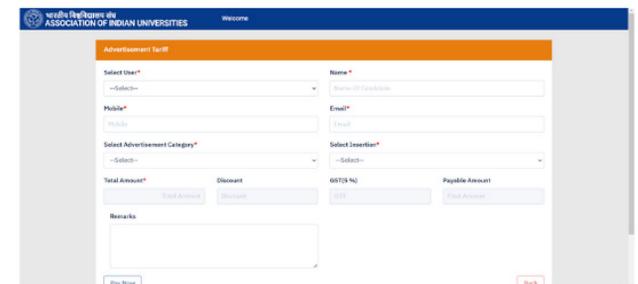
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1.	Educational Studies (Geography)**	-	-	01- EWS
	Educational Studies (History)**	-	-	01-SC(BL)
2.	English	01-OBC (BL)	-	-
3.	Human Resource Management & Organisational Behaviour	-	01-OBC (BL)	-
4.	Tourism & Travel Management	-	-	01 SC*
5.	Marketing & Supply Chain Management	01-OBC	01 UR*	-
6.	Chemistry & Chemical Sciences	-	01 OBC*	01 OBC*
7.	Social Work	01-OBC (BL)	-	01 EWS*
8.	Hindi & Other Indian Languages	-	-	01 OBC*
9.	Public Policy and Public Administration	-	01-OBC (BL)	-
10.	Electronics and Communication Engineering#	01-UR	-	-
11.	Centre For Molecular Biology	-	-	01 OBC*

#**As per AICTE norms   * Vacancies against Lien**
** Qualifications will be as per NCTE norms

BL - Backlog Vacancy, SC - Scheduled Caste, ST- Scheduled Tribe, EWS - Economically Weaker Section, OBC- Other Backward Classes, PwBD – Person with Benchmark Disability

Note: 1. Persons with Benchmark Disability (PwBD) shall be considered subject to availability and suitability of positions for OH, HH & VH as per reservation norms. The PwBD candidates shall be provided horizontal reservation as per the Government Guidelines wherever PwBD candidates are available.

2. If suitable EWS candidates do not become available, the vacancy will be treated as unreserved and filled as an unreserved vacancy. Therefore, other candidates (who fulfill eligibility at UR standards) may also apply for the post.

Important Information

1. The candidates appointed against the lien* posts will be on temporary basis till lien* exists. If lien* employee does not join back, the candidates appointed against the said posts are liable to be confirmed substantially subject to fulfillment of terms and conditions of the probation.

2. The detailed eligibility conditions and other relevant details are available on the University website *www.cujammu. ac.in*. Online application form, complete in all respects must be submitted along with online payment of **Rs 1,000/-** (fee exempted for candidates belonging to SC, ST & PwBD) on or **before 08.06.2025** (11:59 PM).

3. Online portal will be available on University website and remain open from **17.05.2025 (05:00 PM)**

4. The candidates are requested to regularly visit the University Website *www.cujammu.ac.in* for further updates. Hereafter, issuance of notifications in the newspapers, for any information in this regard, is not obligatory on the part of the University.

5. For any queries please email at ***teaching.recruitment@cujammu.ac.in.*** Queries on any other email will not be entertained.

Sd/-
कुलसचिव/Registrar
फोन : 91-8082197957
ईमेल: registrar@cujammu.ac.in

No. CUJ/Estab/ EN-26/2025/587
Date: 16-05-2025

Association of Indian Universities

Capacity Building Initiatives of AIU
Academic and Administrative Development Centres (AADCs)

Transforming Higher Education Post-COVID: AIU's FDP Initiative:

In response to the evolving academic challenges post-pandemic, the **Association of Indian Universities (AIU)** launched an **impactful Faculty Development Programme (FDP)** initiative in 2022 under its Academic and Administrative Development Centres (AADCs). These programmes are dedicated to enhancing the pedagogical and administrative capacities of faculty and university leaders across India.

With a strong **focus on 21st-century skills, Artificial Intelligence (AI), digital pedagogy, interdisciplinary research**, and **academic leadership,** this initiative continues to empower institutions to align with the goals of **NEP 2020.**

3-Year Impact (2022–2025)

2022-23	67 FDPs
2023-24	34 FDPs
2024-25	115 FDPs
Total FDPs	216 FDPs
Faculty & Administrators Trained	11,000

Chart legend: 2022-23, 2023-24, 2024-25

No. of FDPs Conducted (Year)
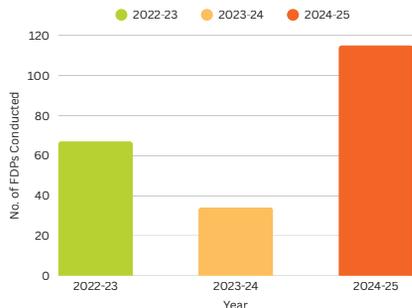
Celebrating Milestones!

- AI-focused FDPs conducted in 2024–25 reflect AIU's commitment to emerging educational technologies.

- Steady growth in FDPs signals rising engagement from universities across India.

- Capacity building at scale, ensuring both academic and administrative readiness.

Heartfelt Congratulations to the AADC Centres!

AIU proudly acknowledges the outstanding contribution of all AADCs in making this initiative a national success.

Your vision, planning, and execution have played a pivotal role in transforming professional development in Indian higher education.

We look forward to scaling new heights together!

www.aiu.ac.in