HE MATTERS
KERALA STATE HIGHER EDUCATION COUNCIL PUBLICATION
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HIGHER EDUCATION MATTERS

magazine

A GATEWAY TO HIGHER LEARNING INITIATIVES

monsoon hits college days

Monsoon disruptions and poor transport hinder college access, particularly for girls

Outcome Based Education Part-IV

Exploring the Three Domains of Learning

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Image: RADIO CU: Open Mic programme as part of Sasthrayaan 2025 at University of Calicut (Main Campus)

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HIGHER EDUCATION MATTERS

A GATEWAY TO HIGHER LEARNING INITIATIVES

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Our aim is to serve students, teachers, administrators and other stakeholders by providing valuable insights into the educational scenario, innovations in teaching and learning, policy changes, and career opportunities. Whether you're navigating the challenges of administration, teaching the next generation, preparing for your future career, or thinking of transforming your educational landscape, this magazine is your first hand information and expert perspectives for your journey.

Questions & Comments may be sent to: contact.hematters@gmail.com

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Opening Note | Editor in Chief

Dear Readers,

As college admissions unfold across the country, this issue of Higher Education Matters arrives at a moment of great decision-making and self-discovery for thousands of students and families. The journey ahead is not only about choosing a college but about choosing a future—and in many ways, a philosophy of learning and living.

This edition resonates with the dynamism and challenges of the times. From coverage on the transition to four-year undergraduate programmes to deep reflections on institutional rankings, accreditation, public perception, and the nuanced role of Indian Knowledge Systems, readers are offered both guidance and provocation. We are reminded that choosing an institution is not only about prestige but about pedagogy, purpose, and potential.

We also highlight pressing concerns like inadequate student transportation and the inclusion of green and gender-sensitive education, while showcasing vibrant initiatives like hackathons, global education summits, and the push for AI-driven teaching tools.

In this evolving educational landscape—amid reforming policies, global political decisions, and digital revolutions—students must choose wisely and boldly. May this issue equip them to ask the right questions and envision an education not just as preparation for a job, but as a foundation for citizenship, creativity, and critical thought.

Warmly,
The Editor-in-Chief

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UPCOMING EVENTS

INCUBATE 2025

31 July 2025 at IIT Bombay's Powai Campus

INCUBATE 2025 is a prestigious, national-level Med-Tech Hackathon co-organized by the Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry, and the Indian Institute of Technology (IIT) Bombay. The event aims to bridge the gap between clinical insight and technological innovation by fostering close collaboration between medical and engineering students. Multidisciplinary teams of 2–4 members are invited to conceptualize and design practical, scalable healthcare solutions that address real-world clinical challenges faced by hospitals and healthcare providers.

Participants must submit a detailed concept pitch and a presentation by 31 July 2025, showcasing their proposed solutions' feasibility, technical design, and potential impact. A panel of experts from both institutions will shortlist the top 15 teams for the final round.

International Conference on Advancements in Power, Communication, and Intelligent Systems

19 to 21 August, 2025 at Tokyo, Japan

The World Conference on Education and Training (WCET 2025) will take place from August 19 to 21, 2025, in a hybrid format, with the in-person event hosted at the Hyatt Regency Tokyo, Japan. This international conference brings together educators, researchers, administrators, and policymakers to explore innovation across 18 thematic tracks, including higher education, educational technology, distance learning, teacher training, and education for sustainability. Participants can attend workshops, breakout sessions, and poster exhibitions, either in person or virtually. Abstract and registration submissions are open offering a platform for academic exchange, networking, and collaboration in shaping the future of education.

(ICMREST-2025)

8 to 9 August 2025 at Bangalore

The 3rd International Conference on Multidisciplinary Research in Education, Science & Technology (ICMREST-2025) will be held in Bangalore, India, on August 8-9, 2025. It is organized by ARSSS and aims to provide a platform for researchers, educators, and innovators to share research and practices across different disciplines. The conference will focus on promoting dialogue, fostering collaboration, and addressing challenges in education and science

International Conference on Quality Education 2025

10 to 15 August 2025 at Mumbai

The International Conference on Quality Education 2025 will be held from August 10 to 15, 2025, in Mumbai, organized by the International Association for Quality Education (IAFQE) in partnership with Indian institutions like Dayananda Sagar University. This hybrid event focuses on improving the quality of early childhood, primary, and secondary education, with themes including STEAM education, green learning, entrepreneurship, and SDG-aligned teaching practices. The conference features keynote sessions, school visits, expos, workshops, and cultural events, along with pre-conference online lectures. Educators, school leaders, and policymakers will also be recognized through awards for excellence in contributing to quality education.

Industrial Ideathon 2025

Last week of August 2025 at New Delhi

The Industrial Ideathon 2025 in Delhi invites 120+ student teams from engineering, design, and business backgrounds to solve real-world industrial challenges. Each team must include at least one female member, promoting gender diversity in STEM. Participants will present innovations in green energy, manufacturing, logistics, and frontier technologies, competing for a prize pool of ₹80 lakh. Organized with government and industry support, the ideathon aims to foster a culture of applied research and entrepreneurship. The event blends innovation, skill-building, and inclusion—aligning with India's drive for Atmanirbhar Bharat and Make in India goals.

DGT & Shell Launch Green Skills and EV Training for Youth

Runs periodically

The Directorate General of Training (DGT) and Shell India have launched a Green Skills and Electric Vehicle (EV) Training programme to equip youth with future-ready skills in green energy and mobility. Implemented by Edunet Foundation, this initiative is active across select ITIs and NSTIs in Delhi-NCR, Gujarat, Maharashtra, Tamil Nadu, and Karnataka.

The programme offers three tiers of training: a 240-hour advanced EV Technician course at 4 NSTIs, a 90-hour job-oriented EV skills course at 12 ITIs with dedicated labs, and a 50-hour foundational green skills module at additional ITIs. Participants will receive hands-on training in EV systems, diagnostics, battery technology, and safety protocols. Faculty members are also trained through Training of Trainers (ToT) sessions, and all successful candidates will receive co-branded certification from DGT and Shell, along with structured placement support. To apply, students should contact their nearest participating ITI or NSTI for details on registration and course schedules. Early inquiry is encouraged due to limited seats. This initiative aligns with India's green economy goals and empowers students with real-world, industry-aligned skills for the future of clean mobility.

New Age Education Summit 2025

2 August 2025 at Mumbai

The New Age Education Summit, scheduled for August 2 at Radisson Hotel, Goregaon, Mumbai, is a focused event exploring innovation in learning methods and school transformation. It will cover emerging trends like gamification, personalized learning, hybrid classrooms, and mental health in education. With educators, school owners, consultants, and EdTech firms in attendance, the summit offers keynote addresses, innovation showcases, and panel debates. It emphasizes integrating technology into pedagogy and creating learner-centric environments. The event is ideal for those seeking practical insights and collaborations in modernizing India's K–12 and higher education landscape.

10th Global Education & Skill Summit (GESS) 2025

8–9 August 2025 at Delhi

Scheduled for August 8–9 in Delhi, the 10th GESS is a premier hybrid event bringing together stakeholders from school education, higher education, EdTech, and skill development sectors. The summit will feature keynote speeches, panel discussions, and innovation showcases, focusing on transformative learning, digital classrooms, and NEP implementation. Over 100 speakers and 750 delegates are expected, including policymakers, education entrepreneurs, and institutional leaders. The event offers networking, workshops, and an education innovation awards ceremony, making it a vital forum for shaping the future of learning and workforce readiness in India and globally.

33rd World Education Summit (WES) 2025

19-20 August 2025 at Delhi

The 33rd World Education Summit (WES) 2025, set to take place in New Delhi on August 19–20, is recognized as one of Asia's most influential and far-reaching platforms for thought leadership in education. Organized by Elets Technomedia, WES has evolved over the years into a key convergence point for top-tier policymakers, educationists, university chancellors, school principals, EdTech entrepreneurs, international delegates, and global development agencies.

This year's summit will focus on "Transforming Learning Ecosystems through Innovation and Inclusion," addressing key themes such as digital transformation in education, integration of emerging technologies, AI-driven learning platforms, future-ready curriculum frameworks, sustainable school infrastructure, and bridging urban-rural education gaps. Special emphasis will be placed on implementing National Education Policy (NEP) 2020, fostering public-private partnerships, and promoting equity and access in learning.

monsoon hits college days

Students, particularly girls, encounter major difficulties because of insufficient public transportation options for travelling to and from colleges and schools. Additionally, their weekday schedules are frequently disrupted by orange and red weather alerts during the monsoon season. Moreover, many academic days have been significantly impacted by sudden, intense rainfall across Kerala during the monsoon

Students' Struggle in heavy rains and lack of public Transportation

This article serves as an initial discussion on public transport and commuter facilities for students, elderly individuals, and women. Access to public transport is vital for these groups in our society. Despite enhancements in regular travel services, especially in Thiruvananthapuram, the public transport system continues to be insufficient in numerous semi-urban and rural areas of the state. Addressing this issue demands coordinated collective actions.

In the lush green landscape of Kerala, where the monsoon rains paint a picturesque backdrop, lies a persistent challenge for students and elderly people alike: the lack of adequate bus services connecting academic institutions with their residential areas. In spite of the fact that many institutions provide their own bus services for students and staff including government run institutions, there is a large majority of students especially girls struggle with inadequate transit options particularly in the semi urban and rural parts of the State.

For years, this deficiency has cast a shadow over the convenience of commuting, especially during the relentless downpours of the monsoon season. Earlier, it was not uncommon to witness the student-only or ladies-only buses particularly buses operated by Kerala State Road Transport Corporation (KSRTC) buses, but now a days, such buses are rare to see.

The shifting monsoon patterns, particularly during June and July, have had a considerable impact on academic activities in schools and colleges across Kerala. In recent years, intense and erratic rainfall has led to frequent class disruptions, school closures, and delayed academic schedules. According to reports from the Kerala State Disaster Management Authority, several districts have lost over 10–15 instructional days annually due to heavy rains, floods, and related calamities—especially since the major floods of 2018 and 2019. This recurring weather volatility continues to pose a challenge to maintaining consistent academic calendars in the State.

According to the Kerala State Planning Board's Economic Review 2023, the number of private buses in Kerala declined significantly from 19,145 in 2016–17 to 10,304 by 2022–23, out of a total fleet that also shrank from 25,449 to 14,317 during the same period. This sharp reduction reflects operational and financial stress faced by the sector, especially after COVID-19.

Shifting Monsoon Patterns and the Rise of Mesoscale Weather Extremes

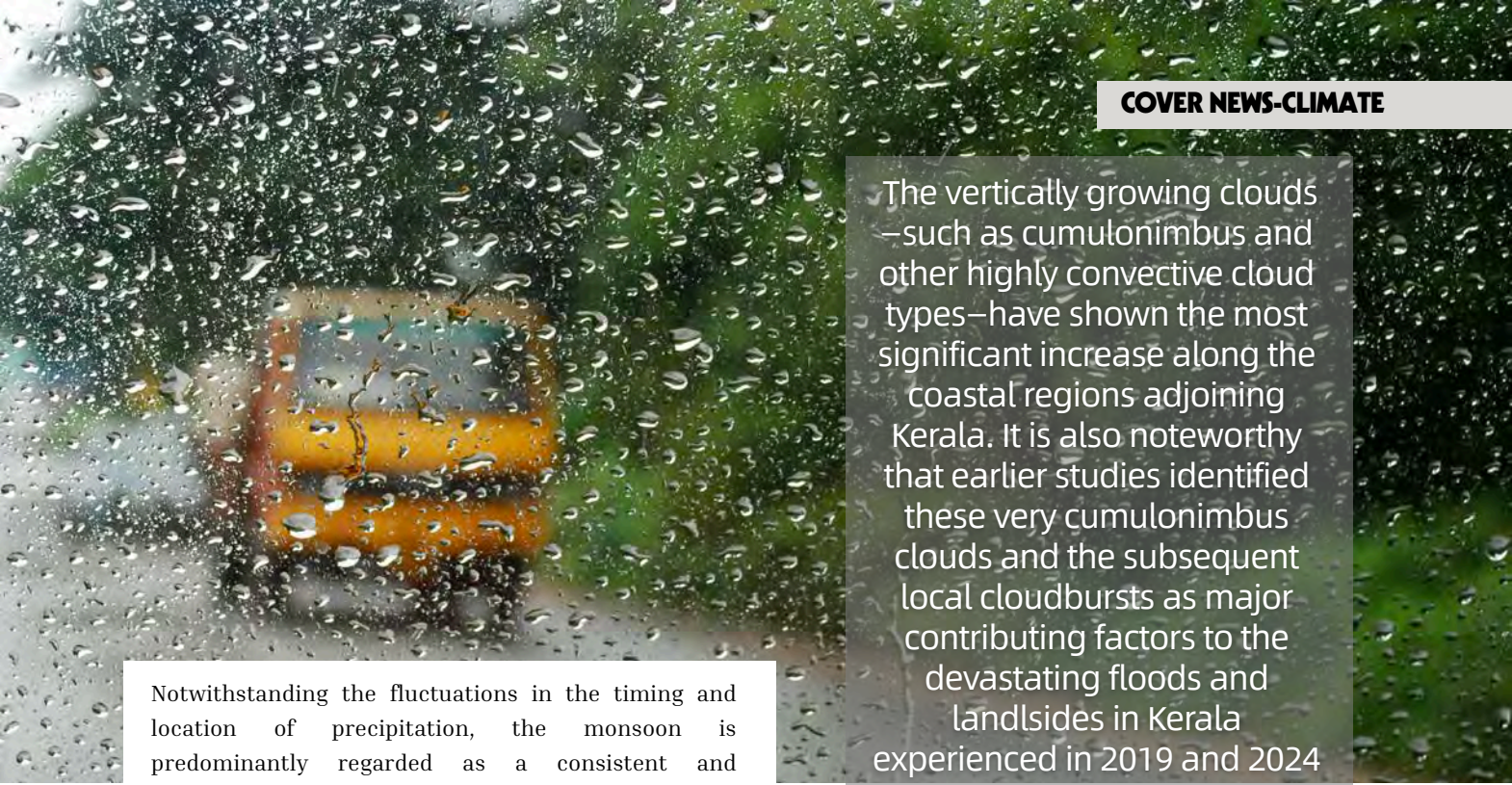
Abhilash S

The 6th Assessment Report by Intergovernmental Panel on Climate Change (IPCC) states with high confidence that human contribution to global warming is causing increasing frequency and severity of hot extremes worldwide, and many of these extremes were virtually impossible without climate change. The planet's average surface temperature has climbed 1.2 degrees Celsius compared to 1850-1900 baseline period. It has been hypothesized that every 1 degree temperature rise increases atmospheric water availability by 7%, causing heavier rains and rapid runoff. Increasing temperature can increase land evaporation, intensifying the dry season and drought. The faster water cycle caused by global warming can worsen floods and droughts.

The term "monsoon" is derived from the Arabic word "mausim," which means "season." The most significant feature of the monsoon is the significant seasonal variation in rainfall and winds. The seasonal variation in the direction of the surface winds has been the traditional method for identifying monsoonal regions. India is primarily an agricultural nation, and rainfall is the most significant and cost-effective source of water for agriculture. Consequently, it is of great importance to the agricultural sector. Approximately 80% of the annual rainfall in the Indian region is attributed to the Indian summer monsoon.

The Indian monsoon, vital for agriculture, faces increasing unpredictability due to climate change, affecting rainfall patterns and extreme weather events

India is considered as the land of monsoons. The impact of global warming due to GHG emission and counteracting impact of aerosol loading and cloud albedo feedback makes it difficult to produce reliable projections of Monsoons. However, IPPC report says with high confidence that, monsoon will become more erratic in such a way that, with warmer climate, wet and prolonged dry conditions will amplify further with possible implications for severe floods and prolonged drought conditions. However, frequency and location of these events depends on the projected changes in the regional circulation patterns. The slowdown of tropical circulation can partly offsets by warming induced strengthening due to heavy precipitation events over Indian region. Though, spatial and temporal variabilities are inherent part of Indian monsoon, there are preferred regions of deep clouds especially over Central India, North east India and northern parts of the Western Ghats regions. These are the potential breeding zones of cloudburst to mini cloudburst events and under warming climate, these regions may gets expanded and more and more regions in India will become prone to severe flash flood events.



The vertically growing clouds—such as cumulonimbus and other highly convective cloud types—have shown the most significant increase along the coastal regions adjoining Kerala. It is also noteworthy that earlier studies identified these very cumulonimbus clouds and the subsequent local cloudbursts as major contributing factors to the devastating floods and landlsides in Kerala experienced in 2019 and 2024

Notwithstanding the fluctuations in the timing and location of precipitation, the monsoon is predominantly regarded as a consistent and dependable component of India's climate. Recently, there have been significant alterations in the overall pattern and behavior of monsoon rains, characterized by an increased frequency of heavy rainfall and prolonged dry periods. In recent years, there has been a significant rise in the formation of low-pressure systems (LPSs) coinciding with the commencement of the southwest monsoon.

Along with the changes in the rainfall intensity and distribution, changes in the cloud structure especially along the mountainous terrains of the Western Ghats and Himalayan regions making those regions hotspots for cloudburst and Mini cloudburst events. Minicloud burst are another classification of intense short spells which may not exceed 10cm in one hour, the classical definition of cloud burst by India Meteorological Department. However based on the damage potential associated with less intense rain spells with rain intensity greater than 10 cm in 2 hours may cause flash floods and landslide along the slopes of Western Ghat mountains and Himalayan regions. Heavy rainfall for short duration especially from mesoscale mini cloudburst events also brings runoff water beyond the carrying capacity of the streams and flush off rain water more faster and rivers and mid land regions of the west coast often may experience frequent occurrence of flash floods. The combined effects of cloudburst, land slides and flash floods may get aggravated in the presence of degrading lands due to human activities such as quarrying, conversion of forest land to plantation and crop field.

A recent work published in npj Climate and atmospheric sciences by Sreenath etal (2022) reported a shallow to deep transformation in the cloud depth over the west coast of India during the recent decades of monsoon season. Notably, these vertically growing clouds—such as cumulonimbus and other highly convective cloud types—have shown the most significant increase along the coastal regions adjoining Kerala. It is also noteworthy that earlier studies identified these very cumulonimbus clouds and the subsequent local cloudbursts as major contributing factors to the devastating floods and landlsides in Kerala experienced in 2019 and 2024. The shift in cloud characteristics towards more explosive structures is now being observed as an emerging pattern along the west coast. The increasing frequency of deep convective cloud formations has emerged as a key driver of the squally weather conditions accompanied by intense lightning activity observed in recent times. These systems pose multiple hazards, including episodes of heavy rainfall, and represent a growing concern for weather-related risk assessment and disaster preparedness.

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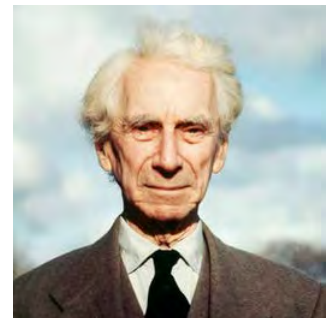


> The acquisition of knowledge is a matter of great joy, and it brings a sense of peace and satisfaction
>
> Bertrand Russel

Navigating the Shift: Choosing the Right Path in the Transition to Four-Year Undergraduate Programs

What to look for?

Jithin Mohan was one among many students of +2 grade along with their parents were at crossroads while choosing an appropriate institution for his higher studies. They are grappling with a crucial decision: the choice of one's pursuing undergraduate program. Especially to those who seeks something different than the conventional choice of professional programmes—an educational path that resonated with one's passions. This is particularly relevant in the context of transitioning our higher education degrees from three-year to four-year programs. There are wide range of possibilities in selecting programmes and courses in the current FYUG programmes.

Which is the Best College ?

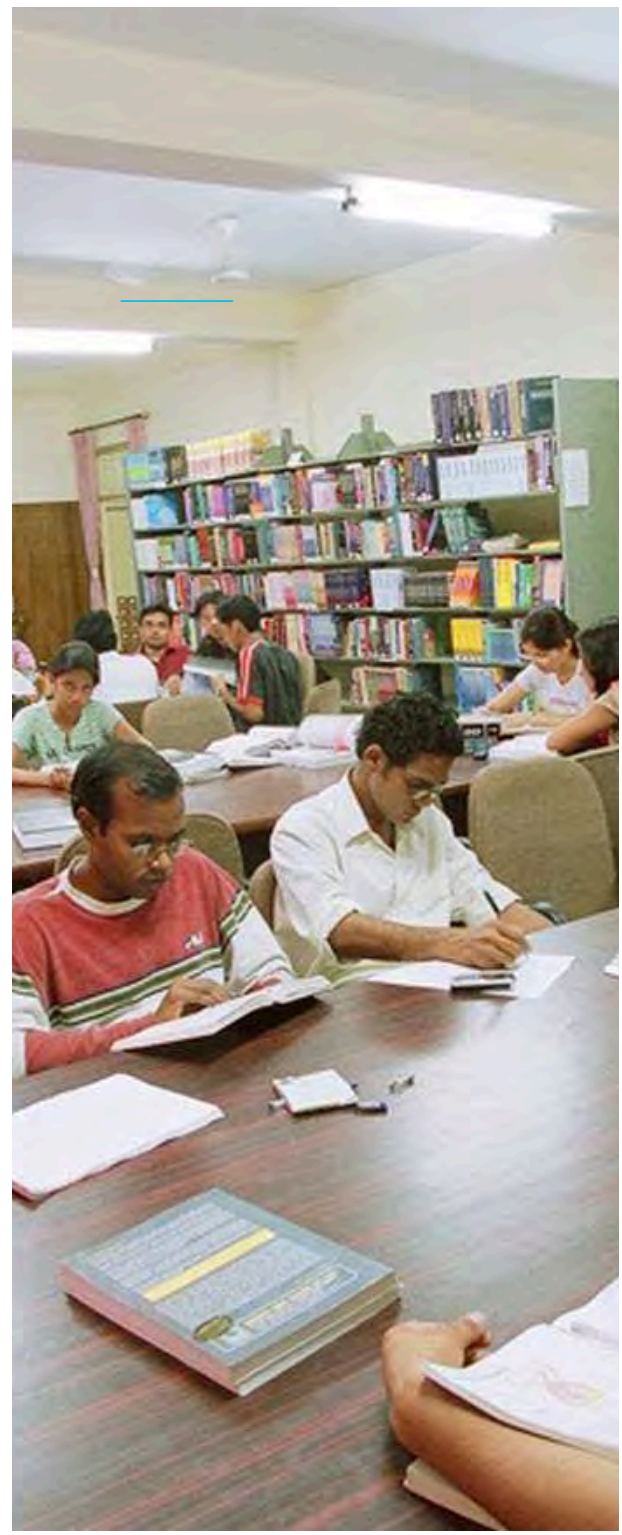
Many students and parents are increasingly showing less interest in conventional academic programmes or navigating the complex maze of entrance examinations for various professional courses. Instead, their focus is shifting toward general degree programmes in the Arts and Science domains. This shift in preference is often motivated by a desire for broader, interdisciplinary education that aligns with their interests and career aspirations beyond the technical fields.

However, for these students and their families, a new challenge arises—choosing the right college and programme of study. With a wide range of institutions offering diverse Arts and Science programs, making an informed decision can feel overwhelming. The primary concern is not only about finding a college that offers the desired courses but also about selecting one that maintains a strong reputation for academic excellence and future career prospects. Given that the ranking of institutions can significantly influence their decision, they need to consider factors such as the college's accreditation, faculty quality, campus facilities, placement records, and overall ranking in national and international educational lists.

The availability of accurate and reliable information about educational institutions is often limited for the general public. Instead of easy access to objective data, most people are exposed primarily to promotional material and advertisements from the institutions themselves. This creates a gap in public awareness, as many individuals lack access to authentic, detailed information regarding the true quality of these institutions, especially those located nearby. Furthermore, the academic programmes offered by different institutions can vary significantly in terms of content, resources, and overall quality. Unfortunately, this variability is often not well understood by prospective students or their families, making it difficult for them to make informed decisions.

However, for these students and their families, a new challenge arises—choosing the right college and programme of study.

Thus, navigating this process requires careful evaluation of multiple aspects, from the college's ranking to the specific strengths of its academic departments. For students and parents in search of quality education in non-professional domains, this decision-making process becomes crucial to ensuring a fulfilling and successful educational experience.



Top 10 Considerations for UG admissions

1. Institutional Ranking and Reputation

- **National and State Rankings:** Rankings from reputable agencies, such as the National Institutional Ranking Framework (NIRF), provide an insightful overview of institutions at both the national and state levels. Additionally, the Kerala Institutional Ranking Framework (KIRF) published its latest report that offers specific rankings for institutions within Kerala.
- **Global Rankings:** Increasingly, many institutions in India and Kerala are gaining global recognition, competing with international standards in terms of academics and infrastructure. Many Indian institutions have made significant strides in global rankings such as the Times Higher Education (THE) World University Rankings, QS World University Rankings, and others.
- **Subject-Specific Rankings:** For students focused on a specific field of study, it's important to look into rankings that evaluate institutions based on their performance in that particular discipline. NIRF, for example, provides rankings that are tailored to different subjects, helping students make an informed decision based on their academic interests.

2. Perception and Prestige

- **Student Enrollment and Retention:** Positive perception attracts more prospective students to apply and enroll. It also influences current students' decisions to remain at the institution.
- **Employer Perception:** Employers often consider an institution's reputation when recruiting graduates. A strong reputation can enhance graduates' employability and career prospects.
- **Research Opportunities:** Institutions with a positive image attract collaborations with other academic institutions, industry partners, and government agencies for research grants and projects.

3. Accreditation and Assessment

- **Accrediting Bodies:** Ensure the institution is accredited by bodies like NAAC (National Assessment and Accreditation Council) or NBA (National Board of Accreditation) or State Assessment and Accreditation (SAAC) and Kerala Institutional Ranking Framework (KIRF) for Institutions in Kerala.
- **Grades and Scores:** Look at the grades awarded by these bodies; higher grades often indicate better quality education and facilities.

4. Accessibility & Facilities

- **Facilities:** Most people consider the classroom facilities, lab equipment, libraries, and ICT tools. in colleges. In Kerala, SAAC gives weight to eco-friendly campuses and smart classrooms. Colleges with well-developed infrastructure enable seamless practical learning, especially in science, IT, and media-related courses.
- **Geographical Location:** Although the proximity to home is a criteria, ease of access via public transportation, and availability or hostel accommodation play important role.

5. Nature of Academic Programs

- **Course Offerings:** Availability of a wide range of courses and flexibility to switch majors or take interdisciplinary courses are now very important especially in the context of FYUGP.
- **Special Programs:** Honors programs, double degrees, and international exchange programs, dual programmes, twinning programmes are some of the interested nature of programmes in new system.

6. Innovation and Entrepreneurship Ecosystem

- Whether the college supports student startups, innovation cells, or links with Kerala Startup Mission (KSUM). Institutions with IEDC cells that encourage entrepreneurship and innovation culture.
- **Financial Aid:** Availability of institution endowments, ease of providing fellowships or grants or freeships, and other financial assistance programmes offered by the institution.

7. Infrastructure and Facilities

- **Campus Facilities:** Quality of classrooms, smart classes, resourceful libraries, laboratories with scientific equipments, sports and cultural activities & facilities, and student hostels and capacity.
- **Technological Resources:** Availability of modern technological tools, internet access, and online learning resources, LMS or hybrid learning methods.

8. Student Life and Extracurricular Activities

- **Campus Life:** Clubs, societies, cultural activities, and overall campus learning and vibrant environment.
- **Support Services:** Availability of counseling, career services, health services, and mentorship programs, skill acquisition programmes etc are essential for an Institution. Check their website for clarity and ensure that details are clearly given before choosing that.

9. International Exposure

- **Exchange Programs:** It is important to look for the availability of collaborative initiatives with foreign universities /institutions of international repute for various student exchange programmes.
- **Internship facilities:** It is essential to have tie up with quality institutions or industry/society for enabling better internship opportunities. Quality in utilising the internship portals offered by State and central governments.

According to the QS World University Rankings 2026 published last week, three Indian institutions made it to the top 200 list: IIT Delhi at 123rd place, IIT Bombay at 129th, and IIT Madras at 180th.

IIT Madras showed the most dramatic rise, climbing 47 spots from 227th in 2025. IIT Delhi also advanced significantly, moving up 27 ranks from its previous position of 150. Meanwhile, IIT Bombay saw a decline, dropping 11 places from its 2025 rank of 118.

10. Additional Considerations

- **Placement Records:** Historical data on placement rates, companies visiting the campus, average salary packages, and internship opportunities. This is important in the case of arts and science colleges also.
- **Class Size:** Although it has certain statutory obligations, smaller class sizes often lead to better student-teacher interaction.
- **Teaching Methods:** The incorporation of modern teaching methods, such as practical training, internships, and project-based learning, is essential. This includes technology-driven approaches like hybrid learning, LMS-based instruction, and more. In other words, it is important to assess whether teachers are genuinely equipped with the digital tools necessary to conduct smart classes.

Public Perception

Does public perception of a college matters really?

Higher education institutions are making every effort to improve their scores in assessment and ranking schemes, such as the National Assessment and Accreditation Council (NAAC), the National Institutional Ranking Framework (NIRF), and the Kerala Institutional Ranking (KIRF), among others. Significant improvements in these ratings are essential for their survival in today's highly competitive educational landscape.

An institution can enhance its public perception through various efforts. This may include ensuring high academic standards and hiring experienced, respected faculty members. It is also important to maintain a strong curriculum delivery system that adapts to changing educational needs. Providing robust student support services and career counseling is crucial. Ensuring high graduation and employment rates further strengthens an institution's reputation.

Institutions can also engage with the local community through service projects, partnerships, and events, showcasing their commitment to societal well-being. Maintaining open and honest communication with stakeholders, including parents, students, and the community, about achievements, changes, and challenges is key. Building strong relationships with alumni, highlighting their successes, and involving them in mentoring and networking opportunities can contribute positively to public perception.

Investing in state-of-the-art facilities, technology, and resources is important to create a conducive learning environment. Additionally, utilizing effective marketing strategies and media relations helps highlight the institution's strengths, successes, and unique programs.

One global example of public perception significantly impacting an educational institution's growth and goals is the case of Harvard University. Despite ranking highly in various accreditation systems such as the U.S. News & World Report and having strong NAAC-like evaluations, Harvard's public perception, largely driven by its alumni, legacy, and global recognition, plays a crucial role in attracting top-tier students and faculty, as well as major funding. This perception of excellence often goes beyond any ranking mechanism and shapes its continued dominance in the educational sphere.

In India, one prominent example is the Indian Institute of Technology (IIT) Bombay. Despite the presence of formal ranking mechanisms like the National Institutional Ranking Framework (NIRF) and accreditation bodies such as NAAC, the public perception of IIT Bombay plays a critical role in its success. It is widely regarded as one of the top institutions in the country, not just because of its rankings but due to its historical reputation, alumni network, and societal impact. The strong public perception of IIT Bombay attracts top-tier students, global collaborations, and significant funding, beyond what rankings alone can explain.

Public perception, while not always in line with ranking mechanisms or accreditation criteria, can influence an institution's success. These perceptions are shaped by a variety of factors, including media portrayal, alumni success, societal impact, and word of mouth.

The Abductive Discovery Process in Scientific Reasoning

Exploring the Role of Abductive Reasoning in Scientific Discovery: A Process that Generates Innovative Hypotheses and Uncovers Deeper Principles in Physics and Beyond

Gangan Prathap

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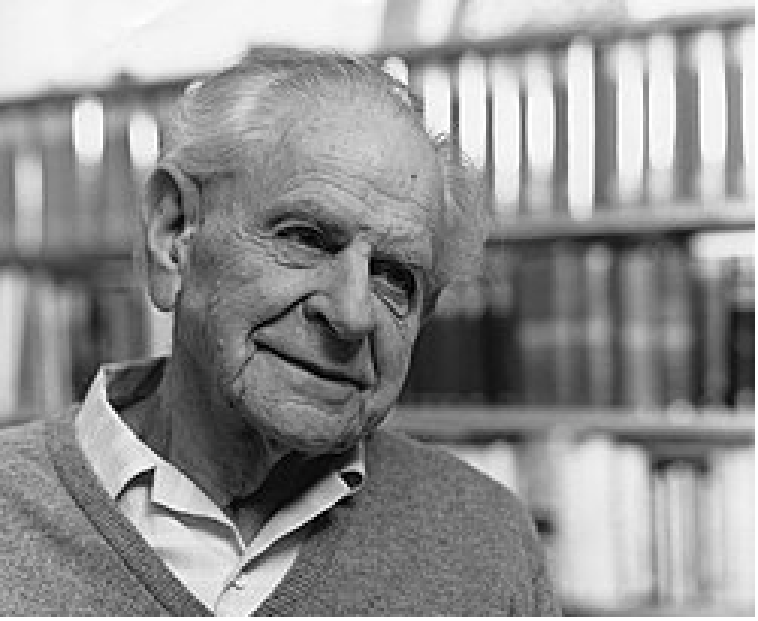
1. Introduction:
The Role of Abduction in Science

Scientific reasoning has traditionally been framed in terms of deduction (deriving conclusions from general principles) and induction (inferring general laws from observations). However, major scientific breakthroughs often begin with abduction—a form of reasoning that generates the best explanatory hypothesis from incomplete data.

This distinction aligns with Karl Popper's concept of the Logic of Discovery (how hypotheses are formed) versus the Logic of Justification (how they are tested and validated). While traditional science education focuses on justification, many of the most significant discoveries in physics arose through abductive reasoning—where an unexpected structural insight suggested a deeper unification of concepts.



2. The Duality of Kinetics and Kinematics

A striking example of abductive reasoning in physics can be found in the interplay between kinetics (forces, without direct reference to motion) and kinematics (motion, without direct reference to forces). Classical mechanics treats these as separate domains, yet their deep interconnection suggests a more fundamental principle.

- Kinetics focuses on force interactions, energy, and impulse, but does not specify how an object moves as a result.
- Kinematics describes motion in terms of velocity, acceleration, and displacement but does not account for the causes of motion.
- The apparent separation between the two invites an abductive question: Is there a missing link that unifies these descriptions?

The Newtonian equation of motion, , is often taken as a fundamental postulate. However, by approaching it abductively, we can derive it from deeper principles such as:

- **Thermodynamic principles:** Systems evolve toward configurations that minimize certain energetic constraints, suggesting that force and acceleration are related via a conserved quantity.
- **Entropy and information considerations:** The evolution of dynamic systems suggests a preference for descriptions that maximize predictability, reinforcing a relationship between force, mass, and acceleration.
- **Kinematic-kinetic duality:** The simplest transformation between force-based (kinetics) and motion-based (kinematics) descriptions leads to a proportionality that naturally gives rise to Newton's Second Law.

This approach reframes not as an arbitrary axiom, but as a consequence of deeper physical constraints—uncovered abductively.

3. Broader Implications: Abduction in Science and Beyond

Recognizing abduction as a core component of scientific discovery has significant implications:

- **Improving scientific pedagogy:** Teaching physics as an exploratory process rather than a fixed set of laws can foster deeper understanding and innovation.
- **Guiding interdisciplinary research:** Many breakthroughs occur when patterns from one domain are abductively transferred to another (e.g., thermodynamic entropy and information theory).
- **Shaping future scientific inquiry:** By explicitly recognizing abductive reasoning, we can refine our approach to problem-solving, allowing for more creative and structurally insightful hypotheses.

> ***By formalizing and teaching abduction alongside deduction and induction, we can cultivate a more comprehensive understanding of scientific reasoning***

4. Conclusion

The abductive approach is not only how discoveries like Newton's Laws, Einstein's Relativity, or quantum mechanics emerged—it remains vital for uncovering new physical principles. By formalizing and teaching abduction alongside deduction and induction, we can cultivate a more comprehensive understanding of scientific reasoning.

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The Integration of Indian Knowledge Systems into Syllabus Promotes Hinduization of Education

CP Rajendran

The National Education Policy (NEP) 2020 has emphasized the integration of IKS into the education system at all levels—school, college, and research. If one carefully examines the statements and policies of the country's politicians and policymakers, it becomes evident that the Indian Knowledge System (IKS) is a political project aligned with the Hindutva ideology of the ruling regime.

A critical analysis of the IKS reveals that it predominantly focuses on ancient India—specifically Hindu India—while sidelining other rich intellectual traditions. The proponents of IKS rarely acknowledge materialist and agnostic schools of thought, such as Charvaka, Buddhism, and Jainism, which actively challenged Vedantic traditions in ancient India. Moreover, the contributions of Muslim scholars and intellectuals, who were integral to India's heritage, are either ignored or disparaged. This selective representation stands in stark contrast to how other civilizations—such as the Greek city-states, the Roman Empire, Arabia, China, and Egypt—celebrate their diverse intellectual traditions.

Image Credit: IISc Publication Cell

This selective representation stands in stark contrast to how other civilizations—such as the Greek city-states, the Roman Empire, Arabia, China, and Egypt—celebrate their diverse intellectual traditions

Claiming that only "we" possess all knowledge while dismissing others as ignorant echoes the arrogance of colonial masters, who believed that only white men were enlightened, while the rest of the world was ignorant. We must resist the West's colonization of knowledge—but not by becoming frogs in a well, confined to narrow perspectives. It is unwise to blindly glorify everything labelled "Indian" as superior while rejecting foreign ideas as inherently bad. Obsession with past glory serves little purpose in a rapidly evolving world. There is no harm in making students aware of India's intellectual contributions. However, a closer look at the rhetoric of policymakers reveals that IKS is less about genuine scholarship and more a political project aligned with the ruling regime's Hindutva ideology.

From the Prime Minister to other ministers, bureaucrats, so-called scientists, and even some Vice-Chancellors, there is a concerted effort to propagate the myth that ancient Indian scholars had comprehensive knowledge of modern concepts—be it the universe, atoms, stem-cell and test-tube technology, plastic surgery, or advanced aviation and warfare. Such claims, often exaggerated or outright false, are frequently promoted through supposedly secular academic platforms like the Indian History Congress and the Indian Science Congress.

Image Credit: https://depositphotos.com/

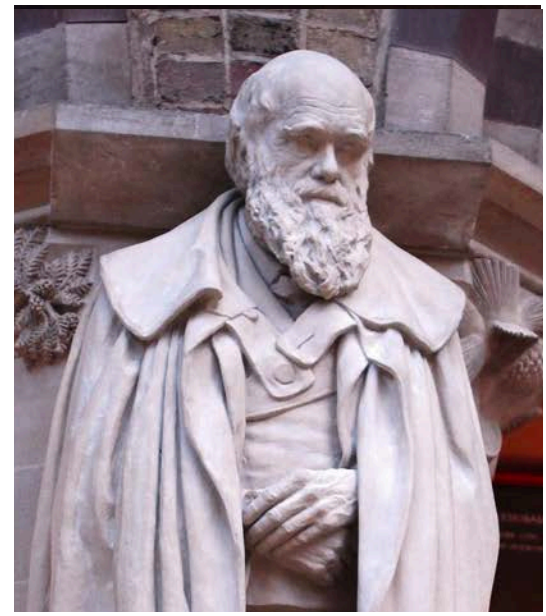
Image credit: canva.com

The situation took a more alarming turn when a government minister openly dismissed Charles Darwin's theory of evolution as "nonsense," claimimg that humans descended from apes.

The situation took a more alarming turn when a government minister openly dismissed Charles Darwin's theory of evolution as "nonsense," claimimg that humans descended from apes. Soon after, the Central Board of Secondary Education (CBSE) removed the lesson on Darwin's theory from the Class 9 and 10 science syllabus—a move that reflects the growing influence of unscientific and regressive ideologies in education. At the same time, there has been a systematic effort to undermine modern medicine (Allopathy) while portraying indigenous systems as cure-alls.

In the realm of education, some state governments aligned with Hindutva ideology have pushed to make the Bhagavad Gita compulsory in schools, framing it as a source of ethical values. Certain textbooks have also presented Hindu mythological figures as historical persons, blurring the line between faith and fact. Meanwhile, these governments have criticized convent schools and madrasas for imparting religious education, raising concerns over double standards in educational policy.

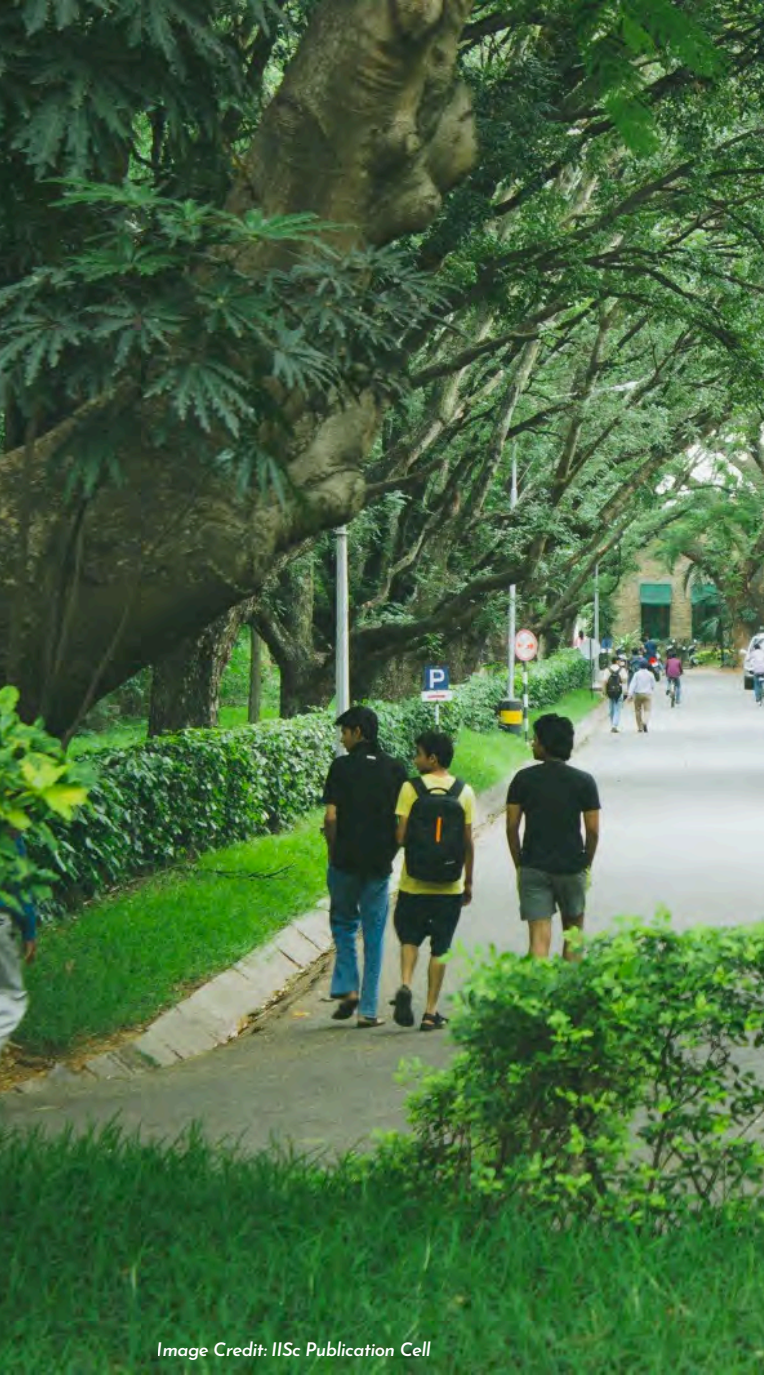

Image Credit: IISc Publication Cell

Even as school textbooks are being rewritten to accommodate Indian Knowledge Systems (IKS), higher education institutions—particularly the IITs—have already become hubs for their promotion. IIT Gandhinagar began offering IKS courses as early as 2015. In December 2021, IIT Kharagpur established a full-fledged Centre for Excellence in IKS and IIT Delhi, meanwhile, houses its controversial "cow-urine research centre." In 2022, the AICTE granted IIT Madras and IIT BHU (Varanasi) their own IKS centres. The approved projects range from designing cities based on Vastushastra (IIT Roorkee) and chemically analysing yagna byproducts (IIT Bombay) to studying the sound spectra of mantras and the geometric patterns of yantras (IIT Kanpur).

The government must prioritise addressing the structural issues plaguing higher education in India, rather than wasting time and resources on superficial fixes and taking the students to obscurantism.

This integration of Hindu-centric knowledge systems (branded as "Indian") into education is a massive social engineering project—one that risks fostering Hindu chauvinism and entrenching superstition in Indian society. The problem is compounded when concepts extracted from IKS—presented as valid in the 21st century—contradict the fundamental principles of modern science.

The celebrated notion of "integral unity"—the supposed holism between spirit and matter—defies the last five centuries of scientific progress since the Scientific Revolution. Attempting to merge Vedic thought with modern education will not produce critical thinkers but pseudoscientists, rather than genuine scientific inquiry.

The government must prioritise addressing the structural issues plaguing higher education in India, rather than wasting time and resources on superficial fixes and taking the students to obscurantism. Most importantly, Indian universities suffer from chronic underfunding, excessive bureaucratic control, and shrinking academic freedom. Overregulation by the UGC, coupled with undue interference from governors (as chancellors) and political actors, has rendered many institutions dysfunctional and directionless.

Moreover, the space for free academic inquiry is rapidly diminishing. Universities and educational centres increasingly face hostility, with intolerant groups launching verbal and even physical attacks on campuses. Without meaningful reform, the future of India's higher education system remains at risk.

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- Enabling the holistic and comprehensive ranking of the 1500+ higher education institutions in the state.
- Pioneering step in the country in quality assurance in Higher Education.

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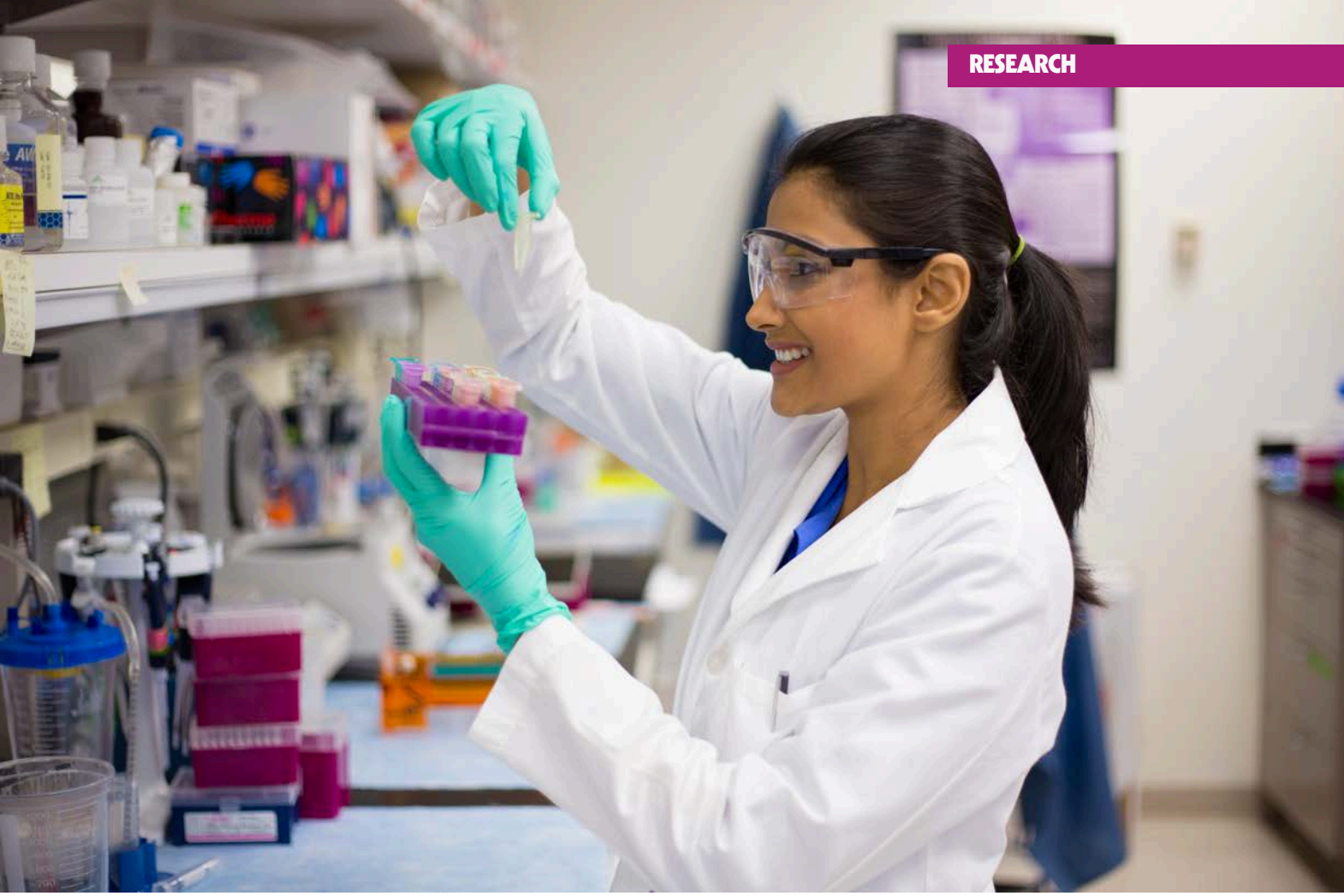

India's Global Push in Research and Innovation

Strategic Initiatives to Attract Global Talent and Strengthen Domestic R&D Amid Shifting International Funding Trends

With research funding facing uncertainty in the United States, several countries are actively developing robust research ecosystems to attract top global talent and fuel innovation. Nations such as China and members of the EU are offering competitive funding, infrastructure, and incentives to draw leading scholars. In response, India is also reshaping its R&D landscape through focused initiatives designed to integrate international expertise and bolster domestic research. Some of these key schemes are outlined below.

VAJRA (Visiting Advanced Joint Research Faculty)

- VAJRA is a flagship initiative by the Government of India designed to attract overseas scientists and academicians of Indian origin, as well as foreign researchers, to collaborate with Indian institutions. Administered by the Department of Science and Technology (DST), the programme facilitates short- to medium-term research engagements (1–3 months) focused on high-impact research, innovation, and mentoring in emerging areas of science and engineering. VAJRA provides generous funding support, offering an honorarium of ₹15 lakh for a month-long visit, prorated for shorter durations, along with travel, accommodation, and research contingency support. The programme aims to strengthen India's research ecosystem by leveraging global expertise, fostering academic collaboration, and accelerating innovation-driven growth in Indian universities, national laboratories, and R&D institutions.
- 🔗 https://vajra-india.in

VAIBHAV (Vaishvik Bhartiya Vaigyanik)

- The VAIBHAV (Vaishvik Bhartiya Vaigyanik) Fellowship is a prestigious initiative by India's Department of Science and Technology (DST) under the Ministry of Science & Technology, designed to strengthen research collaboration between the Indian STEM diaspora (NRIs/PIOs/OCIs) and top-tier Indian higher-education and research institutions. VAIBHAV fellows—esteemed scientists with at least five years of experience abroad—can spend up to two months per year for three years at an Indian host institution, sharing expertise, mentoring students, and initiating joint research in strategic fields like quantum technologies, AI, energy, and biotechnology. The fellowship offers a monthly grant of ₹4 lakh, business-class international travel, accommodation, contingency support, and up to ₹5 lakh in institutional overheads, fostering global knowledge exchange and innovation in India's research ecosystem
- https://dst.gov.in/callforproposals/vaishwik-bhartiya-vaigyanik-vaibhav-fellowship-call-2025

BRAIN GAIN: Kerala's Academic Diaspora Reconnect Initiative

Reversing Brain Drain through Global Scholarly Engagement in State Universities

Amid shifting global dynamics in research and innovation, and with research funding uncertainties in the United States, India has launched national initiatives such as VAJRA, VAIBHAV, and SIRE to attract international academic talent. At the state level, however, Kerala has taken a pioneering step through the 'BRAIN GAIN' scheme, specifically targeting the academic diaspora of Keralite origin. Launched by the Kerala State Higher Education Council (KSHEC), the programme seeks to reverse brain drain by facilitating short-term teaching and research residencies for scholars from across the globe.

The scheme enables Keralite-origin scholars working abroad to engage in residencies lasting from three months to one year at public universities in Kerala. These visits are timed to align with academic sabbaticals or holidays, ensuring both feasibility and effectiveness. Participating universities must submit proposals detailing the scholar's expected contribution and the institutional benefits of the engagement.

Generous funding support is offered, including a monthly honorarium of ₹1,00,000, economy airfare (or business class for distinguished scholars), accommodation assistance, office expenses, and local travel reimbursement. Scholars based within India are also eligible for scaled-down support.

More than a mobility initiative, BRAIN GAIN represents Kerala's strategic effort to reintegrate global academic excellence into its higher education ecosystem—building sustainable capacity and fostering innovation at the regional level

SIRE (Science and Engineering Research Board International Research Experience)

- SERB International Research Experience (SIRE) is a flagship fellowship programme by the Science and Engineering Research Board (SERB) under the Department of Science & Technology, Government of India. It provides 2–6 month overseas research training for Indian researchers holding a Ph.D. and permanent position in an Indian institution, aiming to strengthen national capacity in frontier scientific and engineering domains . Selected fellows receive a monthly stipend of US$3,000, one-time contingency funds (~₹75,000), overseas medical insurance, and round-trip economy air travel. Applicants must secure a host institution's support, submit a research plan, and be under 40 years old (with age relaxations). Applications are submitted via the SERB online portal, and selection is based on research merit and institutional endorsement.
- https://serb.gov.in/page/sire

ANRF (Anusandhan National Research Foundation)

- The Anusandhan National Research Foundation (ANRF), established under the ANRF Act of 2023, is India's apex R&D body under the Ministry of Science & Technology, created to drive high-level strategic research across universities, research institutes, and labs . Absorbing the former SERB, ANRF provides funding, oversight, and policy direction, in alignment with the National Education Policy and the vision of "Viksit Bharat 2047" . With a ₹50,000 crore target fund (₹966 crore allocated for 2024–25), ANRF offers grants and fellowships—such as ARG, J.C.Bose Grant, PAIR, PM-ECRG, and IRG—to foster innovation, interdisciplinary collaboration, inclusive research, and partnerships between academia, industry, and government.
- https://dst.gov.in/anusandhan-national-research-foundation-anrf

Did you know?

According to a new survey from CFA Institute, finance tops the list of career preferences among Indian graduates (38%) followed by IT (32 %) and Education (21 %) and 61% seek careers with societal impact.

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ONLINE DIGITAL REPOSITORY

From Your Desk to Every Student

01. WHO CAN SUBMIT?

Teaching faculty of any college/university can submit the course contents/entire course contents (UG or PG Programmes) in digital form, to this Online Digital Repository, which will be hosted on KSHEC website.

02. WHAT TYPE OF CONTENTS?

The digital materials must be in the form Video lectures, content videos, Audio, PPTs or the YouTube link of video contents. The contents must be either module/unit wise or course wise. Mention the University, Programme, Semester, Topic etc.

03. QUALITY OF CONTENTS

The scope of digital technology should be effectively used for preparing the digital resources. The academic quality and technological quality of contents must be ensured. Time to Time updation of contents must also be done.

04. HOW TEACHERS BENEFIT?

The Kerala State Higher Education Council will provide Certificate of Appreciation to the contributors. Larger community of stakeholders will have access to these online materials and will get wider reach.

The Kerala State Higher Education Council

Contact: 7561018708

Turn your lectures into lasting legacies. Submit your course materials to the KSHEC digital repository today!

Breaking Barriers

UGC's New Guidelines Allowing Students to Pursue Two Academic Programmes Simultaneously

In the recent move, the University Grants Commission (UGC) has unveiled new guidelines in May 2025 that enable students to pursue two academic programmes at the same time. This step is a part of aiming to reshape higher education and promote a more integrated and flexible learning environment.

Pursuing Two Programmes Simultaneously

For many students, the idea of studying two academic programmes might have seemed far-fetched or impractical. However, the UGC has now made it possible, offering greater flexibility and more opportunities for students to deepen their knowledge and skills across multiple fields. The guidelines aim to break down traditional academic boundaries, allowing students to explore interdisciplinary subjects that once seemed separate, like arts and sciences, vocational and academic streams.

These objectives prioritize the development of a student's intellectual curiosity, creativity, and ethical values, while also making sure that education is accessible, inclusive, and relevant to the needs of a rapidly changing world.

Some of the core goals include:

1. Recognition of Unique Capabilities: The focus is on recognizing and nurturing each student's individual strengths, both academically and in extracurricular areas. Teachers and parents are encouraged to support students' all-around development.
2. Breaking Down Silos: The guidelines aim to eliminate the traditional separation between different disciplines, like the divide between arts and sciences. By removing these barriers, students will have the chance to pursue integrated, interdisciplinary learning that reflects the interconnectedness of knowledge in the real world.
3. Holistic Education: Students will have the opportunity to gain a broad-based education that spans across disciplines such as science, humanities, arts, and social sciences. This approach will help develop well-rounded individuals who can tackle complex global challenges.
4. Personalized Learning: The new guidelines allow students to pursue specialized study in areas of personal interest, while also fostering ethical values, creativity, and intellectual curiosity. This approach helps students become not only skilled professionals but also responsible and thoughtful global citizens.
5. Diverse Learning Opportunities: The guidelines provide a rich palette of subjects, including technical, vocational, and professional courses, in addition to traditional academic areas. This diversity allows students to chart their own academic journeys and prepare for a variety of career paths.

Students can now pursue two full-time academic programmes in physical mode, as long as their class schedules do not overlap. This option is perfect for students who want to dive deep into two distinct fields of study

How Will It Work?

The guidelines are structured to give students maximum flexibility in how they approach their studies.

Here's what it looks like:

- Two Full-Time Programmes: Students can now pursue two full-time academic programmes in physical mode, as long as their class schedules do not overlap. This option is perfect for students who want to dive deep into two distinct fields of study.
- One Physical, One Online: Students can pursue one full-time physical mode programme alongside an Open and Distance Learning (ODL) or online programme. This option is especially ideal for those who want to enjoy the benefits of in-person learning while exploring subjects remotely.
- Two Online Programmes: The flexibility extends to students who prefer learning remotely, as they can simultaneously pursue two ODL or online programmes.

However, the guidelines emphasize that all online and distance learning programmes must be pursued from institutions recognized by the UGC or relevant statutory bodies. This ensures that students receive quality education that meets established standards.

The guidelines stipulate that:

- All programmes must comply with the existing UGC regulations and those of respective statutory or professional councils.
- These guidelines apply only to undergraduate and postgraduate programmes, not to Ph.D. courses.

The guidelines also clarify that any simultaneous academic pursuits before the formal notification of these guidelines will be validated if they adhered to existing regulations.

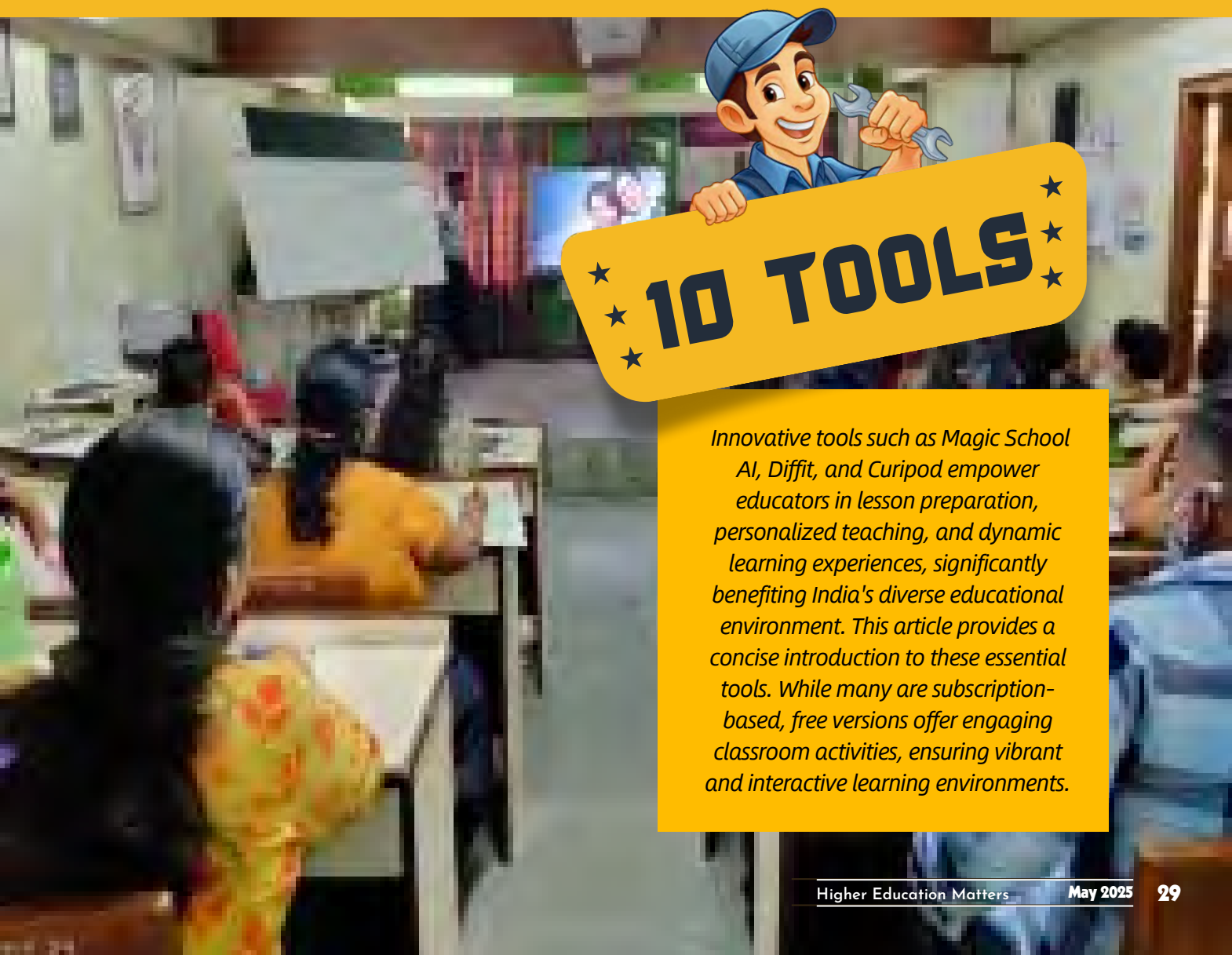
New Possibilities

This new approach marks a significant shift in how higher education is structured in India. It's not just about offering more programmes but creating pathways for students to combine their interests, broaden their horizons, and build the kind of multi-dimensional education that today's world demands.

Universities are encouraged to adapt and implement these guidelines, providing students with the flexibility they need to make the most of their academic experience.

AI Powered Teaching-Learning Tools

Artificial intelligence has revolutionized education, simplifying classroom management, enriching content development, and boosting student involvement



Innovative tools such as Magic School AI, Diffit, and Curipod empower educators in lesson preparation, personalized teaching, and dynamic learning experiences, significantly benefiting India's diverse educational environment. This article provides a concise introduction to these essential tools. While many are subscription-based, free versions offer engaging classroom activities, ensuring vibrant and interactive learning environments.

1. magic school

Magic School AI is an innovative platform offering over 80 AI-powered tools for various classroom tasks across subjects from lesson planning to classroom management. It simplifies student communication and Induvidualised Educational Plan (IEP) preparation. Though, this platform has gained significant use in school education earlier, now a days teachers in higher education sector also rely on Magic School AI to reduce their workload and enhance student engagement. In general, Magic School AI assists teachers in creating structured and standards-aligned lesson plans quickly and efficiently. Most important features include it generates daily or weekly lesson plans based on your module/unit based syllabus. It helps to customise activities, assignments etc. according to the Course Outcomes. Lesson Plan Generator is a valuable resource for educators seeking to create well-structured, standards-aligned lesson plans.

Applications Across Disciplines:

- English Language Arts: Generating reading comprehension exercises, grammar quizzes, and essay prompts. The AI chatbot assists in providing feedback on writing assignments and offers personalized writing tips.
- Mathematics: Interactive tools for creating math quizzes, problem-solving exercises, and adaptive learning modules that adjust difficulty based on student performance. Automated content creation helps generate math worksheets and instant feedback on student solutions.
- Science: Virtual labs and simulations for conducting experiments in physics, chemistry, and biology. AI tools assist in explaining complex scientific concepts through interactive animations and simulations.
- Social Studies: Historical timeline generators, map quizzes, and interactive lessons on world cultures and geography. AI chatbots provide contextual information and answer student queries about historical events and societal structures.
- Special Education: Customizable AI tools for creating individualized education plans (IEPs), tracking progress, and providing adaptive learning materials tailored to students with diverse learning needs.

2. worksheet zone

Worksheet Zone is a popular platform among educators for its ability to generate customizable worksheets tailored to various subjects. This tool is excellent for school levels largely, especially for exam preparation, drills, and curriculum-based worksheet generation. It can be customised for college level also. For example, in formative assessments this tool is very effective.

Applications Across Disciplines:

- Mathematics: AI-powered tools help create worksheets and quizzes covering algebra, geometry, and arithmetic. These interactive formats support digital solving and automatic grading, ideal for efficient assessment during exam preparations.
- Science: Teachers benefit from a rich resource library for generating physics, chemistry, and biology worksheets and experiments. Interactive lab activities and simulations engage students in practical learning experiences.
- English Language Arts: Tools facilitate grammar exercises, vocabulary building, and literary analysis. Reading comprehension passages and activities enhance language skills.
- Social Studies: Educators can design worksheets exploring historical events, geography, and cultures. This includes map quizzes, timelines, and research assignments tailored to different regions and periods.
- Languages (Hindi, Sanskrit, etc.): Teachers create grammar, vocabulary, and comprehension practice worksheets, with tools for script writing and translation exercises.
- Special Education: Tools allow customization for students with disabilities or special needs, supporting adapted materials and assessments aligned with IEP goals.
- Worksheet Zone's interactive and printable formats cater to both digital and traditional classrooms, supporting diverse teaching methods and enhancing student engagement.

Disclaimer: This list of AI tools is not based on any formal survey or exhaustive study. The tools are presented in no hierarchical order, and only ten popular options have been selected for illustrative purposes. Readers are advised to treat this compilation as a basic reference. The magazine's sole intent is to provide preliminary information on emerging AI tools in education.

3. pictory ai.

Pictory AI is a powerful and intuitive tool used by teachers to seamlessly convert text-based content—such as lecture notes, blog articles, and scripts—into high-quality videos featuring voiceovers, captions, and rich stock visuals. It is increasingly popular across a range of educational settings, including online coaching platforms, YouTube educational channels, teacher training modules, and remote learning environments. Pictory is favored by both individual educators and edtech startups aiming to scale content production efficiently while maintaining a polished, professional output.

Applications Across Disciplines:

- STEM Subjects (Science, Technology, Engineering, Mathematics): Teachers utilize Pictory AI to convert complex scientific concepts and mathematical principles into visually engaging videos. Stock visuals and animations help illustrate abstract ideas, making STEM subjects more accessible and stimulating for students.
- Language Arts and Humanities: Supports the creation of narrative-driven videos. It transforms literary texts, historical narratives, and cultural analyses into visually compelling stories with voiceovers and thematic imagery, enhancing understanding and appreciation of diverse subject matter.
- Social Sciences: It aids in visualizing social sciences content such as sociology, anthropology, and political science. It creates videos that explore societal structures, historical events, and cultural phenomena through interactive visuals and explanatory voiceovers, enriching learning experiences.
- Business and Economics: For business and economics education, Pictory AI converts text-based content on financial concepts, market trends, and business strategies into informative videos. Graphs, charts, and data visualizations are used to clarify complex economic principles and enhance student comprehension.
- Creative Arts and Design: Educators in creative arts and design leverage Pictory AI to produce videos showcasing artistic techniques, design processes, and creative projects. The tool incorporates visual demonstrations, interviews, and creative insights to inspire students and deepen their artistic understanding.

4. curipod

Curipod is a dynamic interactive presentation tool that helps to transform traditional, static slide decks into engaging, participatory learning experiences. By integrating features such as live polls, quizzes, word clouds, visuals, and open-ended responses, Curipod facilitates active learning, helping teachers shift away from lecture-heavy formats toward more collaborative and student-centered instruction. The platform has seen growing adoption in schools, particularly those with a focus on technology integration and 21st-century skills. Curipod is gaining traction as a key tool in flipped classrooms and hybrid learning environments, where students engage with content interactively during and beyond class time. This can be effectve in undergarduate education level, as its key features support active learning. by fostering interactive, personalized, and modern learning experiences.

Applications Across Disciplines:

- Mathematics and Sciences: Teachers leverage Curipod's interactive features like live polls and AI-generated feedback to foster active participation in solving math problems and conducting scientific experiments. Visual aids and multimedia integration enrich lessons on complex concepts, making abstract ideas more accessible and engaging for students.
- Language Arts: In language arts, teachers use Curipod to create interactive lessons that include word clouds for vocabulary exploration, open-ended questions for literary analysis, and multimedia elements to illustrate literary themes. This approach not only deepens understanding but also encourages critical thinking and creativity in language studies.
- Social Studies: Curipod supports social studies with tools for creating interactive timelines, map quizzes, and surveys that engage students in exploring historical events, geographical regions, and cultural contexts. This interactive approach helps students connect with historical narratives and geographical concepts more vividly.
- Multilingual Support: For language education, Curipod's multilingual support allows educators to translate lessons into 86 languages, facilitating bilingual and ESL/ELL instruction. This feature promotes inclusivity and ensures that language barriers do not hinder students' access to educational content.
- Special Education: In special education settings, Curipod's customizable lessons and diverse interactive formats cater to individual learning needs. Teachers can adapt lessons with personalized content and differentiated instruction, supporting diverse learning styles and abilities effectively.

5. Diffit

Diffit offers versatile tools for developing reading passages and comprehension questions tailored to various student reading levels, making it particularly valuable for English and Social Studies teachers in multi-level classrooms, including those in inclusive educational settings. It supports in creating customized instructional materials that meet the diverse needs of students of all levels. It is effective both in school and college level educational purpose.

Applications Across Disciplines:

- English Language Arts: Teachers use Diffit to create reading passages and comprehension exercises that cater to different proficiency levels. This includes materials for grammar practice, vocabulary development, and literary analysis, enhancing language skills across diverse student groups.
- Social Studies: In Social Studies, Diffit aids educators in developing content that explores historical events, geographical contexts, and cultural diversity. Teachers can create differentiated materials that engage students in critical thinking and deepen their understanding of societal issues and global perspectives.
- Science: Educators utilize Diffit to create leveled reading materials and comprehension tasks that align with scientific concepts and principles. This supports differentiated instruction in areas such as biology, chemistry, and physics, fostering deeper engagement and understanding among students.
- Mathematics: Diffit supports math teachers by providing tools for developing differentiated word problems, explanations, and examples that address varying levels of mathematical proficiency. This aids in reinforcing core concepts and improving problem-solving skills in diverse classroom environments.
- In teacher education programmes, it can generate leveled, inclusive learning materials, fostering skills in differentiated instruction, language simplification, and assessment design .

6.Leonardo AI

Leonardo AI is widely used to create educational charts, digital illustrations, and creative content that effectively communicate complex concepts. This tool supports project-based learning and visual storytelling, fostering creativity and enhancing educational practices across various disciplines. Especially in art, design, and STEM subjects, for its innovative capabilities in generating visuals, animations, and concept art.

Applications Across Disciplines:

- Art and Design: Leonardo AI empowers art and design educators to generate unique visuals and digital illustrations. It facilitates the creation of concept art and supports students in exploring different artistic styles and techniques, fostering creativity and visual expression.
- STEM Subjects (Science, Technology, Engineering, Mathematics): In STEM education, Leonardo AI aids teachers in creating visuals and animations that illustrate scientific principles, mathematical concepts, and engineering designs. It enhances learning by providing interactive and visually engaging content that simplifies complex ideas.
- Digital Media and Communication: Educators in digital media and communication leverage Leonardo AI to produce multimedia content such as infographics, presentations, and interactive graphics. This supports effective communication of ideas and enhances student engagement in media studies and communication courses.
- Creative Problem-Solving: Leonardo AI promotes creative problem-solving by enabling educators to visually conceptualize solutions and prototypes.
- It supports iterative design processes and facilitates brainstorming sessions where students can explore innovative ideas across various educational projects.
- Its versatile features, including AI image and video creation, realtime canvas editing, and 3D texture generation, cater to diverse educational needs and inspire innovative teaching methods in Indian classrooms.

7. Lumen 5

Lumen5 is a versatile tool used to transform textual content such as blog posts, lecture notes, and other educational materials into engaging video lessons. It has gained popularity among universities, online education providers, and Massive Open Online Course (MOOC) platforms for its ability to create visually rich and dynamic video content efficiently. Therefore, Limen is strongly useful in undergradaate programmes both students and teachers.

Applications Across Disciplines:

- Online Education: Lumen5 is widely adopted in higher education sector and online education platform for converting academic content into engaging video lessons. It supports instructors in delivering complex concepts and lectures in a visually appealing format, enhancing student engagement and comprehension in various disciplines.
- Digital Marketing and Content Creation: In digital marketing courses, Lumen5 facilitates the creation of instructional videos on content marketing strategies, social media optimization, and digital storytelling. Its AI-powered tools convert marketing theories and case studies into compelling visual narratives, supporting hands-on learning experiences.
- Business and Management: Educators in business schools use Lumen5 to produce video tutorials on management principles, entrepreneurial strategies, and case analyses. It integrates animations, stock media, and automated voiceovers to illustrate business concepts effectively.
- Creative Writing and Media Studies: Lumen5 aids in creating video lessons on creative writing techniques, media production processes, and storytelling principles. Its drag-and-drop editor and extensive stock library support educators in crafting multimedia-enhanced content for literature and media studies courses.

- As the education system continues to evolve towards blended and hybrid learning models, this tool supports schools, universities, and training centers in embracing digital pedagogy and enhancing instructional delivery through multimedia-enriched video content.

8. Invideo

InVideo has become a pivotal platform in educational settings, though widely adopted in schools and tuition centers for creating engaging explainer videos, interactive lessons, and digital educational content, it is good for higher education also. It caters to vernacular-medium and multilingual educators by offering good support for other Indian languages, enhancing accessibility and inclusivity in educational content creation.

Applications Across Disciplines:

- Language Learning and Literature: InVideo supports educators in creating language tutorials, literary analysis videos, and interactive reading sessions. It enables the integration of multilingual voiceovers and subtitles, enhancing comprehension and engagement in language education.
- Science and Mathematics: Educators utilize InVideo to produce instructional videos that explain scientific theories, mathematical concepts, and experimental procedures. Rich stock media and customizable templates facilitate the visualization of complex ideas, promoting effective learning in STEM subjects.
- Social Sciences and History: In social sciences and history, InVideo aids in crafting videos that explore historical events, cultural contexts, and geopolitical analyses. It supports visual storytelling through animated timelines, maps, and interactive visual aids, fostering deeper understanding and critical thinking skills.
- Digital Media and Communication: For courses in digital media and communication, InVideo enables educators to create professional-quality videos for teaching digital storytelling, media production techniques, and communication strategies. Its intuitive editing tools and extensive media library support innovative content creation in media studies.
- Its drag-and-drop interface and collaborative features make it indispensable in YouTube channels, online coaching, and e-learning platforms, facilitating seamless content production and distribution.

9. QuillBot

QuillBot has become a highly favored AI-driven tool among educators, students, and researchers in India, particularly in institutions where English is the primary language of instruction. In higher education sector, it is widely popular also. It serves as a sophisticated writing enhancement and paraphrasing tool designed to refine academic writing while preserving the original content's tone, style, and clarity.

Applications Across Disciplines:

- Language and Literature: QuillBot supports students and educators in language studies by offering multiple writing modes for text rewriting. It helps in paraphrasing literary texts, analyzing language structures, and improving grammar and style in academic writing.
- Social Sciences: In social sciences, QuillBot aids in summarizing dense academic texts and enhancing clarity in research papers. It assists in condensing complex theories and findings into concise, understandable content for effective communication.
- STEM Subjects (Science, Technology, Engineering, Mathematics): Students and researchers in STEM fields use QuillBot to simplify technical documents, paraphrase scientific research articles, and ensure accuracy in conveying complex concepts. It supports clarity and precision in writing technical reports and research papers.
- Research and Thesis Writing: QuillBot is instrumental for researchers and thesis writers in drafting and refining academic papers. It includes advanced grammar and spell-checking features, plagiarism detection, and citation formatting, ensuring compliance with academic writing standards and enhancing scholarly credibility.

- QuillBot offers a free version with basic functionalities such as standard paraphrasing and grammar checking, suitable for individual users. It features paraphrasing, advanced grammar checks, plagiarism scanning, and enhanced AI features. The Team Plan extends these capabilities with centralized management and support, making it ideal for institutional use.
- As educational institutions in India increasingly integrate digital tools into their curricula, QuillBot stands out for its ability to streamline academic writing processes, improve language proficiency, and support scholarly endeavors across various disciplines.

10. Slidesgo

Slidesgo has emerged as a go-to platform to create visually compelling and pedagogically effective presentations using Google Slides and Microsoft PowerPoint. With a vast library of professionally designed templates, Slidesgo caters to a wide array of instructional needs—ranging from school-level lesson delivery to higher education seminars and professional development workshops. Its AI-enhanced tools, and flexible usage across platforms. AI functionality, and teaching resources. Institutions can benefit from volume discounts and institutional features.

Applications Across Disciplines:

- K-12 Education: Teachers utilize Slidesgo to create engaging presentations for delivering lessons across various subjects, incorporating interactive elements and visually stimulating graphics. The platform supports lesson planning and facilitates student engagement through its customizable templates.
- Higher Education: Professors and educators in universities leverage Slidesgo to design academic presentations that enhance lecture delivery and seminar discussions. The AI-enhanced tools aid in creating dynamic content that aligns with curriculum objectives and instructional goals.
- Professional Development: Slidesgo serves as a valuable resource for professional development workshops, offering templates tailored for training sessions, conferences, and corporate presentations. Its flexibility in design and comprehensive template options support effective knowledge dissemination and engagement.
- Online Learning: In the context of remote and hybrid learning environments, Slidesgo enables educators to craft visually compelling presentations that facilitate online instruction. The platform's compatibility with Google Slides and PowerPoint ensures seamless integration into various digital learning management systems.
- As educational institutions increasingly adopt digital tools to enhance teaching and learning experiences, Slidesgo stands out for its user-friendly interface, extensive template library, and compliance with privacy regulations, making it a preferred choice for educators seeking to create impactful presentations across diverse educational settings in India.

In today's rapidly evolving education landscape, educational technology (edtech) plays a pivotal role in enhancing experiential learning and fostering higher-order cognitive processes such as critical thinking, problem-solving, and creativity. Traditional rote-based education is no longer sufficient in an era defined by global knowledge production and rapid information exchange. Edtech tools—from virtual labs and simulations to AI-powered adaptive learning platforms—enable learners to engage in hands-on, immersive experiences that bridge theory and real-world application.

Moreover, with the growing use of data analytics and personalized learning paths, edtech supports differentiated instruction tailored to individual learning styles and paces. This personalization is crucial for nurturing higher-order thinking across diverse student populations.

As Indian states particularly in Kerala, which embrace blended and digital-first learning models, especially under new reformative initiatives, technology based tools is not just a supplement but a necessity. It transforms classrooms into innovation hubs, preparing learners to contribute meaningfully to global knowledge creation and future-ready economies.

It also serves as a powerful enabler of **Outcome-Based Education (OBE)**, a model that focuses on clearly defined learning outcomes—what students are expected to know, do, and value by the end of a course or program. By aligning teaching methods, assessments, and learning activities with these outcomes, teaching-learning tools ensure more measurable, student-centered, and goal-driven education. Especially:

Clear Mapping of Learning Outcomes:
Learning management systems (LMS) and curriculum mapping tools allow educators to design courses that directly link content, activities, and assessments to specific learning outcomes. This helps in maintaining alignment and transparency across all instructional components.

Personalized Learning Paths:
Adaptive learning technologies track students' progress in real time and adjust the content based on their mastery levels. This ensures every learner reaches the desired outcome at their own pace—crucial for competency-based education.

Traditional rote-based education is no longer sufficient in an era defined by global knowledge production and rapid information exchange

Data-Driven Assessment:
Edtech platforms provide analytics and dashboards that track student performance across cognitive levels (remember, understand, apply, analyze, evaluate, create). This enables targeted feedback and timely interventions, directly supporting outcome attainment.

Promoting Higher-Order Thinking:
Tools such as simulations, digital storytelling, and project-based platforms engage students in authentic, experiential tasks, aligned with higher-order learning outcomes—a core expectation of OBE.

Continuous Improvement Loop:
Edtech enables educators and institutions to gather evidence on learning effectiveness, helping them refine curriculum, pedagogy, and assessments in line with evolving outcomes and global trends.

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Mapping (but Not Solving) the Science Communication Crisis

The relentless drive to publish has overwhelmed academic journals, corrupted peer review and turned research into a commodity.

Scientific communication has never been more important—or more troubled. In an era of global science, with the multinational scientific development of COVID-19 vaccines as but one impressive example, the ability to quickly evaluate and communicate science and scholarship is critical.

The dramatic expansion of higher education and research in the past half a century has meant that research publications have expanded exponentially, and publication has become the coin of the realm for academic advancement, university prestige, and influential global rankings.

The dramatic expansion of higher education and research has meant that publications have expanded exponentially. They have become the coin of the realm for academic advancement, university prestige, and global rankings. New technologies, multinational publishers, and open access arrangements have led to an expansion that is essentially destroying the traditional publishing system and creating an insurmountable crisis in scientific communication. This analysis provides a roadmap of the crisis, but no clear solutions.

The scope of the academic enterprise is immense. Approximately 200 million students study in 26,000 universities and many other postsecondary institutions worldwide. More than 10 million academics serve this huge system.

Perhaps 10,000 of these universities are "comprehensive" and likely have some research mission. While the number of truly "research-intensive" institutions is much smaller, and most quality research productivity is from this small number of universities, total academic output is much broader and bigger.

Pushed by the emphasis in the global rankings on research, among other factors, the pressure to produce publishable articles has dramatically increased. A shift from monographs and books toward multiauthored journal articles has happened over the past 50 years.

We are entering a new era, made possible by new technologies, multinational publishers, and new open-access arrangements between the higher education sector and the publishing industry. The resulting exponential expansion in the number of articles and books has essentially destroyed the traditional publishing system and created an insurmountable crisis in scientific communication.
At the same time, there is a strong call for open access and open science in response to the financial and exclusive dominance of the publishing industry. This analysis provides a roadmap of the crisis but no clear solutions

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The pressure for open access has not challenged the dominance of the main academic publishers, predominantly located in high-income countries and publishing in English. The editors, editorial boards, and reviewers are still mainly from these countries and are mostly men, although this is gradually changing.

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Unsustainable Expansion

No one really knows how many scientific publications are published each year or how many journals exist. Scopus, a major index of academic journals, includes 22,794 active titles from 11,678 publishers. Forty languages are included. The other major indexer, Web of Science, includes more than 14,400 journals in its three main databases, plus an additional 7,800 journals in its emerging list.

One open-access publisher, MDPI, based in Switzerland and founded in 1996, has published one million articles since its establishment, including 295,186 peer-reviewed articles in 2022 in its 403 journals. As an open-access publisher, MDPI charges a transaction fee of approximately USD 2,000 per article.

The journal production industry has become more diverse, with a mix of traditional academic publishers (including nonprofit university presses and commercial publishers such as Taylor & Francis and Springer, and many new entries), a rise in predatory publishers, and a range of others like MDPI in between.

The pressure for open access has not challenged the dominance of the main academic publishers, predominantly located in high-income countries and publishing in English. The editors, editorial boards, and reviewers are still mainly from these countries and are mostly men, although this is gradually changing. The pressure for scientific communication and publication is increasingly coming from middle- and low-income countries. Furthermore, the academic promotion system has become ever more competitive and demands a high number of publications, often without regard to quality. As a result, many scholars and researchers, especially young ones, have no other choice than to look for alternative publication options, such as MDPI, and predatory journals of poor quality, with higher personal costs.

In an effort to reduce costs to the absolute minimum, quality at all levels is sacrificed. In some ways, many books are now more similar to journal issues, as they have little coherence.

Book Publishing

Over the past 50 years, the importance of academic book publishing has been diminished by the dominance of academic journals. But books remain important in some disciplines and have seen a change as well.

Originally, books were predominantly monographs by single authors, but, first in the hard sciences and then in the social sciences, and more recently in the humanities (according to Albert N. Greco's "Scholarly Publishing in the Humanities, 2000-2024: Marketing and Communications Challenges and Opportunities"), the emphasis has moved to focusing on multiauthored books: conference proceedings, handbooks, and textbooks for teaching.

Print-on-demand, e-book options, and other technological innovations have made it less expensive and more attractive to publish books. Further, it is now possible to purchase individual chapters and not an entire book, creating further income streams for publishers. This has led to a lack of coherence in many multiauthored books. To reduce costs, publishers skimp on peer-reviewing as well as on editing, which is generally outsourced to low-quality companies in India and elsewhere.

In an effort to reduce costs to the absolute minimum, quality at all levels is sacrificed. In some ways, many books are now more similar to journal issues, as they have little coherence.

At the same time, the prices for academic books and individual chapters from many publishers are extraordinarily high, often even for e-books, putting books and chapters beyond the ability of individuals to purchase, and creating severe affordability problems for libraries and institutions in the Global South, even when discounts are offered.

Increased Competition

A significant cause of these dilemmas is the dramatic growth in the numbers of (often substandard) articles and books. Why? Increased competition in the academic profession and the desire of many universities to join the ranks of research-focused institutions—when, in fact, they should first and foremost focus on teaching and community service—has placed an unnecessary premium on publication.

As a result, huge pressures are placed on the entire publishing apparatus. The open access movement is in itself highly complex and has, in some ways, created as many problems as it has tried to solve. The goal, of course, is to make knowledge freely available to all, and there are indeed several positive cases of institutions, research funders, editorial boards, and other agencies that try to address the crisis and develop alternative models.

A recent report by the International Association of Universities (AIU), "Open Science: The Challenge for Universities," correctly places the crisis in scientific communication in the context of universities "facing numerous pressures spanning from political interference, digital transformation, environmental challenges, funding cuts, decolonisation processes, to the repercussions of the increasing commodification of higher education." It asks whether universities perceive the open science movement "as a transformative opportunity for higher education to collectively address current inequities and collaborate around a shared set of principles to make knowledge a global common good."

"facing numerous pressures spanning from political interference, digital transformation, environmental challenges, funding cuts, decolonisation processes, to the repercussions of the increasing commodification of higher education"

Many journals and publishers have moved from subscription-based economics to charging fees to authors. And some journals and publishers simply publish anything, bypassing peer review and flooding the market with substandard material.

Certainly, the trend seems to be moving in the opposite direction. Many journals and publishers have moved from subscription-based economics to charging fees to authors. And some journals and publishers simply publish anything, bypassing peer review and flooding the market with substandard material.

No Easy Answers

This discussion has only scratched the surface of an immensely complex set of challenges. For example, who "owns" knowledge? Those who produce it, or multinational or other publishers? Should English continue to be the global language of science and scholarship? How, in this context, can research and publication focusing on local themes in local languages be encouraged and respected?

There are few answers and the challenges are many, as the IAU report concludes, but the range of topics involved requires careful attention from the higher education community.

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SWAYAM Plus+

SWAYAM Plus, an initiative by the Ministry of Education and led by IIT Madras, offers credit-eligible, industry-aligned courses aimed at enhancing the employability of students in higher education. As part of this effort, the "Campus to Career: Essential Skills for the 21st Century" campaign has been launched, featuring a curated set of NCrF-aligned, self-paced online courses that are open to students from all academic streams and years of study. The course offerings include: Professional Edge by NIIT Foundation (free, 62 hours), Beginning Your Entrepreneurship Journey by Wadhwani Foundation (free, 30 hours), Professional and Communicative English Skills by Lanquill (₹472, 30 hours), Essentials of Personal Finance by Nergy (₹920, 60 hours), Power BI Application by 360Digi (₹590, 30 hours), and Data Analytics using Excel by 360Digi (₹590, 30 hours). Faculty members and placement officers are encouraged to express interest in enrolling their students by filling out a registration form, as individual enrollments are not permitted. Following this, the SWAYAM Plus team will provide further details, including student data collection templates, and schedule a one-on-one discussion with institutions to finalize timelines and operational processes, including signing an MoU with IIT Madras if required. The courses are offered at discounted rates, with a free preview of up to three hours of content before payment. Final assessments will be proctored on campus, and successful learners will receive certificates co-branded by SWAYAM Plus and the respective course provider.

Scholar Connect: A Digital Bridge to Global Academic Diaspora

Eldho Mathews

Kerala State Higher Education Council's Scholar Connect creates a Dynamic Digital Bridge to Engage Global Academic Diaspora for Collaborative Growth and Innovation

Kerala is home to one of India's most vibrant and globally dispersed academic diasporas. Thousands of scholars of Kerala origin contributing to prestigious universities, research institutions, and think tanks around the world. Many of these scholars have consistently expressed a strong emotional and intellectual connection to the State; coupled with a deep interest in supporting the development of its higher education sector. Their willingness to share expertise reflects a growing commitment to reinvest their global experience back into Kerala's academic ecosystem.

Recognising this vast and underutilised potential, the Kerala State Higher Education Council has had taken various proactive steps to strengthen diaspora engagement. In 2021, the Council launched the "Brain Gain" programme which enabled several eminent non-residentacademics of Kerala origin to return as short-term 'Scholars-in-Residence,' and contributemeaningfully to teaching, research, and institutional development. Building on this momentum, KSHEC is now introducing Scholar Connect — a first-of-its-kind mobile and web-based platform designed to create a structured and sustained bridge between Kerala's academic institutions and its global academic diaspora.

The Scholar Connect platform's design incorporates a wide range of features that cater to the specific needs of both diaspora scholars and institutions in Kerala. These features not only streamline communication and visit scheduling but also ensure that engagements are secure and impactful.

Features that Set Scholar Connect Apart

Scholar Connect is more than a mobile or web application — it is the realisation of a bold vision to bring Kerala's global academic community closer to its higher education institutions. The platform serves as a bridge between scholars of Kerala origin living abroad and the colleges and universities within the state.

At its core, Scholar Connect aims to facilitate knowledge exchange, research partnerships, and position Kerala as an intellectually vibrant and globally connected academic destination. What makes Scholar Connect distinctive is its thoughtful design, which caters to both foreign scholars and institutions in the State. Diaspora Scholars can create profiles highlighting their academic interests and availability. Institutions can explore these profiles, identify potential collaborators, and invite them for diverse forms of academic engagement —ranging from research presentations and guest lectures to curriculum development.

The platform supports both in-person and virtual formats of programmes, allowing for flexible participation regardless of geography. Smart features like AI-driven recommendations will ensure smooth and efficient interactions

A Strategic Tool to Promote Inclusive Access and Internationalisation

The Scholar Connect platform will help institutions in Kerala to plan strategically for internationalisation. Institutions can identify areas where expertise is required, and invite scholars matching with specific academic goals. One of the long-term goals is to help Kerala develop a strong global academic presence. By systematically engaging scholars in key international institutions, the state can amplify its academic voice, contribute to global discourse, and attract international students, among others.

The platform will promote inclusive access. Whether a college in a rural area or a university, all institutions in the State will have equal opportunity to engage with top diaspora talent. This feature mediated through the Council will ensure that the benefits of global collaboration reach across Kerala's diverse higher education landscape.

Image: Bust of Edavaleth Kakkat Janaki Ammal at the Birla Industrial & Technological Museum, Kolkata.

Edavaleth Kakkat Janaki Ammal (1897–1984) was a pioneering Indian botanist and cytogeneticist. Born in Thalassery in Kerala, she received a Ph.D. in botany from the University of Michigan in 1931.Janaki Ammal made groundbreaking contributions to plant breeding and cytogenetics, particularly in sugarcane and brinjal (eggplant), playing a key role in developing high-yielding, resilient varieties. She co-authored the monumental Chromosome Atlas of Cultivated Plants, a vital reference work for researchers worldwide. She served as a Professor of Botany at the Maharaja's College of Science in Thiruvananthapuram from 1932 to 1934(University College). In 1954 she became the first Director of the Central Botanical Laboratory of the Botanical Survey of India.
For additional information:
https://insaindia.res.in/BM/BM13_8808.pdf

A Scalable Model

While currently focused only on attracting academic diaspora, Scholar Connect will lay the foundation for broader collaborations in the future. What sets Scholar Connect apart is its ability to scale and personalise academic collaborations in a way that is systematic with a human touch in developing partnerships. Its modular design allows for future upgrades—potentially expanding its reach to include student exchanges, dual-degree and credit transfer programmes, and international research projects.

Unlike traditional models of diaspora engagement that are overly dependent on personal networks, Scholar Connect introduces a structured mechanism with the following pioneering features:

- Verified Access: Only authenticated users — diaspora scholars and faculty from recognised institutions in Kerala —can initiate or respond to collaboration requests.
- Customization: Both diaspora scholars and institutions in Kerala can customise engagement formats, preferences, and schedules.
- Equity in Outreach: KSHEC's role will ensure that academic engagements will reach institutions across all regions—urban and rural —and not just a few elite campuses.
- Digital Empowerment: The entire process—from discovery of institutions/scholars to documentation—is digitised, with a user-friendly interface, multi-platform accessibility (Android, iOS, Web).

Scholar Connect platform will help institutions in Kerala to plan strategically for internationalisation. They can identify areas where expertise is required, and invite scholars matching with specific academic goals

With the official launch of Scholar Connect scheduled in the coming months, higher education institutions across Kerala are strongly encouraged to prepare for onboarding. By participating actively in the programme to attract diaspora talent to the State, institutions could play an important role in strengthening Kerala's higher education sector.

The Scholar Connect initiative is a pioneering attempt to translate technology into connection, and diaspora engagement into sustained academic transformation. With a bold vision and a robust digital framework, Scholar Connect is poised to redefine how diaspora knowledge and expertise are mobilised for the advancement of higher education in Kerala.

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SAAC

Kerala State Higher Education Council

State Assessment & Accreditation Centre

Ensuring Quality Standards Through Continuous Evaluation of State HEIs

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- Preparatory Framework for NAAC & NIRF
- Implementation of PATH, Mentor-Mentee initiatives, and Institutional Development Plans (IDP) Programmes in HEIs
- Customized Institutional Development Plans (IDPs)
- Enhanced Institutional Quality and Visibility
- Establishing State-Level Quality Assurance Bodies
- Focused Assessment for Self-Financing Institutions
- Inclusion of State-Specific Criteria

Outcome Based Education Part-IV

Exploring the Three Domains of Learning:

Balancing Cognitive, Affective, and Psychomotor Domains for Holistic Learning in Higher Education

Learning is a multifaceted process that involves three primary domains: cognitive, affective, and psychomotor. Each domain contributes uniquely to the overall development of learners, shaping their intellectual, emotional, and physical growth. Understanding these domains and how they interact is essential for designing effective educational strategies that cater to the diverse needs of students.

This will help the educators to design the courses and curriculum using the suitable curriculum models. Bloom outlined six levels in the cognitive domain, ranging from basic fact recall to complex evaluation. These stages—knowledge, comprehension, application, analysis, synthesis, and evaluation—reflect increasing mental complexity. Later research introduced action verbs to represent the mental tasks at each level.

Bloom outlined six levels in the cognitive domain, ranging from basic fact recall to complex evaluation. These stages —knowledge, comprehension, application, analysis, synthesis, and evaluation—reflect increasing mental complexity. Later research introduced action verbs to represent the mental tasks at each level.

In 1964, Krathwohl developed a parallel taxonomy for the affective domain, focusing on attitudes, values, and emotional responses. Affective learning is shown through behaviors like showing interest, responsibility, and empathy. Its six stages are perceiving, reacting, conforming, validating, judging, and creating. Relevant verbs include accept, support, judge, and share.

Finally, Kibler and colleagues (1970) completed the taxonomy trilogy by addressing the psychomotor domain, which involves physical skill development from basic to advanced movements. This includes coordination and dexterity in both gross and fine motor tasks. Its stages are perceiving, activating, executing, maneuvering, judging, and creating, with verbs such as bend, grasp, and operate.

1. Affective Domain: Emotions, Attitudes, and Interpersonal Skills

Many researchers firmly believe that non-cognitive factors and skills are more important man cognitive aspects in educative processes. Grit, tenacity, curiosity, attitudes, self-concept, self-efficacy, anxiety coping strategies, motivation, perseverance, confidence are among those frequently referred to as non-cognitive factors. Many of these factors fall into the affective domain.

Every one of us develops a unique personality or self-concept in the process of interacting with and growing in the physical and social environment. In a fast-changing, diverse urban-industrial society, young people face unfamiliar challenges that previous generations did not. As adults struggle with unresolved contradictions from their past, their confusion often transfers to the youth, disrupting healthy emotional growth. Affective education is essential in helping individuals navigate these challenges of 'generation gap' and support emotional development.

The affective domain focuses on emotions, attitudes, values, and interpersonal skills. This domain explores how learners' feelings, motivations, and ethical perspectives influence their learning experiences and outcomes.

In fields such as nursing, medical education, counseling, and social work, the affective domain is particularly significant. Professionals in these fields must consistently demonstrate empathy, care, and ethical decision-making. Therefore, educators often employ strategies such as reflective practice, discussion of ethical dilemmas, and role-playing to nurture affective competencies. By fostering empathy and emotional intelligence, educators help students develop a patient- or client-centered mindset, essential for professional success.

The affective domain focuses on emotions, attitudes, values, and interpersonal skills. This domain explores how learners' feelings, motivations, and ethical perspectives influence their learning experiences and outcomes. Developed by David Krathwohl and colleagues, the affective domain emphasizes the importance of fostering a positive learning environment where students feel motivated and engaged. The Affective Domain is most commonly associated with feelings and emotions. It is usually displayed in positive or negative reactions to given events, objects, behaviors, policies, or situations.

Pierce-Gray developed a Taxonomy for affective domain that involve sensory inputs, mental processing, and output.

2. Psychomotor Domain: Physical Skills and Manual Dexterity

The psychomotor domain focuses on the acquisition and refinement of physical skills, motor coordination, and manual dexterity. Psychomotor skills play a crucial role in general education courses, especially in fields that require hands-on, practical application of theoretical knowledge. It involves activities that require muscular movement and motor functions, such as riding a bicycle, driving a car, playing a musical instrument, typing, acting, or running. These activities are primarily developed through hands-on practice and are assessed based on speed, accuracy, technique, and execution.

While the psychomotor domain is often integrated with cognitive and affective learning, it is especially critical in fields that require physical skill development. Such physical skills are acquired through practice. A precision laboratory activity requires practice. For example, Psychomotor activities become important and even dominant in courses of programmes in Theatre, Music, Painting, Sports, Medicine, Nursing, Dentistry, Emergency Medical Service etc. In these areas, mastery of physical tasks is essential for professional success and effective performance.

Besides these, For example, in chemical laboratory experiments, students need to handle various instruments and chemicals with care and accuracy to conduct experiments successfully and avoid errors or hazards. Similarly, in physics field activities, students must apply theoretical principles to real-world situations, which requires the ability to manipulate equipment, measure physical quantities, and interpret results. In geology fieldwork, students use psychomotor skills to handle compass, collect samples, measure rock formations, and record observations accurately in the field.

By fostering psychomotor skills, these hands-on-experience of courses help students bridge the gap between theory and practice, enhancing their overall learning and preparing them for real-world applications in their respective fields

These activities require students to develop coordination, precision, and manual dexterity to effectively carry out experiments, use equipment safely, and accurately record data.

Though traditionally underemphasized in some educational models, the psychomotor domain is gaining recognition for its importance, especially in hands-on disciplines such as healthcare, engineering, vocational training, and the arts. Developing proficiency in the psychomotor domain enables students to translate theoretical knowledge into practical application, enhancing their overall learning experience and preparing them for real-world challenges. Pierce-Gray developed a Taxonomy for psychomotor domain that involve sensory inputs, mental processing, and output.

Learners first receive information through their senses (like seeing or hearing), then mentally interpret and plan a response, and finally perform a physical action based on that processing. For example, in learning to play an instrument, a student sees the teacher's demonstration (sensory input), thinks about finger placement and rhythm (mental processing), and then attempts to play the notes (motor output).

3. Cognitive Domain: Knowledge Acquisition and Intellectual Development

The cognitive domain is perhaps the most widely discussed, as it focuses on intellectual abilities and the acquisition of knowledge. Cognitive learning is demonstrated by knowledge recall and intellectual skills: comprehending information, organising ideas, analysing and synthesising data, applying knowledge, choosing among alternatives in problem solving and evaluating ideas and actions. This domain encompasses key cognitive processes such as remembering, understanding, applying, analyzing, evaluating, and creating, as outlined in Bloom's Taxonomy. The cognitive domain forms the foundation of general education programs, where reasoning, problem-solving, and conceptual understanding are emphasized. This domain on the acquisition and use of knowledge is predominant in the majority of courses.

Together, these three do mains provide a holistic framework for curriculum design and instructional strategies. While each domain has distinct features, they are interdependent and collectively essential for comprehensive learning

Bloom outlined six levels in the cognitive domain, ranging from basic fact recall to complex evaluation. These stages —knowledge, comprehension, application, analysis, synthesis, and evaluation—reflect increasing mental complexity. Later research introduced action verbs to represent the mental tasks at each level.

In 1964, Krathwohl developed a parallel taxonomy for the affective domain, focusing on attitudes, values, and emotional responses. Affective learning is shown through behaviors like showing interest, responsibility, and empathy. Its six stages are perceiving, reacting, conforming, validating, judging, and creating. Relevant verbs include accept, support, judge, and share.

The Cognitive Domain: Two Key Dimensions

The cognitive domain is organized into two main dimensions: Cognitive Processes and Knowledge Categories. It consists of six levels of cognitive processes and four types of knowledge categories. A table mapping the six cognitive processes across the four knowledge categories serves as a valuable tool for addressing various aspects of teaching and learning. Such a table known as the revised Bloom taxonomy table is shown in the figure given in next page.

Bloom's Taxonomy provides a clear framework for categorizing these cognitive processes hierarchically. The taxonomy ranges from lower-order thinking skills, such as remembering and understanding, to higher-order skills like analyzing, evaluating, and creating. This structured approach helps educators design learning experiences that build students' intellectual abilities progressively, ensuring they not only acquire knowledge but also develop critical thinking and problem-solving skills vital for academic and professional success.

Bridging 'What to Learn' and 'How to Learn' with Bloom's Taxonomy

Bloom's Taxonomy is essential for understanding the cognitive domain, offering a systematic method for organizing and implementing learning objectives. It highlights two fundamental dimensions:

- **What to Learn:** This dimension refers to the knowledge categories, which include factual, conceptual, procedural, and metacognitive knowledge. Typically, university syllabi present course content as topics or subject areas, such as "Igneous Rocks, definition, types—Plutonic, hypabyssal, and Rock cycle." These are often expressed in noun or noun phrase form, representing the content to be learned.
- **How to Learn:** This dimension focuses on the cognitive processes involved in learning. By incorporating action verbs, this dimension makes the learning process more dynamic and measurable. These verbs correspond to various levels of cognitive skills, from basic tasks like remembering to more advanced activities like evaluating or creating.

By combining both dimensions, Bloom's Taxonomy helps educators create a comprehensive approach that not only defines what content students need to learn but also guides how they will engage with that content through different cognitive processes.

What to Learn

How to Learn

Cognitive Process	Knowledge Categories			
	Factual	Conceptual	Procedural	Metacognitive
Remember				
Understand				
Apply				
Analyse				
Evaluate				
Create				

Fig. Revised Blooms Taxonomy Table of the Cognitive Domain

A cell of the Taxonomy Table can be numbered by its cognitive process (1 to 6) and its knowledge category (1 to 4). The cell (4,3) represents Analyse-Procedural outcome, instructional activity, and/or assessment. As there is a hierarchy among cognitive processes, the cell (4,) represents a more complex (higher level) cognitive activity than the cell (3,), but not a necessarily more difficult activity. The cell (4,) implies all activities in (3,), (2,) and (1.) cells.

Incorporating both dimensions into curriculum design transforms a uni-dimensional syllabus into a bi-dimensional one. This means that in addition to covering knowledge categories (what to learn), educators also guide students on the processes through which they will learn that content (how to learn). By applying Bloom's Taxonomy, educators can create a more comprehensive and structured learning experience that supports intellectual growth and the development of higher-order thinking skills.

This second dimension of the cognitive domain focuses on how we learn a knowledge category, not just in terms of the method of learning, but the depth at which we learn the content. This depth is reflected through six cognitive process levels. First, at the Remembering level, we start by recalling basic facts or information. Next, at the Understanding level, we go beyond memorization and start making sense of that information, explaining it in our own words.

The third level, Applying, involves using what we've learned to solve problems or handle real-life situations. Moving deeper, at the Analyzing level, we break down information, looking at its components and understanding how they relate to one another. At the Evaluating level, we critically assess the information, judging its accuracy or value. Finally, at the Creating level, we use everything we've learned to build something new, like creating original ideas or solutions. So, the "how to learn" part refers to this progression through these cognitive levels, where the more deeply we engage with the content, the richer our understanding becomes.

Did you know?

According to a study by the OECD, 45% of college graduates across member countries report being in jobs that do not require a university degree, highlighting the challenges of aligning education with the labor market.

References:

- *Taxonomy for Learning, Teaching, and Assessing, A: A Revision of Bloom's Taxonomy of Educational Objectives, Abridged Edition Paperback – 28 August 2001 by Lorin Anderson & David Krathwohl (Author)*
- *Report on Examination reforms in State Universities, June 2021: published by the Kerala State Higher Education Council*
- *Handbook on Outcome Based Education (General Programmes) 2023: by Prof. N.J. Rao: published by the Kerala State Higher Education Council*

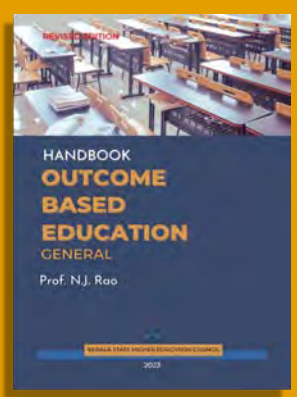
Next Issue: Cognitive Domain & Levels of Courses

HANDS-ON-TRAINING

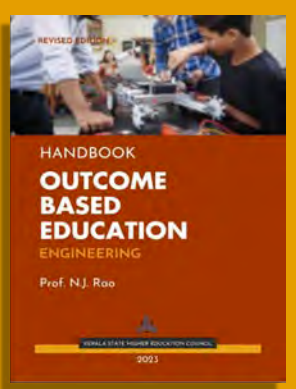
OUTCOME BASED EDUCATION (OBE)

All Higher education Institutions in the country are advised to implement OBE in curriculum design and practice by stating the learning outcomes of programmes and their courses including the Graduate Attributes. A specially designed scheme of OBE by Prof. N.J. Rao is being offered through training/workshops by the Council. It includes, Blooms taxonomy, three-level Outcome scheme, assessment and evaluation methods, attainment of outcomes.

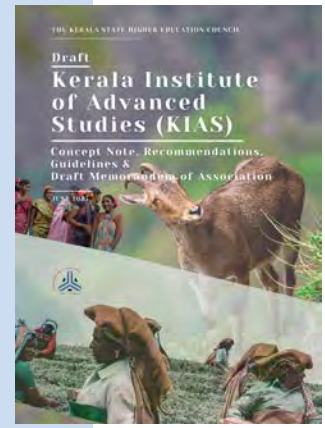
- **Kerala State Higehr Education Council organises Training for the Institutions and Faculty**
- **Published Handbook of OBE & Computation of Attainment published for Engineering and General Education programmes etc.**
- **Handbook for Question bank for FYUGP under OBE scheme etc.**



Kerala State Higher Education Council
Science and Technology Museum Campus,
Vikas Bhavan P.O., Thiruvananthapuram-695033,
Kerala State, India
www.kshec.kerala.gov.in

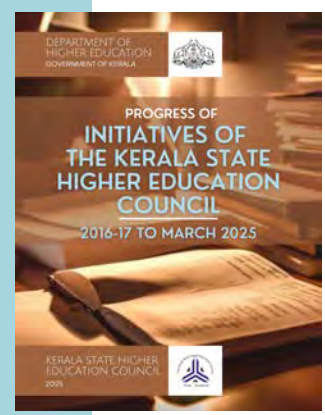


The Kerala State Higher Education Council has published the draft guidelines for the establishment of the Kerala Institute of Advanced Studies (KIAS), one of the centres of Excellence sanctioned by the Government of Kerala. The document outlines the proposal, strategic vision and the draft MoU. It presents KIAS as a world-class, multidisciplinary research and learning institution focused on generating high-impact knowledge and fostering innovation. Envisioned as an autonomous body under the Kerala State Higher Education Council, KIAS aims to bridge global academic excellence with local relevance. The document details the institutional framework, governance structure, funding models, academic philosophy, and research priorities. Emphasis is placed on interdisciplinary collaboration, inclusivity, international partnerships, and cutting-edge research, positioning KIAS as a leader in shaping Kerala's future knowledge economy. The Institute will be established in Munnar, a hill station on western ghats.

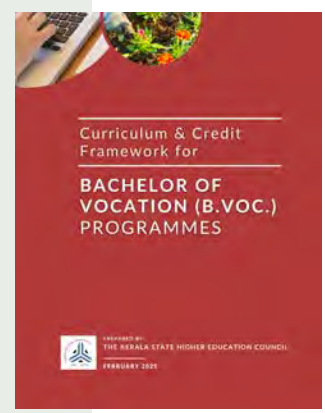


Based on the UGC's guidelines on PG Curriculum, the Kerala State Higher Education Council in May 2025, has published draft version of the Curriculum and Credit Framework for Post Graduate Programmes, to be implemented in the State. The framework outlines a comprehensive reform of postgraduate education in alignment with the National Higher Education Qualification Framework (NHEQF) and National Credit Framework (NCrF). It introduces multiple academic pathways—including one-year, two-year, and integrated five-year programmes—emphasizing flexibility, research integration, industry collaboration, and future-ready skills. The framework prioritizes personalized and interdisciplinary learning, continuous assessment, and ethical research practices. It aims to equip students for academic, professional, and research careers through experiential learning, vocational training, and credit recognition for prior experience, ensuring global alignment and learner-centric education.

The Kerala State Higher Education Council recently released a comprehensive document detailing its initiatives from 2016 to March 2025. This report extensively covers academic advancements, infrastructure developments, digital initiatives, and policy implementations by the Council. Key projects highlighted include the digitization of library resources (KALNET), establishment of the E-Journal Consortium, implementation of Digicol (a digital learning management system), and the creation of e-content repositories. Additionally, the document emphasizes faculty development programs, institutional accreditation efforts through SAAC, and international collaborations under Brain Gain and Erudite schemes. The Council's focus remains on enhancing educational quality, inclusivity, and digital integration in higher education across Kerala, in line with both national and state policies such as FYUGP. Throughout this period, the Council has introduced numerous innovative programmes to achieve these objectives.



The Kerala State Higher Education Council has released the Draft Guidelines for the Curriculum Framework of the Bachelor of Vocation (B.Voc.) Programs, outlining a detailed structure for integrating vocational education into the Four-Year Undergraduate Programme (FYUGP). The guidelines focus on combining general education with skill development in line with the National Skills Qualification Framework (NSQF), ensuring alignment with industry needs. Key features include flexible exit options, apprenticeship-based pathways, interdisciplinary minors, and a strong assessment framework. The goal is to improve employability, practical skills, and academic mobility through a structured credit system, industry collaboration, and the creation of Centers for Skill Development Courses and Career Planning (CSDCCP) at higher education institutions across Kerala. This framework serves as a crucial guide for transitioning existing B.Voc. programmes to the four-year structure.



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Hands-On-Training (Online Mode)

Moodle-Learning Management System (LMS)

The Kerala State Higher Education Council organises hands-on workshops on specific intervals on the topic '**MOODLE-based Learning Management System (LMS)**' in online mode for the faculty members of the higher education institutions in the state. **Heads of Institutions (Colleges & University Departments) can avail of this opportunity by sending the list of faculty members.**

Workshop Topics:

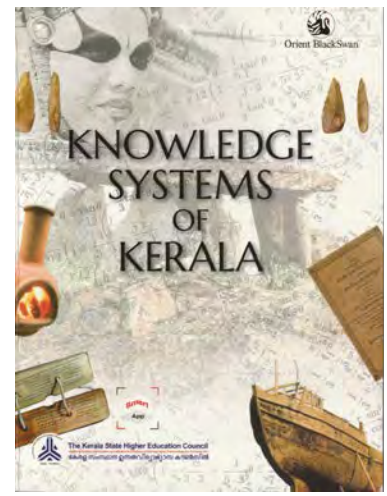
- Optimizing Moodle for Effective Course Management and Resource Sharing
- Engaging Learning Experiences: Incorporating Assignments, Quizzes, and Interactive Tools
- Innovative Course Design: Pedagogical Approaches and the Use of Technology
- Enhancing Collaboration: Utilizing Wikis, Blogs, and Discussion Forums in Moodle
- Future Directions in Education: Leveraging Technology and Case Studies for Learning Improvement

KSHEC NEWS
kerala state higher education council

Knowledge Systems of Kerala-Text Book

The Kerala State Higher Education Council (KSHEC) has proposed a new textbook titled *'Knowledge Systems of Kerala'* for third-semester undergraduate students, making it a compulsory course in the four-year undergraduate program. The textbook, intended to provide an introduction to Kerala's indigenous knowledge systems, covers a wide range of topics, including performing arts, cultural practices, oral traditions, and Ayurveda. KSHEC emphasizes that the textbook is aligned with the University Grants Commission's directive to incorporate Indian Knowledge Systems into higher education, but with a focus on Kerala's regional context.

The book consists of nine chapters that explore topics such as regional knowledge systems, the traditional knowledge of ethnic communities, knowledge embedded in crafts and architecture, Ayurvedic practices, and the development of new knowledge in the state.



FDP on Curriculum Framework & Techno Pedagogy

The One Week Faculty Development Programme (FDP) titled "Curriculum Framework & Techno Pedagogy" on the theme was successfully conducted from May 5th to 9th 2025 at the KSHEC Training Hall, organized by the Centre of Excellence for Teaching Learning & Training (CETLT) and the Faculty Development Centre (FDC) of the Kerala State Higher Education Council (KSHEC). A total of 30 participants attended the programme from various colleges across the State.

The programme commenced with an inaugural session on 5th and various technical sessions were handled by Prof. K.P. Mohanan on Foundations of Knowledge and Enquiry, Dr. Biju V.N. (Technology Enhanced Teaching and Research, featuring a session on AI Tools for Educators), Prof. Rajan Gurukkal (Knowledge Systems of Kerala), Dr. Sudheendran K. (Credit Framework and Skill Education), Dr. Ramesh Unnikrishnan (evolving teaching-learning methods under the changing credit system) Dr. Mendus Jacob (Outcome Based Education (OBE).

HE MATTERS

KERALA STATE HIGHER EDUCATION COUNCIL PUBLICATION

HIGHER EDUCATION MATTERS

A GATEWAY TO HIGHER LEARNING INITIATIVES

ഒരു നല്ല ഫോട്ടോഗ്രാഫർ നിങ്ങളിൽ ഉണ്ടോ?

കാമ്പസ്സിന്റെയും ക്ലാസ്സ് മുറികളുടെയും ആത്മാവും ഊർജ്ജവും പ്രതിഫലിക്കുന്ന ദൃശ്യങ്ങൾ പകർത്തൂ..
ഞങ്ങളുടെ മാഗസിന്റെ പേജുകൾക്കും കവർചിത്രങ്ങൾക്കുമായി സമർപ്പിക്കുക!"

എന്തിന്?

- നിങ്ങളുടെ സൃഷ്ടികൾ ആയിരക്കണക്കിന് ആളുകൾ കാണട്ടെ
- പ്രസിദ്ധീകരിച്ച് ക്രെഡിറ്റുകൾ നേടൂ
- ക്യാംപസ്സിലെ നിമിഷങ്ങൾ എന്നെന്നും ജീവിക്കട്ടെ!

നിങ്ങൾ പകർത്തുന്ന അതിമനോഹരമായ ദൃശ്യങ്ങൾ ഞങ്ങൾക്ക് അയയ്ക്കുക

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contact.hematters@gmail.com

UNIVERSITY news
universities in Kerala

University of Kerala

MediaCon 2025 (April 22, 2025)

- The University of Kerala hosted MediaCon 2025, Kerala's first major media and entertainment industry conference. Organized by CTLG at the Karyavattom campus, it connected students, media professionals, and creators to discuss storytelling, journalism, influencer culture, and digital content trends in the evolving creative economy.

EU–India Trade & Technology Council Visit

- In May 2025, the University of Kerala became a key participant in two major EU–India collaborative research initiatives funded under the Horizon Europe program, with a total investment of €41 million. The first initiative targets marine pollution, particularly the rising threat of microplastics and heavy metals in Indian coastal ecosystems. With Kerala's unique backwaters and biodiversity, the university's role includes developing real-time detection tools, conducting field studies in ecologically sensitive zones, and formulating sustainable mitigation strategies. The second initiative focuses on generating green hydrogen from biogenic waste—a major step toward clean energy transition. KU and its partners, including KUFOS and NCESS, are working on pilot technologies to convert organic and municipal waste into hydrogen fuel using low-carbon methods. These projects not only aim to address pressing environmental issues but also position the University of Kerala as a critical research hub in international efforts to combat climate change and promote sustainable development.

"Kaadariyaan" Study Tour

- The Sociology Department, in collaboration with Tribal Arts & Science College, organized a field visit to Idukki. Students explored tribal communities, biodiversity, and conservation challenges, gaining firsthand insight into forest sustainability, climate change, and the socio-economic conditions of indigenous populations.

Growth in International Student Enrolment

- The university recorded 2,620 international applications for 2025–26, nearly doubling from previous years. Attributed to KU's improved NIRF ranking, NAAC A++ status, and academic offerings, this surge highlighted the university's growing reputation as a hub for global higher education and research.

Edited Sessions Launch – Academic Discussions

- The Department of Political Science launched the "Edited Sessions" platform at the V.K. Krishna Menon Centre. It introduced a series of academic dialogues on diplomacy, diaspora, and global sociology, encouraging interdisciplinary debates and innovative research dissemination within the university.

Microplastic Study in Kerala's Coastal Wetlands

- A study of Ashtamudi Lake (a Ramsar wetland) revealed alarming levels of microplastics in sediments, fish (19.6%) and shellfish (40.9%), along with heavy metals like iron and barium adhered to particles—raising concerns about ecological and human health. The findings support ongoing and future campus research into marine pollution, particularly tools and mitigation strategies being developed via the EU–India project.

Kannur University

Carbon Sequestration in Mangrove Ecosystems

- Kannur University researchers conducted a comparative study on disturbed vs. undisturbed mangrove habitats across Kannur district. The study focused on evaluating carbon sequestration potential, helping quantify the role of blue carbon in climate mitigation. Findings contribute to conservation planning and offer a scientific basis for managing coastal ecosystem services and mangrove restoration projects in Kerala.

Arecanut Husk Ash for Lithium-Ion Batteries

- Researchers at Kannur University developed a method to convert arecanut husk ash, an agricultural waste, into anode material for lithium-ion batteries. The eco-friendly process yields high-capacity electrodes, offering a sustainable alternative to conventional graphite. This innovation could reduce battery production costs and enhance energy storage technologies, while also providing a valuable use for agricultural byproducts.

Microbial Biodiversity and Biotech Applications

- Kannur University's biotechnology department advanced research on the use of diverse microbial strains for applications in medicine, energy, food, and environmental sustainability. Projects explored enzyme production, fermentation technologies, and microbial waste treatment. This research supports Kerala's bioeconomy by linking biodiversity-rich ecosystems with industrial biotech processes and sustainable innovation.

Copper-Doped g-C_3N_4 for Pollution Control

- The Department of Chemistry created copper-doped graphitic carbon nitride (g-C_3N_4), a nanomaterial with dual functionality: reducing the pollutant p-nitrophenol and detecting paracetamol residues in water. This advancement in nano-catalysis and sensing can help in both environmental remediation and pharmaceutical waste monitoring, offering a cost-effective solution for water purification in polluted ecosystems.

University of Calicut

Madhava Observatory Utilisation

- The Madhava Observatory—established in 2005 with the Indian Institute of Astrophysics—features a 14″ Meade Cassegrain and an 18″ NGT reflector under a 6.6 m dome. During April–June 2025, both undergraduate and postgraduate students, alongside faculty, conducted observational astronomy sessions and data analysis on celestial objects. Equipped with a dedicated computing cluster (server plus four nodes), the observatory actively supported astrophysical research while training the next generation of astronomers

Sree Sankaracharya University of Sanskrit (SSUS)

Kerala Institute for Gender Equity & Translation Centre

- Hon. Higher Education Minister R. Bindu inaugurated the Kerala Institute for Gender Equity at SSUS, Kalady, aimed at researching and documenting historical gender discrimination and empowering academia in gender equality. Simultaneously, the Translation Studies Centre, under the Kerala Language Network, was launched to elevate scholarly translation research and enhance multilingual academic exchange.

Faculty Development Programme (FDP) 'Training of Faculty Trainers' ToFT

- Faculty Development Centre (FDC) & Centre of Excellence for Teaching Learning & Training (CETLT) of the Kerala State Higher Education Council (KSHEC) along with the Sree Sankaracharya University of Sanskrit Kalady organised One Week Faculty Development Programme (FDP) 'Training of Faculty Trainers' ToFT on Transforming Higher Education: Reforms into Action during 24-28, June 2025 at the Seminar Hall, Language Block, Sree Sankaracharya University of Sanskrit Kalady, for the faculty members of the higher education institutions in Kerala.

Mahatma Gandhi University

QR Code-Based Evaluation System

- MGU's School of Computer Sciences, supported by RUSA, launched a pioneering QR-coded evaluation system in May. This platform processed around 150,000 exam scripts (UG, BCA, BBA), delivering results within 24 hours of submission. It enhanced efficiency, transparency, and cost reduction, marking a first-of-its-kind achievement in Kerala's higher education sector

Workshop on Research Methodology & Academic Writing

- The School of Letters conducted a six-day workshop for newly registered doctoral scholars across humanities disciplines. Delivered in Malayalam and English, it covered research design, data analysis, and academic writing. Participants (Ph.D. students post–June 2024) presented 10-minute papers, fostering critical scholarship and research literacy

UGC Category I Status Awarded

- In March, MGU received the UGC Category I status—granting academic autonomy to launch programmes and establish institutions without UGC approval. This milestone, the first for a Kerala state university, sets the groundwork for increased innovation, autonomy, and expansion that gained momentum through Q2 2025

The Kerala government has approved a ₹215 crore CSIR-NIIST project at **Bio360 Life Sciences Park**, Thonnakkal. The initiative includes a pilot plant to produce green hydrogen from wastewater using solar energy, promoting clean energy and sustainability. It also features R&D hubs for biopolymers, bioplastics, bio-based leather, AYUSH products, and value-added innovations in rubber, coir, and spices. The project aims to boost Kerala's bioeconomy through research, start-up incubation, and technology commercialization.

Cochin University of Science and Technology (CUSAT)

ICMBGSD 2025 Conference

- International Conference on Marine Biodiversity, Genomics and Sustainable Development (ICMBGSD 2025) was held from April 9 to 11, 2025, at the School of Marine Sciences, Lakeside Campus, this international conference focused on marine biodiversity, environmental genomics, and sustainable development practices. Organized in collaboration with marine research agencies like MPEDA, the event brought together global experts to discuss conservation challenges and advances in coastal and oceanic science.

Faculty Development Programme on Human Rights

- From May 26 to June 1, 2025, the Justice V.R. Krishna Iyer Chair at CUSAT conducted a seven-day online Faculty Development Programme on human rights. It was aimed at law and social science faculty, covering legal pedagogy, human rights frameworks, experiential learning, and case analysis to enhance scholarly competence and classroom engagement.

CUSAT Innovation Showcase at 'Ente Keralam' Expo

- During May 2025, CUSAT participated in the 'Ente Keralam' government expo held in Ernakulam, where students and faculty displayed innovations such as a Mars Rover prototype (for the European Rover Challenge), a Formula Bharat race car, a VR Antarctica journey, and a multilingual legal chatbot. These exhibits highlighted the university's commitment to interdisciplinary, real-world solutions through research and technology.

Kerala University of Digital Sciences, Innovation and Technology

Final Technical Sanction for Digital Science Park

- In May 2025, KUDSIT's proposed Digital Science Park in Technopark Phase IV, Thiruvananthapuram, received its final technical sanction. This approval clears the way to issue construction tenders for a 2 lakh sq ft, five-storey facility—India's first third-generation digital science park—scheduled for completion in 12 months.

ATAL Faculty Development Programme: Healthcare with Cloud & IoT

- The university is hosting an ATAL-sponsored Faculty Development Programme titled "Next-Generation Healthcare with Cloud Computing and IoT", from June 30 to July 5, focusing on integrating cloud, IoT, and digital technologies into healthcare—a key signal of growing interdisciplinary faculty research.

"Girls in ICT Day" Awareness Event

- On April 23, KUDSIT observed Girls in ICT Day (10:30 am–1 pm), promoting gender inclusivity in digital technology fields. The event featured interactive sessions for female students to explore ICT careers, mentorship, and the university's diversity initiatives.

EU–India delegation for Horizon Europe research pact

In June 2025, a high-level EU–India delegation visited key research institutions in Kerala—including the University of Kerala, KUFOS, MG University, NCESS, and others—to initiate collaborations under a €41 million Horizon Europe research pact. This initiative includes two major joint calls: one focused on assessing and mitigating marine pollution (microplastics, heavy metals, etc.), and another on developing waste-to-green hydrogen technologies using biogenic waste. Co-funded by the EU and Indian ministries (MoES and MNRE), the programme aims to foster long-term scientific partnerships, enhance ocean health monitoring, and support renewable energy innovation. Kerala's institutions are poised to play a central role in these transnational research consortia, with proposals due by September 2025.

What is Horizon Europe?

- Horizon Europe is the EU's key funding programme for research and innovation. Following the Multiannual Financial Framework Midterm Review (MTR) decision, the indicative funding amount for Horizon Europe for the period 2021-2027 is EUR 93.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dispersing of excellent knowledge and technologies.

Thunchath Ezhuthachan Malayalam University

Seminar on Feminist Translation :

- The National Seminar on Feminist Translation was held from June 11 to 13, 2025, at Thunchath Ezhuthachan Malayalam University, Vakkad, Tirur. Organized by the university's Department of Feminist Translation, the three-day academic event brought together scholars, researchers, and faculty from across India to engage in critical discussions on the theories and practices of feminist translation. The seminar aimed to explore how gender perspectives influence translation choices, challenge patriarchal narratives, and contribute to inclusive language practices. Participants were invited to present research papers that addressed various dimensions of feminist translation, including linguistic representation, cultural politics, and intersectionality in literature. The event served as a platform for advancing scholarly discourse and promoting gender-sensitive translation methodologies within academia.

Dr. Sharmila Mary Joseph, a 1997-batch IAS officer of the Kerala cadre, took over the charge of the Principal Secretary of the Higher Education Department, Government of Kerala. She has held several key administrative roles, including Principal Secretary in the departments of Local Self-Government, Rural Development, Social Justice, Women and Child Development, and Health and Family Welfare (Medical Education), Departments such as Planning & Economic Affairs and Finance (Expenditure) etc.

Kerala Agricultural University

SPARC Phase III Project Kick-Off

- On April 7, 2025, the College of Agriculture, Vellayani, hosted the launch of KAU's SPARC Phase III project titled "Assessing Vulnerability to Flood and Drought Hazards using Machine Learning." The international collaboration involves Justus Liebig University Giessen and the University of Hohenheim (Germany), along with CUSAT and IIT Roorkee. The event featured hybrid workshops, research discussions, and training sessions focused on climate-resilient agricultural modeling using AI and spatial analysis tools.

"AI 4 Publishing" Workshop

- From April 12 to 16, 2025, the Department of Agricultural Extension Education, Vellayani campus, conducted a hands-on workshop titled "AI 4 Publishing." The five-day training introduced postgraduate students to artificial intelligence tools for academic writing, citation management, and data visualization. Led by experts including Dr. Achuthsankar S. Nair, the workshop aimed to improve research output and publishing efficiency, culminating in a certificate award ceremony.

College of Agriculture, Vellayani – Platinum Jubilee

- Between May 21 and 28, 2025, KAU celebrated the Platinum Jubilee (70 years) of the College of Agriculture, Vellayani, with week-long academic and outreach events. Highlights included a seminar on urban and peri-urban agriculture, a two-day agri-tech fair, and a grand Agri-Science Exhibition and Knowledge Fair inaugurated on May 26. The celebration featured student innovation displays, heritage booths, digital farming tools, and drew large public and academic participation.

Joint Master's programme with University of Western Australia

- On June 19, 2025, Kerala Agricultural University signed a strategic academic agreement with the University of Western Australia (UWA) to launch a dual-degree M.Sc. programme in Environmental Science and Agricultural Economics. The program, set to begin with the 2026 admissions cycle, will allow students to study across both Indian and Australian campuses, emphasizing sustainability, global food systems, and environmental policy.

KAU Convocation Ceremony 2024

- The Kerala Agricultural University's Annual Convocation for the 2024 graduating batch was held on June 26, 2025, at the Hyatt Regency, Thrissur. The event celebrated academic excellence with degree awards, gold medals, and honorary doctorates. Distinguished alumni and international partners like UWA were acknowledged, marking the university's growing international collaborations and its commitment to agricultural innovation and environmental stewardship.

Kerala University of Fisheries and Ocean Studies

QnSmart Academic Tool Workshop

- On April 28, 2025, KUFOS hosted an exclusive workshop at Panangad campus for faculty and staff to demonstrate the implementation of the new QnSmart academic tool—a digital platform aimed at streamlining teaching assessments and research coordination within university departments

Water & Soil Quality Analysis Training

- On June 2, 2025, KUFOS conducted a practical training session at Panangad focused on advanced Water & Soil Quality Analysis. Designed for postgraduate researchers and extension officers, the programme emphasized hands-on lab techniques, GIS mapping, and data interpretation relevant to aquaculture research.

Fish Cell Culture Techniques Workshop

- Held on June 14, 2025 at the Panangad campus, this workshop introduced participants to fish cell line culture methodologies, covering aseptic techniques, media preparation, contamination control, and applications for disease diagnostics and toxicological studies in fisheries science

APJ Abdul Kalam Technological University

ETIS 2025 Research Workshop

- On March 8, 2025, KTU hosted ETIS 2025 (Emerging Technologies for Intelligent Systems) at Mar Baselios College of Engineering & Technology, Thiruvananthapuram. The Day 3 session, titled "Aspiring for Quality Research: Orientation for M.Tech Students", featured Dr. Alex James (DUK) and emphasized enhancing postgraduate research skills and academia-industry collaboration

Online IT Workshop – Linux & FOSS (Batch II)

- In June 2025, KTU conducted an Online IT Workshop covering Linux, Free and Open Source Software tools, Python programming, Object-Oriented Programming (OOP), and introductory AI. The interactive virtual workshop, aimed at first-year engineering students, focused on foundational development skills and open-source technologies

Kerala Kalamandalam Deemed University

Historic Admission in Bharatanatyam

- On June 12, 2025, Kerala Kalamandalam admitted its first 11-year-old boy, Daniel Eldho, into a six-month introductory bharatanatyam course at Vallathol Nagar. This marks the broadening of access to traditionally gender-specific disciplines, following a policy change in 2024 allowing all genders to enrol in its performing-arts programmes

'Contemporary Kerala' Faculty Development Programme

- Throughout late June into July, the university's 'Study in Kerala' initiative launched a 14-day Contemporary Kerala FDP. Held at the Nila Campus, it covers Kerala's culture, literature, democracy, caste, temple festivals, martial traditions, environmental issues, and traditional performance arts—designed for international academics

Resumption of Public Recital Tours

- After a pause during April–May exams and summer break, guided public performances of Kathakali, Kutiyattam, Mohiniyattam, Thullal, and Panchavadyam in the campus Koothambalam resumed in June 2025, welcoming tourists, students, and art enthusiasts from across India and abroad

Kerala Veterinary & Animal Science University (KVASU)

Inauguration of Dairy & Food Technology Lab at VKIDFT, Mannuthy

- On June 16, 2025, Hon. Chief Minister Pinarayi Vijayan inaugurated a state-of-the-art laboratory complex at the Verghese Kurien Institute of Dairy & Food Technology (VKIDFT), Mannuthy. The facility enhances research and training capabilities in dairy processing, quality control, and food technology.

"Milk Arang" – Value-Added Dairy Product Training

- From June 18, 2025, VKIDFT, Mannuthy, hosted a three-day hands-on training programme titled "Milk Arang" on value-added dairy product preparation. Designed for entrepreneurs and extension officers, the workshop focused on formulation, processing techniques, sensory evaluation, and packaging for market readiness.

Lab Animal Models Workshop

- Between June 13–17, 2025, the Department of Veterinary Pharmacology & Toxicology at CVAS Mannuthy conducted an intensive Lab Animal as Experimental Models workshop. Participants learned aseptic techniques, ethical considerations, and experimental protocols essential for preclinical research in veterinary and biomedical sciences .

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Dental Implants That Feel Real

Traditional dental implants can't fully replicate natural teeth, lacking sensory feedback and often causing nerve damage. Now, Tufts University scientists have created a “smart” implant that fuses with gum tissue and nerves, mimicking the feel and function of real teeth. This innovative design uses a biodegradable outer layer with stem cells and a protein that stimulates nerve growth. Unlike conventional implants that require bone drilling, the new method is gentler and less invasive. “Natural teeth connect through nerve-rich tissue,” said Tufts’ Jake Jinkun Chen. “These new implants aim to restore that vital sensory connection’

Source: www.newatlas.com

Launch of 'Jigyasa' Science Outreach Initiative

The Indian Institute of Technology (IIT) Delhi has launched a new science outreach initiative called 'Jigyasa' aimed at bridging the gap between scientific research and the public. Organized by the institute’s academic outreach office, the programme seeks to demystify complex scientific concepts and present them in accessible formats. Faculty and students from IIT Delhi will engage with communities and institutions across India, showcasing their research and illustrating how scientific advancements impact everyday life.

Image Source: www.wikipedia.com

Rethinking Global Reforestation Potential

Global maps of reforestation potential often vary widely, limiting their usefulness. Researchers reviewed 89 maps to develop improved global models, presenting eight reforestation scenarios that balance goals like ecosystem services, social acceptance, and policy alignment. They estimate a maximum of 195 million hectares (2225 $TgCO_2e$/year) are realistically available—71–92% less than past claims due to stricter data and safeguards. The area could shrink to just 6 million hectares if limited to protected lands. Few areas meet all goals, highlighting the need for diverse strategies to maximize reforestation's climate and ecological benefits.

Source: https://doi.org/10.1038/s41467-025-59799-8

Image Source: www.appily.com

Nano-Antennas Revolutionize Brain Monitoring

Researchers at the University of Wisconsin–Madison have created a groundbreaking tool for brain research: nano-antennas the size of brain cells. These gold, mushroom-shaped devices attach to neurons and amplify their magnetic signals over 250 times—wirelessly and noninvasively. This innovation may enable real-time monitoring of individual brain cell activity for the first time. Previously, scientists relied on either invasive electrodes or low-resolution methods like EEG. This new approach offers a minimally invasive yet highly detailed alternative. The team has already simulated the technology and is preparing for tests in cell cultures and animals, potentially transforming neuroimaging and brain-computer interfaces.

Source: https://engineering.wisc.edu/news

Image Source: www.usnews.com

India's Tiger Comeback: A Global Conservation Model

India's wild tiger population doubled from 2006 to 2018, expanding its range by 30% despite development pressures. This success—driven by protected habitats, habitat corridors, scientific monitoring, and strong laws—has made India home to nearly 75% of the world's tigers. Key strategies included land sparing (relocation from core zones) and land sharing (coexistence with people). Political will, community support, and eco-tourism incentives also played vital roles. Yet, challenges like poaching, fragmentation, and uneven recovery remain. Experts warn continued success depends on balancing ecology and development, ensuring connectivity, and adapting to evolving threats.

Source: https://doi.org/10.1038/d44151-025-00093-3

China Unveils Hyperspeed Maglev Prototype

China has revealed a prototype maglev train that could travel from Beijing to Shanghai (1,200+ km) in just 90 minutes—matching jet speed on the ground. Using advanced magnetic levitation, the train floats above tracks, eliminating friction and noise while achieving extreme velocity.

For context, the same trip takes 5+ hours by current high-speed rail and over 2 hours by plane (including airport time). This could make regional flights obsolete. Still in testing, the project promises to transform travel and redefine global transport.

Image Source: wikipedia.org

Singapore's First Wildlife Bridge

Singapore, often known as a "City in a Forest," has constructed Southeast Asia's first ecological bridge to reconnect two nature reserves separated by an expressway. This green corridor allows wildlife to safely cross between the Bukit Timah and Central Catchment Nature Reserves, expanding their habitat and access to food and mates while reducing the risk of road fatalities. By restoring this crucial ecological link, the bridge supports greater biodiversity, genetic diversity, and long-term species survival. The project reflects Singapore's commitment to urban conservation and sustainable development, blending infrastructure with nature to protect and enhance its rich natural heritage

Image Source: https://www.nparks.gov.sg/

Brazil Paves the Way with Sugarcane Waste

Brazil is quietly leading a sustainable infrastructure revolution by using sugarcane waste to build roads. Scientists have discovered that sugarcane bagasse ash—a byproduct of sugar production—can replace stone dust in asphalt. The result: roads that are not only stronger and more durable, but also significantly more eco-friendly. This innovation reduces the need for mineral extraction, lowers carbon emissions, and enhances road performance. Early highway trials show promising results, highlighting the potential for global adoption. By blending agriculture, technology, and sustainability, Brazil's sugarcane-powered roads could redefine how nations approach road construction in a greener, smarter future

Image Source: https://vespertool.com/

Academic Mobility

Academic mobility refers to the movement of students, researchers, and faculty across institutions, regions, or countries for academic purposes. In India, it plays a vital role in internationalizing higher education and enhancing exposure to diverse knowledge systems. Initiatives like GIAN (Global Initiative of Academic Networks) invite international faculty to Indian universities, while Study in India aims to attract foreign students to Indian institutions. The NEP 2020 also emphasizes the importance of both inward and outward mobility, encouraging twinning programs, joint degrees, and student exchange agreements with global universities. Indian students increasingly participate in mobility programmes like Erasmus+, Fulbright-Nehru Fellowships, and university MoUs that allow credit transfer and research collaboration. In addition to it, mobility of students from one institution to the other using their credit transfer is also coming under this aspect. Mobility enhances cultural understanding, global employability, and academic quality.

Massive Open Online Courses (MOOCs)

Massive Open Online Courses (MOOCs) are affordable, flexible online programmes designed to provide large-scale access to quality education. They offer video lectures, assignments, and assessments, often created by top universities and industry leaders. In India, government-backed platforms like SWAYAM, NPTEL, and SWAYAM Plus play a key role. SWAYAM provides free courses from institutions such as IITs and IGNOU, while NPTEL focuses on technical content. SWAYAM Plus offers industry-aligned, credit-eligible courses to enhance employability, aligned with the National Credit Framework (NCrF).

Globally, platforms like Coursera, edX, FutureLearn, and Udacity partner with leading universities and companies to offer courses in technology, business, humanities, and more. MOOCs support self-paced and lifelong learning, helping individuals upskill, reskill, or earn certifications. In India, the National Education Policy (NEP 2020) encourages integrating MOOCs into formal education through blended learning and credit transfer. By increasing accessibility and reducing barriers, MOOCs are democratizing education across regions and backgrounds.

Curriculum Designing

Curriculum design is the structured process of planning and organizing academic content, teaching methods, learning outcomes, and assessments to ensure effective student learning. It plays a crucial role in aligning education with societal needs, industry demands, and global standards. In India, curriculum design is being reshaped by the National Education Policy (NEP) 2020 and also as per the reforms implemented by the respective States and Universities. The new trend promotes a multidisciplinary, flexible, and holistic approach. The focus is on outcome-based education, skill development, integration of technology, and inclusion of Indian knowledge systems. The policy also encourages credit-based modular courses and multiple entry-exit options to enhance student choice and mobility.

Globally, curriculum design emphasizes learner-centric models, digital literacy, interdisciplinary learning, and employability skills. Many universities adopt frameworks like the European Credit Transfer System (ECTS) to ensure international compatibility and student mobility. Whether in India or abroad, effective curriculum design is central to producing well-rounded graduates who are prepared for dynamic careers and lifelong learning.

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All Kerala Higher Education Survey

Developing a comprehensive database of higher education institutions in the state based on several parameters including state specific features with time bound updation.
To strengthen official statistical system for review of the performance of education sector in its regional divergences across the state. This scheme for is similar to AISHE

- KSHEC conducts survey of Higher Education Institutions on Academic/ Infrastructure components on an annual basis.
- This scheme of the survey is at par with All India Higher Education Survey (AISHE).
- It includes state-specific details on Higher Education in Kerala.
- Annual maintenance of portal facility, publication of Annual Report and the other infrastructure updation is necessary for creating the state level data in Higher Education.

The Kerala State Higher Education Council initiative