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HIGHER EDUCATION MATTERS

magazine

A GATEWAY TO HIGHER LEARNING INITIATIVES

Designing and Implementing Curricula for Higher Education

KNOWLEDGE AND KNOWLEDGE SYSTEMS

K.P. Mohanan & Tara Mohanan

K-REAP

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KERALA STATE HIGHER EDUCATION COUNCIL PUBLICATION

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A GATEWAY TO HIGHER LEARNING INITIATIVES

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HE MATTERS

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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.

Curated Stories
Higher Education Matters Magazine prides itself on the educational content published in the magazine in print. We believe knowledge is power, which is why we work so hard to cover topics about local to global issues and initiatives pertaining to higher education. Throughout the magazine you may come across articles open to every reader irrespective of online or print editions. If you have any questions about the nature of the magazine, please reach out to us.

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Opening Note | Editor in Chief

Dear Readers,

In this sixth edition, we navigate the intellectual, technological, and philosophical currents reshaping higher education. With a blend of global perspective and local initiative, this issue presents both time-tested wisdom and forward looking innovations that challenge us to reflect, reimagine, and reform.

We begin with a foundational inquiry: What is knowledge? In a lucid, thought provoking piece, K.P. Mohanan and Tara Mohanan unravel the structure and essence of knowledge systems. Their article serves as a philosophical scaffold, grounding our understanding of learning, cognition, and the role of higher education in society. Building on this theme, Designing and Implementing Curricula for Higher Education explores how institutions can realign pedagogy to nurture "higher order cognitive processes" rather than simply deliver content.

These reflections take tangible form in Kerala's digital leap 'K-REAP' an ambitious platform unifying academic governance, student lifecycle management, and learning through state of the art infrastructure.

Equally compelling is our double feature on artificial intelligence in academia. While AI and the Future of Education (UNESCO overview) examines ethical dilemmas and systemic shifts in classrooms, Ali Shiri's AI in Universities focuses on research: the promise and peril of large language models transforming scholarly work. Together, these pieces provide a holistic view of AI's impact on pedagogy and publication.

Finally, in From Anagram to Law: How F = kx became a Cornerstone of Physics and Engineering, Prof. Gangan Prathap guides us from linguistic puzzles to physical principles, a metaphor for the hidden depths of academic inquiry.

May this issue inspire you to question deeply, engage fully, and act purposefully.

Warmly,
The Editor-in-Chief

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HE MATTERS

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Designing and Implementing Curricula for Higher Education:

General Introduction

K P Mohanan and Tara Mohanan

Does Higher Education matter? If our answer is yes, then the next question is: why does it matter? What desirable outcomes does the Institution of higher education bring to the human species, outcomes that would be absent if the institution had not come to exist in human history?

This **series of articles** begins with the axiom that:
the ultimate purpose of education is to help members of the human species become truly educated (as distinct from doing well in exams and receiving degrees and certificates), such that they can work towards their own well-being and the well-being of others (including other life forms on the earth) along the physical, emotional, intellectual, societal, aesthetic, ethical, and spiritual dimensions of life.

Within that purpose, we assume that:
the function of Higher Education is to help learners develop what we call Academic Cognition, which NEP 2020 calls Higher Order Cognition, whose strands include the capacities for self-directed, independent, lifelong learning; critical reading and critical thinking; independent inquiry and integration of knowledge, all of them developed through the pursuit of Academic Knowledge.

If the institution of higher education were to be erased from the history of the human species, the well-being of the human species and other life forms on the earth would be compromised. That is why higher education matters.
With that answer, this series of articles seeks to explore issues in the design and implementation of curricula for higher education that aim to help learners develop the capacity for Academic Cognition.

Knowledge and Knowledge Systems

K P Mohanan and **Tara Mohanan**

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1. Education and Educatedness

Education is the process of helping learners — those who seek to learn — become educated. Educatedness is not a matter of receiving certificates and degrees. It is a quality of mind. A person who never obtained a Bachelor's degree can still be a highly educated individual, and one who has a Doctorate might be considered a poorly educated one. The primary function of institutionalised Higher Education would ideally be to help learners develop the quality of mind that we expect from highly educated individuals, and not just that of providing credentials.

To this end, it is imperative that the designers of curricula in a Higher Educational environment have a deep understanding of the nature of academic knowledge, and the nature of the knowledge systems that shape the construction and critical evaluation of knowledge. Such curricula can support students in developing a set of capacities specifically associated with the knowledge they acquire, and knowledge field they learn within.

It is, however, equally important that the students also obtain a rudimentary understanding of the nature of knowledge and systems of knowledge, and develop the capacity of Higher Order Cognition as stated in NEP 2020. This calls for students to understand how different kinds of academics think — mathematicians, scientists, philosophers, historians, literary critics, as well as engineers, doctors, lawyers, and so on — and what ways of thinking are shared across the systems of knowledge.

Bearing in mind the goal of education suggested above, this article is a preliminary attempt to share with stakeholders of higher education our answers to two questions:

- What is knowledge?
- What is a knowledge system?

2. What is Knowledge?

Imagine that you are walking along a path in a forest. You experience a particular fragrance. If you have lived in a village in India, chances are that you would be able to identify that fragrance as coming from a particular category of flowers, say, the flowers of a jasmine plant. A few meters further, you get a whiff of another fragrance, perhaps coming from the flowers of a champaka plant *(Magnolia Champaca).* Someone who has never had the prior *experience* of the fragrance of jasmine flowers and champaka flowers would not be able to do what you did. That person does not have the *knowledge* of the flower fragrances that you have.

Given this, it would be reasonable for you to say, "I know what jasmine and champaka flowers smell like."

Now consider the following dialogue:

Zeno: Which of these propositions is true?
Proposition 1: The Earth revolves around the Sun.
Proposition 2: The Sun revolves around the Earth.
Plato: The first one.
Zeno: So it would be reasonable to say that you *know* that the earth revolves around the Sun?
Plato: Definitely.

Knowing that the Earth revolves around the Sun is an example of textbook knowledge that communicates the findings of academics. We may use the term ACADEMIC knowledge to denote this kind of knowledge. EXPERIENTIAL knowledge, on the other hand, is the kind of knowledge you have about the fragrance of jasmine and champaka, and is not the same as Academic knowledge.

However, they are both valid forms of knowledge and share the same framework:

x knows that y

where x is the individual human knower, and y is a statement that the knower knows.

There is another dimension to knowledge that we may call "know how-to" knowledge, as distinct from the "know that" knowledge. For instance, knowing *how to ride* a bicycle is not the same as *knowing that* bicycles have two wheels. In this article, our primary attention would be on the *know-that* form of knowledge.

3. Types of Knowledge

One way of categorising knowledge is in terms of its subject matter. Astronomy, physics, materials science, chemistry, biology, anatomy, physiology, psychology, sociology, economics, and history are examples of disciplines that differ in subject matter.

Another way of classifying knowledge is in terms of what it is based on or where it is derived from. In the previous section, we suggested that we can say that x knows that y only if x believes y to be true. With this in mind how do we determine something to be true? Consider the following examples:

~Knowledge based on the testimony of an authority

Zeno: Do you believe that the Earth revolves around the Sun?
Plato: Yes, indeed.
Zeno: Why do you believe that?
Plato: Huh? Because it's true.
Zeno: I'm asking you why you think it is true. Why do you think that the statement that the Sun revolves around the Earth is false?
Plato: Well, that is what the textbooks say.

Now compare that with the following ones:

~Knowledge Based on Experience

Zeno: Do you believe that a stubbed toe is more painful than a pin prick?
Plato: Yes, indeed.
Zeno: Why do you believe that?
Plato: Because that has been my experience.

~ ***Knowledge based on Observation and Reasoning***

Zeno: Do you believe that Socrates is taller than Aristotle?
Plato: Yes.
Zeno: Have you seen them standing side by side or measured their heights?
Plato: No. I haven't. But I have seen Socrates standing next to Dogenes. Socrates is taller than Diogenes. And I have seen Diogenes standing next to Aristotle. Diognes is taller than Aristotle. So it is legitimate to conclude that Socrates is taller than Aristotle.

~***Knowledge based on Prior Knowledge and Reasoning***

Zeno: Do you believe that all ants have compound eyes?
Plato: Yes.
Zeno: Have you looked at every ant to check if it has compound eyes?
Plato: No, I haven't.
Zeno: Why then do you believe that that statement is true?
Plato: Well, I know that all insects have compound eyes. I also believe that ants are insects. It follows therefore that all ants have compound eyes. If the first two statements are true, then the third statement must be true.

~***Knowledge based on Feeling***

Zeno: Do you believe that Athena loves you?
Plato: Yes, indeed.
Zeno: Why do you believe it is true?
Plato: I have a strong feeling that is it true. There is no other reason. Closely related to the concept of Knowledge based on Feeling are the concepts of Experiential Knowledge and Personal Knowledge. Suppose someone called Mino says: "On 21st December 2024, I dreamt that I was an insect."

Mino's statement is part of his PERSONAL knowledge, not ACADEMIC knowledge; it is what an individual believes to be true, and is knowledge that only that person has access to, such as dreams. This is not only an example of PERSONAL but EXPERIENTIAL knowledge as well, showing how many of the categories intersect or overlap.

Our intention is not to defend the postulation of any of these categories, but to give the readers a sense of the variety of categories based on different reasons for believing that something is true.

4. Knowledge, Knowing, Cognition, and Cogniser

The term *cognition* comes from the proto-Indo European root *gno-* from which the English words *cognise* and *know* are derived (see https://www.etymonline.com/word/cognition). The Sanskrit word *jnana* 'knowledge' is also derived from the same root (see https://en.wikipedia.org/wiki/jnana).

Cognising is knowing, and hence we may use the term *cogniser* to mean 'knower', which in our terminology, includes not only individual human beings who know something, but also communities of knowers who share a certain knowledge. In this sense, we can say that physicists know that electrons are negatively charged, and that those who have a university degree know that the Earth revolves around the Sun. It would also be legitimate to say that the ancient knowledge seekers 'knew' that the Sun revolves around the Earth.

What does it mean to say that a cogniser x knows that y? We propose the following answer:

For us to say that
x knows that y,
the minimal condition is that x believes y to be true.

Earlier, we made a distinction between *know-that* knowledge and *know-how-to* knowledge. The issue of truth does not apply to *know-how-to* knowledge.

5 . What is Academic Knowledge?

In the previous sections, we took it for granted that the category of knowledge that Higher Education is concerned with is that of ACADEMIC. We also discussed examples that implied a distinction between ACADEMIC knowledge and other types of knowledge such as EXPERIENTIAL knowledge and PERSONAL knowledge. But we did not answer the question: What do we mean by the term 'academic knowledge?'

We might begin by saying that academic knowledge is *a body of statements that are accepted as true by the community of academics*. And we define academics as *those who are professionally committed to the pursuit of truth*.

Another way of characterising the concept of academic knowledge is to consider it as the sum total of knowledge in all of the disciplines in the structure of a University: mathematics, astronomy, physics, biology, sociology, history, philosophy, and so on.

Yet another way of defining academic knowledge is as the knowledge transmitted through institutions of Higher Education. Knowledge of theory construction in Mathematics, the physical-biological-human sciences, and the humanities, such as art history, are examples of academic knowledge. A course in anthropology that explores courting patterns in different cultures might find a place in a university, while a course that provides training in the the art and craft of flirting, or in how to engage in effective gossip, may not be appropriate in a university.

6. Characteristics of Academic Knowledge

Academic knowledge is one of the bodies of rational knowledge. What do we mean by that? As a starting point, we may say that being rational requires adherence to two guiding principles of rationality:

Accepting Logical Consequences

> *If we accept a set of premises, we must also accept the conclusions that logically follow from them.*

If we accept the statements that all humans are primates, all primates are mammals, all mammals are vertebrates, and all vertebrates are animals, then we must also accept the conclusion that all humans are animals.

Rejecting of Logical Contradictions

> *Combinations of propositions that are logically contradictory must be rejected as false.*

The compound proposition that the earth is flat and the earth is not flat constitutes a logical contradiction. Hence we must not accept it as part of our knowledge.

Logical consistency is the absence of logical contradictions, hence we may alternatively formulate this principle as: "A body of knowledge must be logically consistent."

We are by no means suggesting that academic knowledge is superior to or more valuable than any of the other forms of knowledge. Nor are we saying that Academic Knowledge is the only form of rational knowledge.

Rational considerations are equally important for other forms of knowledge. For instance, fishermen use their geo-centric Ethnic knowledge of the sky and the stars, the seasons, and the ocean, to reason and decide when and where to fish. This decision is certainly based upon rational thinking. For some forms of illnesses, homemade plant remedies based upon one's ethnic knowledge may be more effective cures than pharmaceutical products offered by modern mainstream medicine, while for other illnesses, the medications of modern mainstream medicine may be more effective. These decisions too involve rational thinking.

In the context of Higher Education, the term *ethnic knowledge* is often contrasted with *universal knowledge*, with the implication that academic knowledge is universal. Let us take a close look at this distinction.

What does the term *universal* mean in the claim that Academic Knowledge is universal? Suppose we say that what it takes as true applies to the whole universe, and is not restricted to a specific part of the universe such as a specific individual community, a region on the earth, or even the earth itself. How tenable is this distinction?

The so-called universal law of gravitation that says that every material body in the universe attracts every other material body is indeed universal. However, the statement creates a problem for Galileo's law of falling bodies. If we drop a stone from a height, its downward acceleration is 32 feet per second. This is not universal because while it may be true for the earth, it is not true for some other planet or for any of the moons. If we take Galileo's law as universal, then we must reject our definition of universality.

To solve this problem of terminology, can we say that Academic Knowledge is universal in the sense that it holds true on all of the earth? In this sense, Galileo's law of falling bodies might appear to be universal at the first blush, but on closer examination, difficulties arise. If we drop a rock from a height of, say, a kilometre above the earth, it would obey law of 32 feet per second acceleration. But what if it is from a height of a little more than half the distance between the earth and the moon? Would it still obey that law?

Suppose we were able to build a tube, say, with a radius of 5 meters from one side of the earth through the molten metal at the center to the other side, would the acceleration be the same at the center? If not, does Galileo's law apply to all regions of the earth? Is it a universal law?

How about the statement that water boils at 100^0 C. It is true on the earth at sea level, but not true at higher altitudes on the earth.

The knowledge of the effectiveness of the glutathione molecule (C10H17N3O6S) in healing cellular dysfunctions is part of our academic knowledge, not ethnic knowledge, because it has no geo-cultural restrictions. Glutathione is a constituent molecule of the *tulsi* plant *(Ocimum tenuiflorum)* which is found in Asia, Australia, and the Western Pacific. There is a belief that tea made from the combination of fresh tulsi leaves and ginger root can cure a common cold. Is this belief part of Academic Knowledge or Ethnic Knowledge? We leave the question open for you to gnaw on.

However, bear in mind that there are different varieties of what we call tulsi and ginger and within these varieties the properties may vary depending on the environment such as the soil or the climate. And in addition, the processes of making the tea can vary depending on many factors as well.

What we have done in this section is to outline some of the characteristics of Academic Knowledge which it may or may not share with other forms of knowledge. We have also raised questions about some of its alleged characteristics.

7. What is a Knowledge System?

Having provided a number of examples of different types of knowledge, we are now ready to answer the question, "What is a knowledge system?" As the first step, we begin with the question,

"What is a system?"
A system is *a set of interrelated components that perform a given function or a set of functions*. In this sense, the respiratory system, the circulatory system, the neural system, the digestive system, and other systems in a human body are prototypical examples of systems. So are economic systems, legal systems, and systems of medical practice in human society.

Given this concept of system, we may define the concept of 'knowledge system' as follows:

> A KNOWLEDGE SYSTEM is a set of interrelated components that together have the function of constructing knowledge and evaluating knowledge claims.

The components of knowledge systems include:

- ways of looking for answers to questions that need investigating (methodology);
- ways of arriving at conclusions from premises (modes of reasoning); and
- ways of justifying or refuting the claims (the norms for establishing knowledge claims as true or false);

Readers who are familiar with the history and philosophy of science would immediately see that the concept of knowledge system is a generalisation of the concept of paradigm in Thomas Kuhn's 1962 book, *The Structure of Scientific Revolutions*. In our judgment, the best definition of the concept of paradigm appears in S Dasgupta's 1992 article, "Understanding design: Artificial intellligence as an explanatory paradigm":

> "In essence, a Kuhnian Paradigm is a network of generalised theories, metaphysical assumptions, metaphorical and heuristic models, methodological commitments, values and exemplars that are shared by, or are common to, a given scientific community. A paradigm provides the framework within which members of that community recognise and solve problems."

If we replace the concept of scientific communities with academic communities, then Dasgupta's definition of paradigms is the same as systems of academic knowledge. And if we generalise further by removing the specification 'academic', then it means the same as what we mean by 'Knowledge Systems'.

As far as Academic Knowledge is concerned, a central component of the knowledge system is ***reasoning***, the study of which is ***logic***. To illustrate, let us look at the differences between proofs in mathematics and experimental proofs in science.

Mathematical proofs are arguments in support of knowledge claims called CONJECTURES. The premise propositions for mathematical arguments are the ***axioms and definitions of a theory***, which we will call ***postulates***. Once a conjecture has been proved to establish it as a theorem, then that theorem can in turn be used as a premise. The form of reasoning used in mathematical proofs is that of ***classical deductive reasoning***, found in most standard textbooks on logic.

In experimental proofs, the premises are the outcomes of the experiment, a sample of ***data points***. In this domain, the counterpart of a conjecture is called a ***hypothesis***. Once established as true, hypotheses become ***observational generalisations*** on a population. The mode of reasoning from data points to observational generalisations is that of ***inductive reasoning***.

We urge the readers to reflect on how legal proofs in the criminal court are different from both mathematical proofs and experimental proofs.

Central to the differences between knowledge systems is the concept denoted by the English word, ***argument***. We use the term as synonymous with ***proof*** and ***rational justification***. But the reader must be warned that not everyone uses that word with the same meaning. Examples of different meanings include sentences like: "Don't you dare argue with me;" or "The couple were arguing throughout the night;" where it refers to disagreeing (with each other). In "I argue that AI is a wonderful gift to mankind," it probably refers to providing an extended exposition of an assertion, not providing reasons for the assertion.

The English words *know* and *knowledge* are also multiply ambiguous. Clarity in the understanding of the concepts denoted by these terms is central to the study of knowledge and knowledge systems.

Given our limited space, we do not expect all readers to fully understand the concepts we have given in bold italics. All that we have tried to do in this article is to outline the bare skeleton of the concepts of knowledge and knowledge systems, all of which need to be fleshed out.

Seeing the skeleton of an animal is hardly sufficient for anyone to understand its anatomy and physiology, let alone behaviour. What we have in this article is such a skeleton, as a starting point for further exploration.

8. Evolution of Knowledge and Knowledge Systems

Whether the cognizer is an individual, a community, or the human species, knowledge keeps evolving. So do knowledge systems.

Suppose we assume that *the rational knowledge created and transmitted in a University is Academic Knowledge*. Suppose we also define a University as *a place where novice learners and experienced learners are engaged in the pursuit of knowledge*. If so, we may say that the earliest Universities in the recorded human history were those of Takshashila, also known of Taxila, established around 1000 BCE.
(https://en.wikipedia.org/wiki/Taxila)
Scholars like Paanini and Caraka were products of Takshashila, and Paanini's Ashtaadhyaayi and Charaka's Charakasamhita were examples of the academic knowledge of the Ancient times. Plato's Academy, established around 400 BCE came next. Then came the ancient University of Nalanda, established around 400 CE.
(https://en.wikipedia.org/wiki/Nalanda_mahavihara)

Many propositions believed to be true two thousand years ago are now considered to be false, and vice versa. Examples are not hard to find in mathematics (e.g., axioms being self-evident), astronomy (e.g., geocentric and heliocentric theories), physics (theories of motion and gravity), chemistry (e.g., matter being infinitely divisible vs. indivisibility of atomic units of matter, water and air being elements), biology (e.g. evolution from unicellular ancestors), and psychology (e.g., mind being an emergent property of the body).

What is less well known, perhaps, is that knowledge systems also keep evolving. This includes our preconceptions of the nature of reality (called ontology), and the ways of establishing a proposition as true (called epistemology, logic being one its components.)

An important matter of debate in Ancient Knowledge Systems centered around the nature of ultimate Reality. The philosophical school called Sankhya, for instance, subscribed to dualism (*dvaita*), holding that the diversity of phenomenal reality is the result of the interaction between *Purusha* and *Prakriti*. The philosophical school called *advaita* subscribed to monism, holding that the diversity of phenomenal reality is a manifestation of a single ultimate reality called Brahman. In the West, the concept of the world being created by a Deity subscribes to dualism, while modern Cosmology lends itself to monism.

The very concept of rationality has been evolving. The logic of the ancient and medieval Western World was two-valued: every proposition was taken to be either true or false. In medieval Buddhist logic, logicians like Nagarjuna propounded a four-valued logic called *catushkoti* (tetralemma). Three-valued logic and multi-valued logics entered the western world in the early twentieth century. And four-valued logics emerged with quantum theory (quantum logic).

Is it rational to believe that a given proposition is neither true nor false? The Aristotelean system of two-valued logic tells us that it is not. It also tells us that it is not rational to believe that a given proposition is both true and false.

An important factor that distinguishes one knowledge system from another is the set of ways of knowing that they adopt, and the criteria they use to judge the reliability of knowledge. Another factor leading to their diversity is the historical circumstances in which they evolved.

9. The Series

In forthcoming articles in this series, we will explore in depth each of the concepts discussed in this one. At the heart of these concepts are the following characteristics exemplified in the best of academic knowledge and inquiry, though not necessarily by every academic or every 'discipline'.

- A) Doubting and questioning what one already believes to be true. (For a brief glimpse of this, watch what Hepatia, the heroine of the movie, says in the three minute YouTube clip: "Question your beliefs – Agora." https://www.youtube.com/watch?v=4N8EFH-qYJ4)
- B) Doubting and questioning candidates for belief. (Such candidates may come from others, or from one's own introspection.)
- C) Taking steps to minimise the doubts in (A) and (B), while avoiding complete certainty of belief.

Central to (C) is:

- (D) Reasoning.

We will show how an understanding of different systems of academic knowledge in terms of (A)-(D) is essential for all stakeholders of Higher Education, whether to acquire or to transmit academic knowledge in a meaningful way.

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next issue: "From Experience to Knowledge"

ThinkQ, founded by K. P. Mohanan and Tara Mohanan, is an educational initiative that nurtures higher-order thinking through inquiry, questioning, and integration across disciplines. It empowers learners to critically evaluate knowledge, cultivate intellectual curiosity, and engage in reflective learning, fostering independent, creative, and responsible thinkers for complex real-world challenges.

K-REAP:

Kerala's Digital Leap in Higher Education

K-REAP is Kerala's pioneering digital platform for higher education, integrating university governance, administration, and learning. Cloud-based, secure, and scalable, it streamlines admissions, academics, and student life. With an advanced LMS and mobile tools, it enhances teaching, learning, and transparency, **benefiting 30,000+ students across multiple universities free of cost.**

Sudheendran K

The Kerala Resources for Educational Administration and Planning, better known as K-REAP, is emerging as one of the most ambitious higher education digital reforms in the country. Initiated by the Kerala State Higher Education Council (KSHEC) under the Department of Higher Education, and implemented in partnership with ASAP Kerala and their technology partner, K-REAP is envisioned as a next-generation university governance and academic administration platform. It has been designed to meet the complex and diverse functional needs of universities and affiliated colleges across the state, symbolizing Kerala's commitment to digital transformation in higher education.

Unlike traditional fragmented legacy systems, K-REAP offers a holistic, cloud-based solution that integrates every aspect of academic and administrative life. The platform is delivered in a Software-as-a-Service (SaaS) model, which ensures scalability, centralized updates, and ease of deployment. Each university in Kerala receives a dedicated instance of the software, thereby safeguarding institutional autonomy while maintaining strict data segregation. At the same time, the system operates on Yotta Cloud, a MEITY-empanelled Tier IV data center, which guarantees data localization and 99.995 percent uptime. Robust physical and digital security features—including biometric access controls, encrypted storage, and round-the-clock monitoring—reinforce the reliability of this infrastructure.

Data security and ownership remain guiding principles of the platform. All information collected through K-REAP belongs to the implementing universities or colleges alone. While the system is seamlessly integrated with the Academic Bank of Credits (ABC) and the national APAAR ID framework, the use of Aadhaar is strictly optional and, when provided, remains securely masked. Encryption protocols such as SSL/TLS 1.2 for data in transit and AES-256 for data at rest ensure the highest standards of privacy, while every change made in the system is logged with a timestamp, offering an auditable trail that strengthens institutional governance.

K-REAP Kerala Resources for Education Administration and Planning

**Each university in Kerala receives a dedicated instance of the software, thereby safeguarding institutional autonomy while maintaining strict data segregation.
Robust physical and digital security features—including biometric access controls, encrypted storage, and round-the-clock monitoring—reinforce the reliability of this infrastructure.**

Functionally, K-REAP addresses the entire lifecycle of academic and administrative operations. Universities can now manage admissions, course registration, fee collection, examination processes, mark entry, result publication, and transcript generation from within a single integrated platform. The system also supports programme and course management, student lifecycle operations, and institutional administration. By integrating these processes, K-REAP eliminates duplication, enhances efficiency, and fosters transparency in governance.

In terms of adoption, the platform has already made significant headway. Over the past year, Kannur University has been using K-REAP for the Four-Year Undergraduate Programme (FYUGP) across its teaching departments and affiliated colleges. Thunchath Ezhuthachan Malayalam University and Sree Sankaracharya University of Sanskrit have also implemented it for their FYUGP programmes. The University of Calicut has adopted the system for its postgraduate courses, covering both regular and distance education streams, while Maharaja's College, Ernakulam, joined the group of early adopters this year. As of now, more than 30,000 students from five universities in Kerala are benefiting from this digital infrastructure, provided entirely free of cost by the Department of Higher Education.

The reform is not limited to backend governance alone. K-REAP has also rolled out digital tools aimed at enriching the teaching and learning experience. The Student Life Cycle Management System, Programme Life Cycle Management, and the University Management System have already been deployed, while a mobile application for students has improved accessibility and engagement. An administrative dashboard allows real-time monitoring of university activities, giving policymakers and institutional heads a clear picture of progress and performance.

At the heart of K-REAP lies its most powerful feature—the Learning Management System (LMS) for colleges. This state-of-the-art platform brings together teachers, students, and administrators into a common digital space for teaching, learning, and assessment. For teachers, it provides the ability to create, distribute, and teach curriculum-based content while automating non-academic tasks such as attendance records and reporting. It enables innovation in pedagogy, integrates smoothly with online conferencing tools for live classes, and supports comprehensive and continuous evaluation.

For students, the LMS promises a joyful and engaging learning environment. Courses, assignments, and resources are made available through user-friendly dashboards, while performance reports and progress tracking ensure continuous academic support. The system is fully aligned with the Outcome-Based Education model mandated under the FYUGP, helping institutions to deliver education that is both structured and flexible. Administrators, meanwhile, benefit from role-based dashboards and centralized access to institutional data, ensuring that governance is transparent, efficient, and data-driven.

The introduction of this LMS under K-REAP will transform the classrooms into hybrid digital spaces where technology complements human teaching. The fact that this sophisticated platform is being made available at no cost to students and institutions underscores Kerala's commitment to equity and inclusion in education. By bridging the digital divide and providing cutting-edge resources to every corner of the state, K-REAP is ensuring that no college or university is left behind in the digital age.

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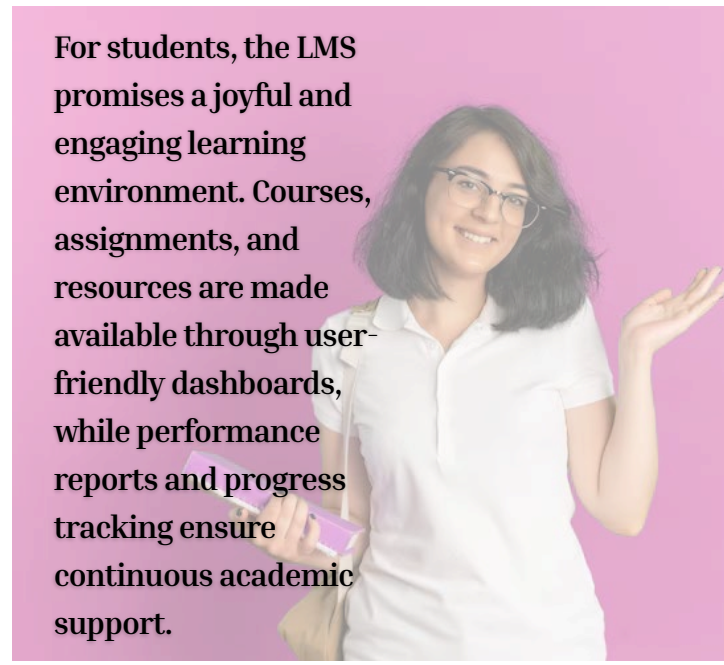
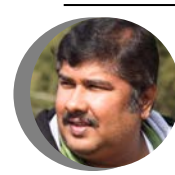


The significance of K-REAP extends beyond Kerala's borders. By integrating university governance, academic administration, and learning processes into one unified platform, the state has set a new benchmark for higher education reforms in India. Its architecture, which blends security, scalability, and compliance with national digital initiatives like ABC and APAAR, makes it a model that other states may seek to replicate.

K-REAP is not merely a software system; it is the digital backbone of Kerala's higher education reforms. It has already redefined how universities function, how students engage with learning, and how administrators govern institutions. As more universities and colleges adopt the platform, its impact will deepen, positioning Kerala as a leader in educational innovation and digital empowerment. In the coming years, K-REAP has the potential to transform higher education in the state into a system that is inclusive, efficient, globally benchmarked, and fully prepared for the challenges of the twenty-first century.



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Email: sudhi.kooriyattil@gmail.com

AISHE 2024-25

Last Date: 30-9-2025

The Kerala State Higher Education Council (KSHEC) serves as the State Nodal Agency for the All-India Survey on Higher Education (AISHE), a nationwide annual web-based initiative conducted by the Ministry of Education, Government of India. The survey plays a vital role in collecting comprehensive data on the status and functioning of higher education institutions throughout the country. In its capacity as the nodal agency, KSHEC is responsible for coordinating, monitoring, and facilitating the participation of all eligible institutions in Kerala.

In the past, KSHEC has achieved a commendable level of institutional participation, reflecting the state's dedication to transparency, accountability, and evidence-based educational planning. It was highlighted that 100% of universities and university-level institutions in the state took part in the survey, ensuring full representation at the university level. Moreover, KSHEC mentioned that 88% of colleges and 82% of stand-alone institutions including teacher training institutes, nursing colleges, and polytechnics that had successfully submitted their data.

The Council attributed this high participation rate in the previous years due to its effective engagement strategies and ongoing efforts to raise awareness among institutions about the importance of AISHE. The data collected through the survey contributes significantly to national education policy formulation, strategic decision-making, resource allocation, and the overall enhancement of higher education governance in the state.

Data Submission Drive for Higher Education Institutions in Kerala

All Higher Education Institutions (HEIs) in Kerala are hereby requested to proactively participate in the All India Survey on Higher Education (AISHE) for the academic years 2024-25 and 2025-26. The Ministry of Education, Government of India, is conducting this web-based annual survey to comprehensively capture the status of higher education across the country.

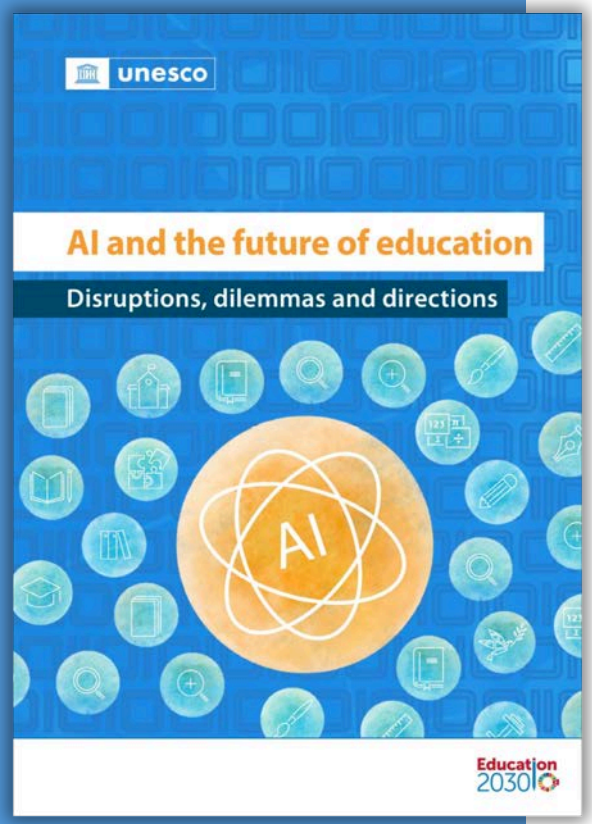
The last date for submission is 30th September 2025, and timely participation is essential for maintaining accurate and updated national education statistics that inform policy and planning.

In Kerala, the Kerala State Higher Education Council (KSHEC) has been designated as the State Nodal Agency to coordinate and facilitate the AISHE data collection process. A dedicated team at KSHEC is fully committed to supporting all institutions and will provide guidance, clarification, and technical assistance as needed throughout the process.

All institutions are urged to begin the registration and data entry process without delay to ensure completion well within the deadline.

For any queries or assistance, please contact the KSHEC AISHE support team. Let us work together towards strengthening the higher education ecosystem in Kerala and India.

https://aishe.gov.in



AI and the future of education: Disruptions, dilemmas and directions

unesco publication

AI and the Future of Education: Disruptions, Dilemmas and Directions is a landmark 2025 publication by UNESCO (United Nations Educational, Scientific and Cultural Organization), serving as a global thought leadership document on the implications of artificial intelligence in education. Bringing together 21 think pieces from leading international scholars, practitioners, and policy experts, the volume explores the philosophical, pedagogical, ethical, and governance challenges posed by AI. Published under the framework of the Education 2030 Agenda, it aims to foster inclusive, equitable, and human-centred approaches to AI in education through global dialogue and collective sense-making.

UNESCO's AI and the Future of Education is a timely, profound, and multi-perspectival contribution to one of the most pressing global debates: how artificial intelligence is transforming the future of education. Unlike policy-heavy, technocentric documents, this report embraces ambiguity, contradiction, and imagination. It provides a polyphonic collection of 21 think pieces by philosophers, educators, AI experts, and policy researchers across the world. Together, they challenge dominant techno-optimistic narratives and propose pathways rooted in equity, care, and ethical reflexivity.

The volume successfully avoids techno-determinism, inviting the reader instead to reimagine educational futures in ways that centre human agency, relational pedagogies, and ecological sensibility. The writing is both critical and hopeful, academic yet poetic. It is a must-read for education leaders, policymakers, technologists, and educators, offering a rare space to reflect, unlearn, and collectively rethink what kind of AI-integrated education futures we want and for whom.

The chapters collectively examine AI's transformative impact on education, addressing opportunities, risks, ethics, and equity. They present global perspectives, challenge dominant narratives, and propose inclusive, human-centered strategies for shaping sustainable educational futures

Chapter 1: Introduction – Reclaiming Education's Public Purpose

This chapter sets the tone for the entire book, framing AI not as an inevitable tool of progress, but as a contested actor shaping and being shaped by education systems already marked by inequality. UNESCO emphasizes education as a public good rooted in dignity, solidarity, and justice. It warns against technocratic solutions and calls for dialogue across diverse geographies, epistemologies, and experiences.

Chapter 2: AI Futures in Education – Philosophical Provocations

The opening essays offer deeply philosophical insights, beginning with Báyò Akómoláfé's call to "listen to the cracks" those spaces where traditional educational paradigms fracture under AI's influence. Bing Song proposes a relational and harmonious worldview, while Mary Rice and Joaquín Argüello de Jesús use water as a metaphor for AI's complex entanglements with learning. These pieces question the very foundations of what it means to learn and be human in the age of intelligent machines.

Chapter 3: Debating the Powers and Perils of AI

This section presents contrasting views on AI's role in education. Andreas Horn promotes pragmatic integration with guardrails and teacher training, whereas Emily Bender warns of corporate colonization of education through overhyped AI narratives. Markus Deimann and Robert Farrow advocate reclaiming educational values like justice, sustainability, and inclusion amid the noise of AGI futurism.

Chapter 4: AI Pedagogies, Assessment and Emerging Educational Futures

Here, contributors like Abeba Birhane argue that education is an ethical and relational process, not reducible to algorithms. Carla Aerts and Paul Prinsloo warn against hyper-personalization, while Mike Perkins and Jasper Roe critique traditional assessments in the GenAI era. In contrast, Bill Cope and colleagues imagine AI-enhanced, formative assessment grounded in teacher design and student feedback. This section calls for a complete rethink of pedagogy and assessment models.

Chapter 5: Revaluing and Recentring Human Teachers

With AI stepping into roles once reserved for humans, this chapter defends the irreplaceable value of teachers. Ching Sing Chai et al. offer a multidimensional analysis of the teacher's role, while Arafeh Karimi proposes "Compassion by Design", a framework where AI systems are co-designed with educators to embed care, ethics, and equity at every level. The emphasis is on pedagogical dignity and human flourishing.

Chapter 6: Ethical and Governance Imperatives

Ethical AI cannot be retrofitted; it must be embedded from the start. Kaśka Porayska-Pomsta and Isak Nti Asare push for participatory design grounded in real-world classroom realities. Kalervo Gulson and Sam Sellar raise deeper concerns about "synthetic governance", warning that data-driven automation can erode democratic participation. Together, these essays stress that governance must prioritize inclusion, transparency, and human rights.

Chapter 7. Confronting Coded Inequalities

Case studies highlight AI's risks of reinforcing gender, linguistic, and disability-based exclusions. Authors propose participatory, context-driven approaches in Africa, young women's education, and deaf/hard-of-hearing learners' inclusion

Chapter 8: Reimagining AI in Education Policy

George Siemens draws attention to the geopolitics of AI, likening AI investment to military and economic power. Ilkka Tuomi critiques evidence-based policy dogma, proposing instead collective sense-making and policy-as-learning. Both authors emphasize that AI in education policy must be deliberate, evidence-informed, and globally just, rather than reactionary or industry-driven.

Chapter 9: Conclusion – Open-ended Futures

The report closes by reaffirming that AI in education is not a story of inevitable outcomes, but of choices, values, and imagination. It reminds us that inclusive, ethical, and sustainable education futures are still being written and that educators, learners, and communities must co-author these futures with courage, care, and clarity.

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Victorian Botany Alumni Association (VIBA)
A Case of Best Practice

Prof. Mohan Menon

Introduction:

Victorian Botany Alumni Association (VIBA) is an organisation formed by some old students of the Botany Department of the Government Victoria College (GVC), Palakkad, one of Kerala's oldest colleges. Established in 2008 as an informal organisation of like minded alumni it remained largely dormant for almost a decade. Thanks to the efforts made by a few members and also the Botany Department, VIBA became more active leading to its formal registration as per Societies Registration Act in 2022. It received both financial assistance, professional support and active participation from a larger alumni community within and outside Kerala. As a registered society VIBA got legal legitimacy, identity and autonomy to function based on the objectives and aims of the Bye-laws of its MOA. Although VIBA is not organically linked with the Botany Department it uses the address of the Department with special written permission of the College.

VIBA is a discipline-based alumni focussed essentially on activities related to the study of Botany within the multidisciplinary GVC. Such alumni are more likely to engage with content and situations relevant to their specific or related field of study and career. VIBA provides a platform for former students to reconnect with each other and the institution, strengthening the sense of community. As of today the association has 5 patrons, over 250 life members and more than 50 student members.

GVC has an Old Students Association (OSA) formally registered in 1936 with members from all disciplinary departments. VIBA has been closely associated with OSA since its inception. Many VIBA members are also members of OSA and a few are in its governing bodies.

Governing Structure:

VIBA is governed by an Executive Committee with the Head, Botany Department as ex-officio President, and thirteen elected members including Secretary and other office bearers. EC also has one nominated department faculty member, immediate past president and secretary and all Patrons as permanent invitees. All permanent faculty members of the department are honorary members in the VIBA-GB.

Alumni-Department cooperation:

The successful functioning of VIBA has been due to a strong but informal relationship between two different entities, one a registered society (an NGO) and the other governed by the rules of a Government college. Maintaining a healthy and effective working relationship between the two is very vital and this can be strengthened by having a standing committee with participation of members from both partners. Such a committee which meets regularly can ensure that the needs of the Department and the potential of VIBA are fully synchronized for maximum impact.

This is visualised by the recent circular of the Higher Education Department of Government of Kerala which directs all colleges of Kerala to create an Alumni Cell (AC) having well defined responsibilities which mainly include alumni coordination and database maintenance. The circular envisages regular interaction between the Alumni cell and all alumni organizations of the college.

Member Profile:

The alumni profile of VIBA comprises diverse professionals including teachers and research students, advanced level researchers and professionals in Botany and related interdisciplinary areas. A large section pursue occupations or professions not directly or even indirectly related to Botany and life sciences and many are home makers who might be involved in botany related activities as a hobby or for income generation. The life member profile of VIBA appears to be a representative cross section of the larger alumni population of the Department. Most of the VIBA Life members are with an undergraduate degree from the Department. They are mainly motivated by the quality of teachers and their commitment to the profession and the quality learning environment they created. The emotional connection that students who studied in the college developed with their teachers and the campus could also have been the reason for their active participation.

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VIBA sponsored field visit of Botany students to College of Forestry and College of Agriculture, Trissur

Mandate:
VIBA has the mandate to function in mainly three broad areas which are sufficiently exemplified in its Bye-laws.

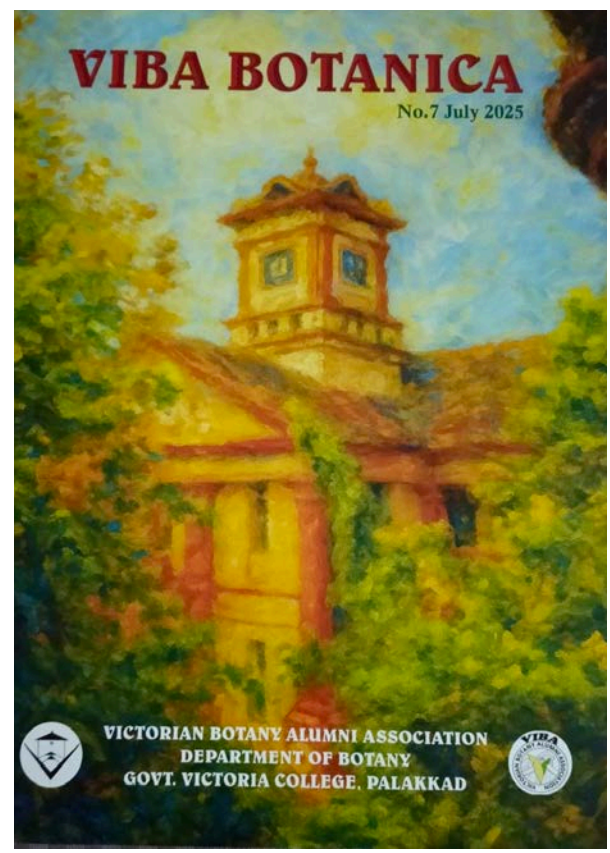
- One, it should establish and promote fellowship and comradeship among alumni through suitable forums and activities for mobilising and synergising their efforts for the department and the community.
- Two, to mobilise its alumni in procuring and providing assistance and amenities to the student community of the department for their studies in the College as well as their mentoring and guidance for future productivity and placement.
- Three, to provide varied support to the society directly, partnering with the Department and with the participation of like minded organisations, programmes and projects within its disciplinary boundaries and professional competencies of its alumni.

VIBA supported visit of Botany students to Mount View Garden, Thachanpara, for Bonsai demonstration

- Organizing programmes for VIBA members including webinars, field tours to places such as Dhoni, Chinnar, Nilambur, Nelliampathy, Attappady and education trips to selected institutes of Bangalore, Kerala Agricultural University and Ahalia campus, Palakkad etc.

Support to Botany Department and larger community:
Support provided by VIBA include:

- Donation of IQAC complex and a reception counter to College, costing about 25 lakhs.
- Six endowment funded programmes annually mainly for the academic and skill support, cash awards and recognition of the students of the Department.
- Financial support during NAAC visit, participation in training, organization of quiz and other competitions, purchase of smart phones for students during pandemic period
- Medical support for needy students, consultations for their research work and placements, support for identifying resource persons for academic programmes in the department
- Publication of annual newsletter 'VIBA – Botanica' and a commemorative volume on biodiversity " on realms of Biodiversity"
- Financial assistance for flood relief and rehabilitation during 2018 Kerala floods.
- QR coded signage for Vatika – public park of Palakkad municipality and installation of information board with an indigo plant for building awareness about Champaran strike in the 'Vatika'and botanical garden at GVC.



VIBA Botanica - Annual News Letter

Conclusion:

VIBA has been successfully fostering connections between current and former members of the department, serving as a source of inspiration, guidance, and support through events, mentorship, scholarships, and networking opportunities that benefit both students, department itself and the larger community. It is surely emerging as a best practice showing how a small group of old students of a Department can come together and establish a discipline based alumni in a relatively short period. Further with the help of about 250 life members with a good support from the Department it has been contributing substantially to the benefit of the student community, departmental academic quality and also the welfare of the surrounding community. VIBA is emerging as a model for other colleges to replicate.

The association successfully organised a Grand Alumni Meet in August 2025 as the part of Platinum Jubilee Celebrations of the Botany Department. VIBA has now reached a take off stage ready for further expansion as well as strengthening of its programmes and outreach.

250 life members with a good support from the Department, VIBA has been contributing substantially to the benefit of the student community, departmental academic quality and also the welfare of the surrounding community. VIBA is emerging as a model for other colleges to replicate.

*The author **Prof Mohan Menon** is a Life Member and Patron of VIBA. He was formerly a UNESCO diplomat and Deputy Vice-Chancellor, Wawasan Open University, Malaysia*

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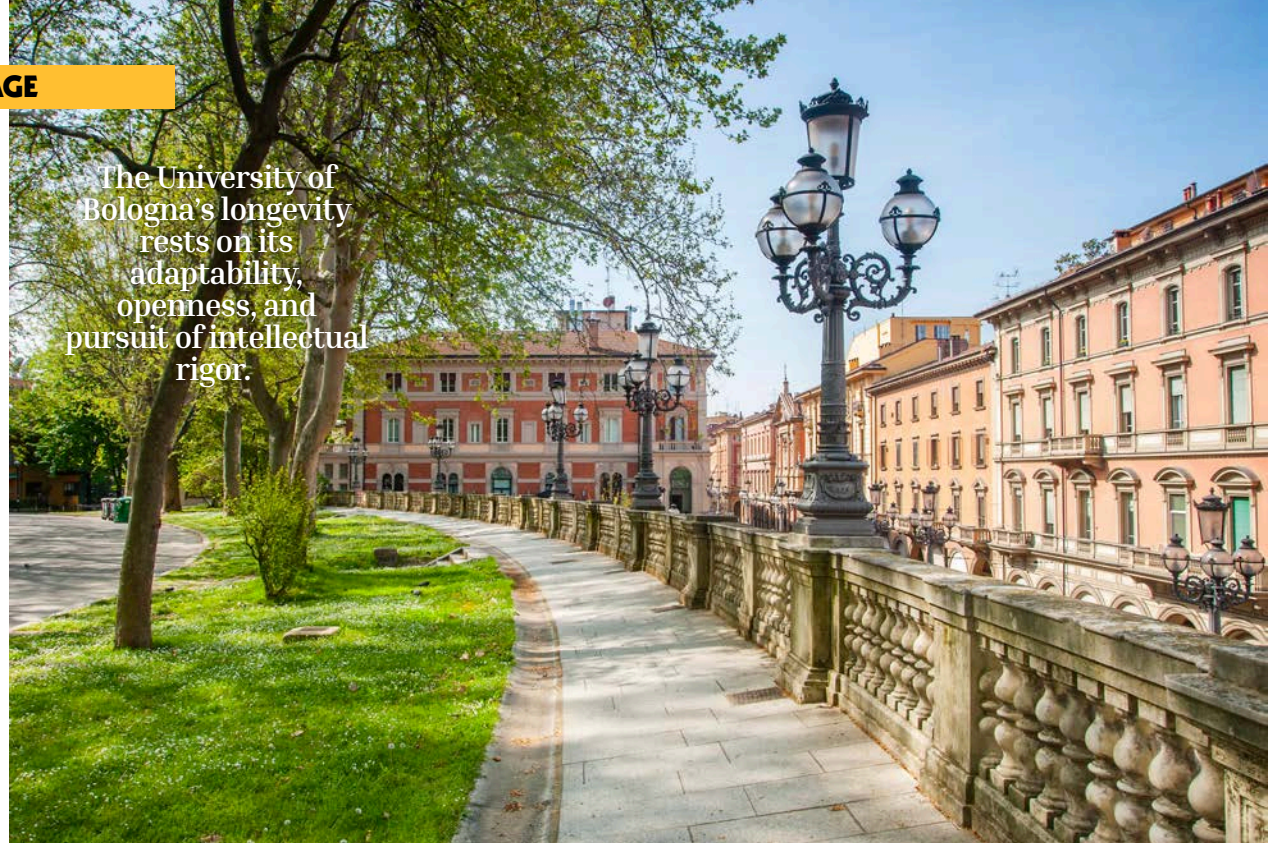
The University of Bologna: The World's Oldest University and Its Enduring Legacy

The University of Bologna, founded in 1088, is universally recognized as the oldest university in continuous operation. Established by guilds of students with the guidance of eminent jurists such as Irnerius, it pioneered the universitas model that gave rise to the very term "university." From its earliest years, Bologna was synonymous with the study of law, particularly Roman and canon law, which attracted scholars from all over Europe and cemented its place as a cradle of higher learning[1].

A Tradition of Excellence Since Inception

Unlike many medieval institutions that vanished with time, Bologna thrived by continually adapting to intellectual and social transformations. The university nurtured thinkers like Dante Alighieri, Francesco Petrarch, and Nicolaus Copernicus, whose contributions shaped literature, humanism, and astronomy[2]. By formalizing structured courses, examinations, and degrees, Bologna created a model that spread across Europe and remains the foundation of modern academia.



Bologna's survival has not been without challenges. During the Renaissance, it faced competition from rising centers like Padua and Paris, yet its commitment to scholarly freedom preserved its prestige. Political upheavals including Napoleonic reforms and the turbulence of the World Wars have threatened its autonomy, but Bologna consistently reasserted itself as a bastion of learning. In the 20th century, it endured fascist censorship, yet emerged to embrace democratic reforms and intellectual openness once again[3].

Modern Growth and Global Influence

Today, the University of Bologna is not merely a historic relic but a thriving institution of global stature. It enrolls over 90,000 students across multiple campuses, including Bologna, Forlì, Cesena, Ravenna, and Rimini. With 32 departments and more than 200 degree programs, it has firmly positioned itself among Europe's top universities[4]

Its influence extends beyond Italy. The Bologna Process, launched in 1999, took its name from the university and reshaped European higher education by standardizing degree structures and fostering mobility across nations. This initiative illustrates how the oldest university continues to set the agenda for the future of academia[5].

Balancing Tradition and Innovation

One of Bologna's defining strengths is its ability to preserve its medieval heritage while investing in cutting-edge research and internationalization. Its historic Archiginnasio library and medieval halls coexist with advanced research centers and partnerships worldwide. This delicate balance ensures that the institution remains a guardian of tradition while being a laboratory of innovation.

A Living Symbol of Quality

The University of Bologna's longevity rests on its adaptability, openness, and pursuit of intellectual rigor. It has endured wars, shifting political regimes, and evolving academic demands without losing quality. Instead, it has transformed these challenges into opportunities for growth.

In essence, Bologna is more than the world's oldest university—it is a living institution that demonstrates how history and progress can coexist. Its continued vitality proves that enduring legacies are built not by resisting change but by embracing it while staying true to foundational principles.

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From Anagram to Law: How F = kx Became a Cornerstone of Physics and Engineering

Gangan Prathap & ChatGPT

https://chatgpt.com/share/68ad4c8a-77c4-8012-9b08-91463a2bb755

In the evolution of scientific thought, some of the most profound insights begin in the form of simple observations or puzzles. One such case is Hooke's Law, now universally known by its algebraic expression:

$$F = kx$$

Yet its journey from a cryptic Latin anagram to a cornerstone of structural and materials engineering offers deep insight into the transformation of mathematics into physics.

1. The Origin: A Puzzle Concealing a Law

In 1676, Robert Hooke introduced his principle of elasticity not as a straightforward publication, but as a Latin anagram: ceiiinosssttuv. This was a common way to claim intellectual priority without immediately revealing the content. The anagram decoded to "Ut tensio, sic vis" — "As the extension, so the force."

This succinctly captured a profound insight: that the force required to stretch a spring is directly proportional to the extension of the spring. Initially stated qualitatively, this insight would later be mathematized as:
F = kx

This equation is algebraically simple, but conceptually potent. At this stage, however, it was still just a symbolic relationship—not yet a law of nature.

2. The Physicalization:
From Symbols to Quantities

The equation F = kx becomes a physical law only when the variables are given empirical meaning:
-F represents force, measured in newtons (N),
-x is the displacement or extension in meters (m),
-k is the spring constant, measured in newtons per meter (N/m).

With this assignment of units, the equation enters the realm of physics. What was once a syntactic relation among symbols becomes an empirical tool, capable of prediction, measurement, and falsification.

This process — assigning real-world referents and measurable units to mathematical symbols — is what transforms pure mathematics into physics. Syntax alone doesn't make a scientific law; semantics — the physical meaning attached to variables — is what completes the transformation.

3. A Foundation for Engineering

Hooke's Law bridged one of Galileo's two "new sciences"—the strength of materials (the other being kinematics)—into a quantitative framework. It provided the foundation for:
- The theory of elasticity
- Stress-strain relationships in materials
- Structural analysis and load-bearing design
- Modern mechanical and civil engineering

Despite its apparent simplicity, F = kx remains fundamental in understanding how buildings withstand earthquakes, how bridges bend without breaking, and how materials deform under pressure.

In this sense, Hooke's Law is not merely an equation; it is a codification of a worldview: that nature behaves in regular, measurable ways, and that these behaviors can be abstracted, quantified, and applied.

This linear relation serves as a first-order approximation in a wide variety of systems, and even when materials behave nonlinearly, Hooke's Law remains the entry point for further analysis.

4. The Philosophical Arc: From Observation to Law

The history of F = kx illustrates a general arc in scientific theory formation:
- Qualitative insight: A simple observation about how the world behaves.
- Symbolic formalization: Expression of the insight in algebraic form.
- Physicalization: Assignment of units and empirical meaning to the variables.
- Generalization and application: Embedding the relation into broader theoretical and technological frameworks.

In this sense, Hooke's Law is not merely an equation; it is a codification of a worldview: that nature behaves in regular, measurable ways, and that these behaviors can be abstracted, quantified, and applied.

Conclusion

The story of F = kx is more than the tale of a spring. It is a microcosm of how science works: beginning in mystery, formalized in mathematics, and culminating in a practical understanding of the physical world. It reminds us that even the most compact equations often conceal within them vast conceptual revolutions—waiting to be decoded, measured, and put to work.

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AI in universities: How large language models are transforming research

Ali Shiri

Generative AI, especially large language models (LLMs), present exciting and unprecedented opportunities and complex challenges for academic research and scholarship.

As the different versions of LLMs (such as ChatGPT, Gemini, Claude, Perplexity.ai and Grok) continue to proliferate, academic research is beginning to undergo a significant transformation.

Students, researchers and instructors in higher education need AI literacy knowledge, competencies and skills to address these challenges and risks.

In a time of rapid change, students and academics are advised to look to their institutions, programs and units for discipline-specific policy or guidelines regulating the use of AI.

Researcher use of AI

A recent study led by a data science researcher found that at least 13.5 per cent of biomedical abstracts last year showed signs of AI-generated text.

Large language models can now support nearly every stage of the research process, although caution and human oversight are always needed to judge when use is appropriate, ethical or warranted — and to account for questions of quality control and accuracy. LLMs can:

- Help brainstorm, generate and refine research ideas and formulate hypotheses;
- Design experiments and conduct and synthesize literature reviews;
- Write and debug code;
- Analyze and visualize both qualitative and quantitative data;
- Develop interdisciplinary theoretical and methodological frameworks;
- Suggest relevant sources and citations, summarize complex texts and draft abstracts;
- Support the dissemination and presentation of research findings, in popular formats.

However, there are significant concerns and challenges surrounding the appropriate, ethical, responsible and effective use of generative AI tools in the conduct of research, writing and research dissemination. These include:

- Misrepresentation of data and authorship;
- Difficulty in replication of research results;
- Data and algorithmic biases and inaccuracies;
- User and data privacy and confidentiality;
- Quality of outputs, data and citation fabrication;
- And copyright and intellectual property infringement.

Deakin University and Government of Telangana Announce Intent to Advance AI Innovation in India Image: deakin.edu.au

AI research assistants, 'deep research' AI agents

There are two categories of emerging LLM-enhanced tools that support academic research:

1. AI research assistants:

The number of AI research assistants that support different aspects and steps of the research process is growing at an exponential rate. These technologies have the potential to enhance and extend traditional research methods in academic work. Examples include AI assistants that support:

- Concept mapping (Kumu, GitMind, MindMeister);
- Literature and systematic reviews (Elicit, Undermind, NotebookLM, SciSpace);
- Literature search (Consensus, ResearchRabbit, Connected Papers, Scite);
- Literature analysis and summarization (Scholarcy, Paper Digest, Keenious);
- And research topic and trend detection and analysis (Scinapse, tlooto, Dimension AI).

2. 'Deep research' AI agents:

The field of artificial intelligence is advancing quickly with the rise of "deep research" AI agents. These next-generation agents combine LLMs, retrieval-augmented generation and sophisticated reasoning frameworks to conduct in-depth, multi-step analyses.

Research is currently being conducted to evaluate the quality and effectiveness of deep research tools. New evaluation criteria are being developed to assess their performance and quality.

Criteria include elements such as cost, speed, editing ease and overall user experience — as well as citation and writing quality, and how these deep research tools adhere to prompts.

Research is currently being conducted to evaluate the quality and effectiveness of deep research tools. New evaluation criteria are being developed to assess their performance and quality.

The purpose of deep research tools is to meticulously extract, analyze and synthesize scholarly information, empirical data and diverse perspectives from a wide array of online and social media sources. The output is a detailed report, complete with citations, offering in-depth insights into complex topics.

In just a short span of four months (December 2024 to February 2025), several companies (like Google Gemini, Perplexity.ai and ChatGPT) introduced their "deep research" platforms.

The Allen Institute for Artificial Intelligence, a non-profit AI research institute based in Seattle, is experimenting with a new open access research tool called Ai2 ScholarQA that helps researchers conduct literature reviews more efficiently by providing more in-depth answers.

Emerging guidelines

Several guidelines have been developed to encourage the responsible and ethical use of generative AI in research and writing. Examples include:

- The Government of Canada Guide on the Use of Generative Artificial Intelligence. This counsels federal institutions and academics to explore potential uses of generative AI tools, and follow a recommended framework for decision-making about them, including responsible communication and transparency.
- Guidance from publicly funded federal agencies — collectively known as the Tri-Council Agency — offering research grants and programs covering different research disciplines.
- The Observatory in AI Policies in Canadian Post-Secondary Education, run by the firm Higher Education Strategy Associates, lists AI policies and guidelines developed by more than 30 Canadian higher education institutions.

AI-powered platforms can analyze researcher profiles and publication networks to map expertise, identify potential collaborators across fields and reveal unexpected interdisciplinary connections.

LLMs support interdisciplinary research

LLMs are also powerful tools to support interdisciplinary research. Recent emerging research (yet to be peer reviewed) on the effectiveness of LLMs for research suggests they have great potential in areas such as biological sciences, chemical sciences, engineering, environmental as well as social sciences. It also suggests LLMs can help eliminate disciplinary silos by bringing together data and methods from different fields and automating data collection and generation to create interdisciplinary datasets.

Helping to analyze and summarize large volumes of research across various disciplines can aid interdisciplinary collaboration. "Expert finder" AI-powered platforms can analyze researcher profiles and publication networks to map expertise, identify potential collaborators across fields and reveal unexpected interdisciplinary connections.

This emerging knowledge suggests these models will be able to help researchers drive breakthroughs by combining insights from diverse fields — like epidemiology and physics, climate science and economics or social science and climate data — to address complex problems.

Call to Action

Calling All Creatives!

We invite you to share your unique ideas, compelling stories, and campus experiences. Submit your articles, grievances, and quality photos to be featured in our next issue!

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Considering the growing power and capabilities of large language models, there is an urgent need to develop AI literacy training tailored for academic researchers.

Research-focused AI literacy

Canadian universities and research partnerships are providing AI literacy education to people in universities and beyond.

The Alberta Machine Intelligence Institute offers K-12 AI literacy programming and other resources. The institute is a not-for profit organization and part of Canada's Pan-Canadian Artificial Intelligence Strategy.

Many universities are offering AI literacy educational opportunities that focus specifically on the use of generative AI tools in assisting research activities.

Collaborative university work is also happening. For example, as vice dean of the Faculty of Graduate & Postdoctoral Studies at the University of Alberta (and an information science professor), I have worked with deans from the University of Manitoba, the University of Winnipeg and Vancouver Island University to develop guidelines and recommendations around generative AI and graduate and postdoctoral research and supervision.

Considering the growing power and capabilities of large language models, there is an urgent need to develop AI literacy training tailored for academic researchers.

This training should focus on both the potential and the limitations of these tools in the different stages of the research process and writing.

Ali Shiri is Professor of Information Science & Vice Dean, Faculty of Graduate & Postdoctoral Studies, University of Alberta

Source: This article was originally published on https://theconversation.com/global
Published: July 21, 2025

Outcome Based Education Part-VI

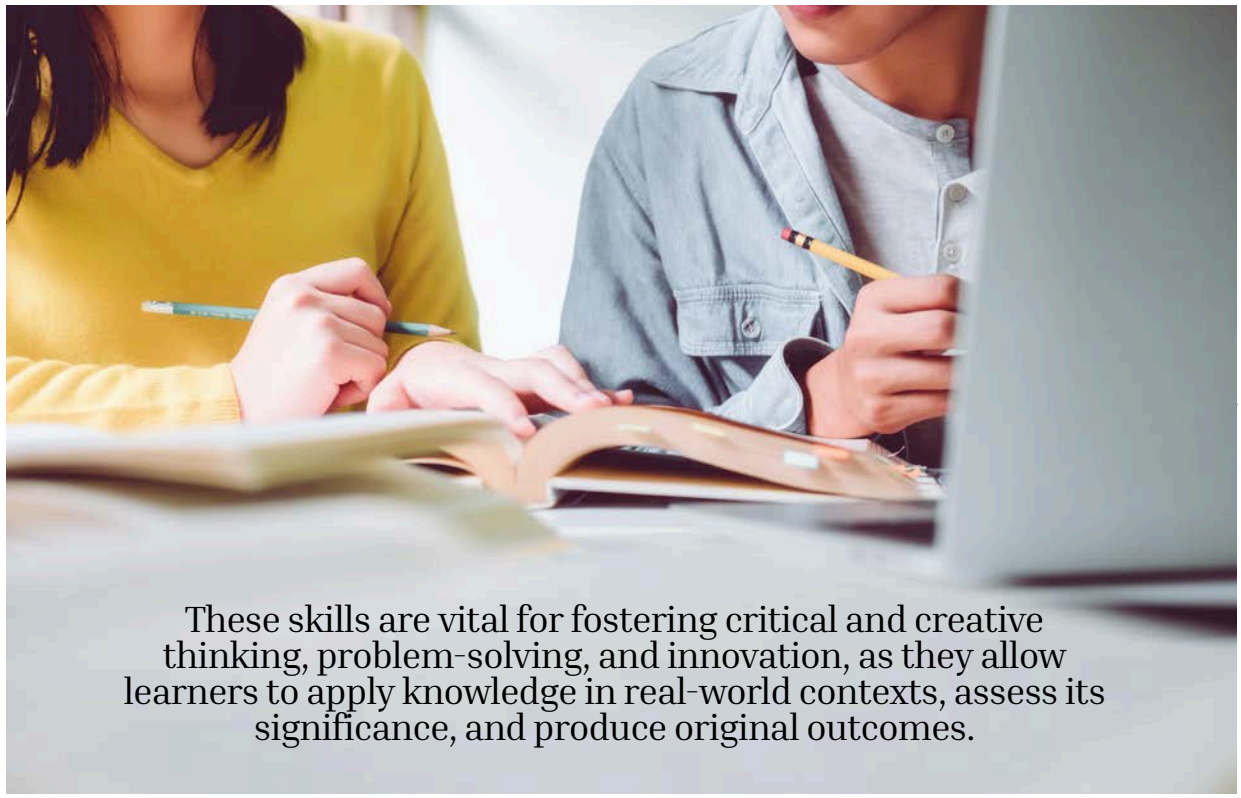
Higher order **Cognitive process**

Higher-order cognitive processes progress from analysing information, evaluating ideas critically, to creating innovative solutions that advance learning and understanding

In Bloom's revised taxonomy, higher-order cognitive processes represent advanced forms of thinking that extend beyond recalling or understanding information, focusing instead on analyzing, evaluating, and creating.

At the analyzing stage, learners break down information to uncover relationships, patterns, and structures; evaluating requires making judgments based on evidence and criteria through critical reflection; and creating, the highest level, involves generating new ideas, products, or perspectives by combining elements in innovative ways. These skills are vital for fostering critical and creative thinking, problem-solving, and innovation, as they allow learners to apply knowledge in real-world contexts, assess its significance, and produce original outcomes. In higher education, particularly in the final years of undergraduate programs, cultivating these processes is emphasized through classroom instruction, laboratory work, and project-based learning. As Anderson and Krathwohl's (2001) revision highlights, and as explained in detail by Prof. N.J. Rao (2021), developing higher-order cognition equips learners to think independently, make informed decisions, and contribute actively to the creation of knowledge rather than remaining passive recipients.

We will go to the details of each process in the following sections.



These skills are vital for fostering critical and creative thinking, problem-solving, and innovation, as they allow learners to apply knowledge in real-world contexts, assess its significance, and produce original outcomes.

4. Analyse

Analyse involves breaking material into its constituent parts and determining how the parts are related to one another and an overall structure. This process category includes the cognitive processes of differentiating (determining the relevant and important elements of a message), organizing (determining how the components of the message are arranged), and attributing (determining the underlying purpose of the message). Learning to analyze maybe as an end itself. Educationally it is considered as an extension of understanding or as a prelude to Evaluating and Creating. A teacher may wish to develop in his/her students the ability to:

- Distinguish fact from opinion (or reality from fantasy)
- Connect conclusions with supporting statements
- Distinguish relevant from extraneous material
- Determine how ideas are related to one another
- Ascertain the unstated assumptions involved in what is said
- Find evidence in support of the author's purposes

The processes of Understanding, Analysing, and Evaluating are interrelated and often used iteratively in performing cognitive tasks. At the same time, however, it is essential to maintain them as separate process categories. A person who understands communication may not be able to analyze it thoroughly. Similarly, someone who is skilful in analyzing a communication may evaluate it poorly.

Differentiating involves distinguishing the parts of a whole structure in terms of their relevance or importance. Differentiating occurs when a student discriminates relevant from irrelevant information, important from unimportant, and then attends to their significance and essentiality. Differentiating differs from comparing in using the broader context to determine what is relevant and essential. In comparing, all factors are equal irrespective of their relevance and importance. Alternate terms for differentiating are discriminating, selecting, distinguishing, and focusing.

Organizing involves identifying the elements of communication or situation and recognizing how they fit together into a coherent structure. In organizing, a student builds systematic and coherent connections among the pieces to the presented information. Organizing usually occurs in conjunction with differentiating. The student first identifies the relevant or essential elements and then determines the overall structure within which the elements fit. Organizing can also occur in conjunction with attributing, in which the focus is on determining the author's intention or point of view. Alternative terms for organizing are structuring, integrating, finding coherence, outlining, and parsing.

Analyse means to examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.

Attributing occurs when a student ascertains the point of view, biases, values, or intentions underlying communications. Attributing involves a process of deconstruction, in which a student determines the intentions of the author of the presented material. In contrast to interpreting, in which the student seeks to understand the meaning of the presented material, attributing involves extension beyond basic understanding to infer the intention or point of view underlying the presented material. An alternative term is deconstructing.

Some sample Analyse activities are:

- refining generalizations and avoiding oversimplifications
- developing one's perspective: creating or exploring beliefs, arguments, or theories
- clarifying issues, conclusions, or beliefs
- developing criteria for evaluation: clarifying values and standards
- evaluating the credibility of sources of information
- questioning deeply: raising and pursuing root or significant questions
- clarifying arguments, interpretations, beliefs, or theories
- reading critically: clarifying or critiquing texts
- examining or evaluating assumptions
- distinguishing relevant from irrelevant facts
- making plausible inferences, predictions, or interpretations
- giving reasons and evaluating evidence and alleged facts
- recognizing contradictions
- exploring implications and consequences

Some generic questions related to Analyse activity are:

- Structure evidence into for and against a historical description?
- Determine the point of the author of an essay in terms of his or her political perspective?
- Identify the cause and effect of advertising in FMCG?
- Analyze given literature from feminist and post-colonial approaches?
- Identify the historical development of Sanskrit plays?
- What is the theme . . ..?
- What evidence can you find . . .?
- What motive is there . . .?
- How is ... is related to . . .?

5. Evaluate

Evaluate is defined as making judgments based on criteria and standards. The criteria most often used are quality, effectiveness, efficiency, and consistency. The student or others may determine them. The standards may be quantitative or qualitative. Evaluating includes the cognitive processes of checking (judgments about internal consistency) and critiquing (judgments based on external criteria). However, all judgments are evaluative. Most cognitive processes require some form of judgment. What most differentiates Evaluate from other judgments made by students is the use of standards of performance with clearly defined criteria. Is this machine or software working as efficiently as it should be? Is this method the best way to achieve the goal? Is this approach the most cost-effective than other approaches?

Checking involves testing for internal inconsistencies or fallacies in operation or a product. For example, checking occurs when a student tests whether a conclusion follows its premises, whether data support or disconfirm a hypothesis, or whether presented material contains parts that contradict one another. When combined with planning (a cognitive process in the category Create) and implementing (a cognitive process in the category Apply), checking involves determining how well the plan is working. Alternative terms for checking are testing, detecting, monitoring, and coordinating.

Evaluate means to Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.

Critiquing involves judging a product or operation based on externally imposed criteria and standards. Critiquing lies at the core of what has been called critical thinking. An example of critiquing is judging the merits of a solution to acid rain in terms of likely effectiveness and its associated costs. An alternate term is judging.

Some sample Evaluate activities are:

- Select the factor among the following that has maximum impact on climate change
  - Carbonated soft drinks like Pepsi and Coke
  - Automobiles
  - Cell phones
  - Fast food
- What would you recommend . . .?
- What would you cite to defend the actions . . .?
- What choice you would have made . . .?
- How would you rate the . . .?

6. Create

Create involves putting elements together to form a coherent or functional whole. Objectives classified as Create have students make a new product by mentally reorganizing some elements or parts into a pattern or structure not present before. Although Create requires creative thinking on the part of the student, this is not entirely free creative expression unconstrained by the demands of the learning task or situations. To some persons, creativity is the production of unique products, often due to some special skills. The "create" process, as used here, includes objectives that call for unique production, also refers to objectives calling for production that all students can and will do. If nothing else, in meeting these objectives, many students will create in the sense of producing their synthesis of information or materials to form a new whole, as in a circuit, a software unit, a mechanism, a structure, and so on.

Create means to compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.

Although the process categories of Understand, Apply, and Analyse may involve detecting relationships among presented elements, Create is different because it also involves constructing an original product. Unlike create, the other categories involve working with a given set of elements that are part of a given whole; that is, they are part of a larger structure the student is trying to understand. In creating, on the other hand, the student must draw upon elements from many sources and put them together into a novel structure or pattern relative to his or her prior knowledge.

Create results in a new product that is something that can be observed, and that is more than the student's beginning materials. A task that requires Create is likely to require aspects of each of the earlier cognitive process categories to some extent, but not necessarily in a specific order.

The creative process can be broken into three phases: problem representation, in which a student attempts to understand the task and generate possible solutions; solution planning, in which a student examines the possibilities and devices a workable plan; and solution execution, in which a student successfully carries out the plan. The creative process can, therefore, be thought of as starting the divergent phase in which a variety of possible solutions are considered as the student attempts to understand the task (generating). This is followed by a convergent phase, in which the student devises a solution method and turns it into a plan of action (planning). Finally, the plan is executed as the student constructs the solution (producing). It is not surprising that the Create is associated with three cognitive processes: generating, planning, and producing.

Create results in a new product that is something that can be observed, and that is more than the student's beginning materials. A task that requires Create is likely to require aspects of each of the earlier cognitive process categories to some extent, but not necessarily in a specific order.

Generating is used in a restricted sense here. Understand also requires generative processes included in translating, exemplifying, summarizing, inferring, classifying, comparing, and explaining. However, the goal of Understand is most often convergent (that is, to arrive at a single meaning). In contrast, the purpose of generating within Create is divergent (that is to come at various possibilities). An alternative term for generating is hypothesizing.

Planning involves devising a solution method that meets a problem's criteria, developing a plan for solving the problem. Planning stops short of carrying out the steps to create the actual solution for a given problem. In planning, a student may establish sub-goals or break a task into subtasks to be performed when solving the problem. An alternative term is designing.

Producing involves carrying out a plan for solving a given problem that meets the given specifications. Producing can require the coordination of the four types of knowledge. An alternative term is constructing.

Some sample Create activities are:

- Design a flowchart showing the energy flow in the Western Ghats.
- Create a plan to conserve the wetland ecosystem.
- Create awareness on issues related to health, nutrition, and family using audio, visual, and audio-visual technologies.
- Design a marketing mix for fairness cream among working women in Tamilnadu during summer.
- Produce a 30-minute movie out of a 2-hour feature film using specified techniques of editing.

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*
- *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*

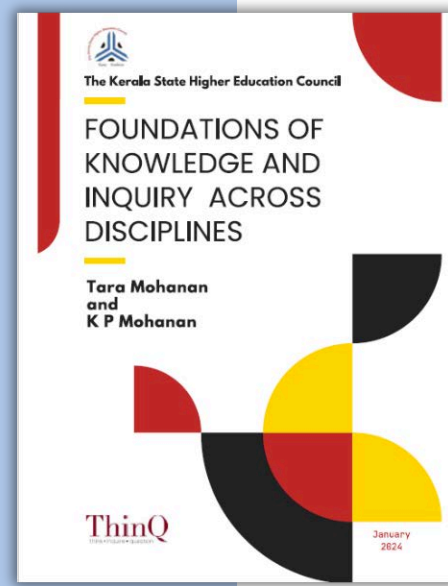
Next Issue: Critical Thinking and Problem-Solving

KSHEC publications

Foundations of Knowledge and Inquiry Across Disciplines

by Tara Mohanan and K.P. Mohanan

Foundations of Knowledge and Inquiry Across Disciplines by Tara Mohanan and K.P. Mohanan is an educational text designed to cultivate higher-order thinking skills—critical reasoning, inquiry, and transdisciplinary cognition—among undergraduate learners. Rather than emphasizing the rote acquisition of subject-specific facts, the book equips students with general cognitive tools to question, analyze, and evaluate knowledge across fields.



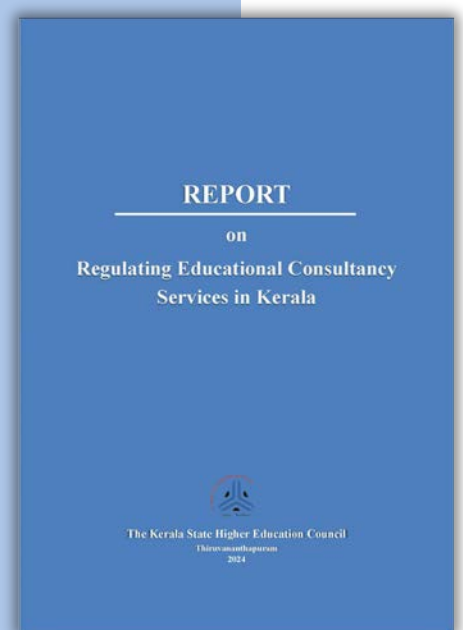
The opening chapters introduce the nature of inquiry, distinguishing it from mere information-seeking, and emphasize its role in developing independent, reflective thinkers. Through dialogues between fictional characters such as Rafa, Anu, and Neel, the book illustrates how reasoning, questioning assumptions, and examining premises can deepen understanding. These stories make abstract concepts tangible, demonstrating processes like hypothesis testing, classification, definition, and critical evaluation.

Subsequent sections focus on logic, reasoning, and other tools of inquiry, guiding learners to justify claims, identify contradictions, and critically engage with evidence. The text also explores different ways of knowing—perception, memory, reasoning, testimony, and introspection—while encouraging readers to reflect on their reliability and limits.

Ultimately, the book aims to foster intellectual independence, preparing students to engage in academic inquiry not just within single disciplines, but across them. It supports learner-driven and "flipped classroom" models, making it suitable for both guided and self-directed study.

Report on Regulating Educational Consultancy Services in Kerala

The Kerala State Higher Education Council (KSHEC) Report on Regulating Educational Consultancy Services in Kerala (2024) was prepared in compliance with a directive from the Hon'ble High Court and the Government of Kerala. The study examines the growing role of educational consultancies in facilitating student migration, while also highlighting instances of exploitation, fraud, and unethical practices. It underscores the urgent need for a comprehensive legal framework to regulate consultancy operations within the state. The report analyses global and local trends in student migration, identifies push and pull factors, and documents challenges faced by Kerala's students. Key recommendations include establishing a State Authority for Student's Overseas Migration (SASOM), creating databases on student out-migration and consultancy firms, introducing compulsory registration and licensing, enforcing codes of conduct, and setting up grievance redressal mechanisms. The report also proposes the draft Kerala Higher Education Consultancy Regulation Act, 2023, aiming to safeguard student interests and ensure fair practices

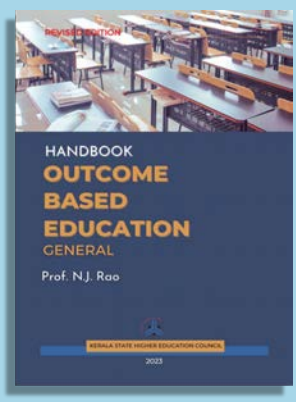


HANDS-ON-TRAINING

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.**



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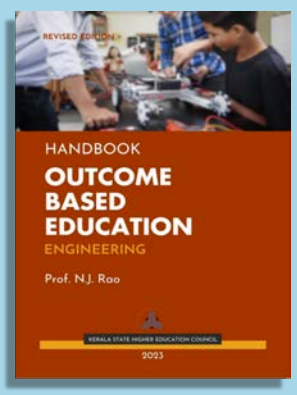

KSHEC NEWS
kerala state higher education council

Workshop on the Integrated Teacher Education Programme (ITEP)

The Kerala State Higher Education Council (KSHEC) conducted a one-day workshop on the Integrated Teacher Education Programme (ITEP) on 11 July 2025 at St. Joseph's College of Teacher Education for Women, Ernakulam. The workshop was conceived as a significant step in advancing reforms in teacher education and aimed at collecting expert insights, institutional perspectives, and policy-oriented strategies for the state-wide rollout of ITEP.

The programme was inaugurated by the Honourable Minister for Higher Education and Social Justice, Dr. R. Bindu, who, in her address, highlighted the government's unwavering commitment to holistic reforms in the sector. She underlined the need for contextual adaptation of the ITEP model, ensuring inclusivity while aligning with Kerala's unique educational environment.

The inaugural session began with a welcome note by Prof. (Dr.) T. Mohamed Saleem, Governing Body Member, KSHEC, and was followed by a keynote address from Prof. (Dr.) Mohan B. Menon, which provided an academic framework for the deliberations. The session was chaired by Prof. Rajan Varughese, Member Secretary, KSHEC.

The workshop was structured into plenary discussions and group deliberations. A wide spectrum of stakeholders—including university administrators, Board of Studies members, principals of teacher education institutions, representatives of teacher associations, and education experts—actively participated. Discussions centered on curricular integration, institutional restructuring, and regulatory aspects necessary for ITEP's effective adoption.

A major outcome of the workshop was the generation of practical, phased strategies for implementation, particularly focusing on aligning ITEP with the Four-Year Undergraduate Programme (FYUGP). The event reaffirmed Kerala's commitment to building a robust, future-ready teacher education framework.

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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UNIVERSITY news

Universities in Kerala

University of Kerala

Microbio Kerala 2025

- Microbio Kerala 2025, held on July 30–31, 2025, at CV Raman Hall, CLIF, University of Kerala, was a national seminar organized by the Translational Research and Innovation Centre (TRIC-KU) in collaboration with CLIF. The event brought together undergraduate, postgraduate, and doctoral students, along with faculty, to discuss innovations in microbiology, with particular focus on environmental and biochemical applications. Participants showcased research findings through paper presentations and posters. The seminar aimed to promote interdisciplinary learning, encourage collaboration among institutions, and advance microbial science with translational potential for sustainable development, environmental protection, and public health initiatives. It was well-attended and academically impactful.

Kannur University

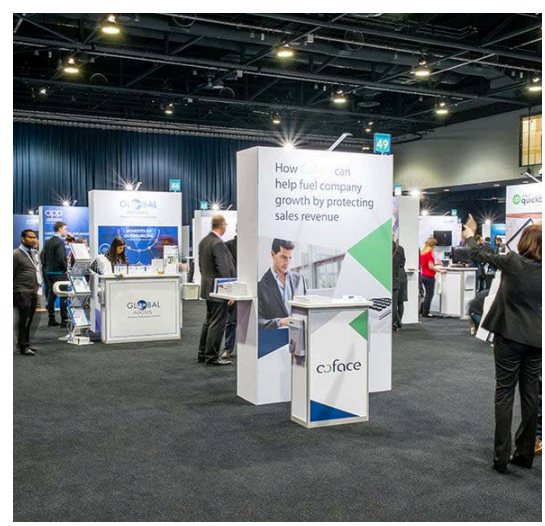
New Horizons in Material Science 2025

- New Horizons in Material Science 2025" was an international seminar organized by the Departments of Physics and Chemistry at Kannur University, focusing on advances in material science and interdisciplinary innovations. The event welcomed researchers, academicians, and postgraduate scholars to present findings on emerging materials, nanotechnology, photonics, and interface science. Participants submitted abstracts during registration, and selected papers were published in the Journal of Advanced Materials and Interfaces (ISSN 2583-8415). The seminar encouraged collaboration, knowledge exchange, and showcased cutting-edge research relevant to academia and industry, reinforcing Kannur University's role in global materials research dialogue

Cochin University of Science and Technology (CUSAT)

Aquasem-25

- Aquasem-25 was an international conference organized by the School of Marine Sciences, CUSAT, focusing on sustainable marine ecosystems and climate-resilient strategies. Held in 2025, it brought together oceanographers, environmental scientists, policymakers, and researchers to discuss ocean health, marine biodiversity, and sustainable fisheries. Abstract submissions were invited until 12 July 2025, with selected papers eligible for peer-reviewed publication. The event fostered interdisciplinary dialogue and promoted solutions for coastal conservation and marine sustainability in the context of climate change, aligning with national blue economy initiatives and international marine science goals.



OPTIQ 2025

- OPTIQ 2025 was an international conference hosted by the International School of Photonics at CUSAT, centering on Recent Advances in Photonics and Quantum Technologies. The event featured keynote talks, technical sessions, and poster presentations covering quantum optics, laser technologies, photonic sensors, and quantum communication. It served as a platform for scientists, academicians, and graduate researchers to exchange breakthroughs in both theoretical and experimental photonics. Emphasizing India's emerging role in quantum research, OPTIQ 2025 encouraged collaborative research and industry linkages, contributing to the broader vision of quantum-enabled technological progress and national capacity-building in high-precision photonics.

Sree Sankaracharya University of Sanskrit (SSUS)

National Doctors' Day

- On July 01, 2025, National Doctors' Day was celebrated at the main campus of Sree Sankaracharya Sanskrit University, Kalady under the leadership of the NCC. Cadets visited local health centers including the University Health Center, Kalady Medical Center, P.M.M. Hospital, Govt. Homeo Clinic, Govt. Hospital, and Mattoor Health Center, where they honored doctors with flowers and greeting cards

Fabric of Modernity: Clothing in Ayyankali, Ambedkar and Gandhi

- July 02, 2025 – The University's Centre for Buddhist Studies and the S.N.D.P. Public Library, Kalady jointly organized an international seminar online on the theme "Fabric of Modernity: Clothing in Ayyankali, Ambedkar and Gandhi." The keynote address was delivered by Prof. P.P. Ajayakumar (Institute of English, University of Kerala).

Print and Traditional.-Workshop

- July 03–04, 2025 – At the Kalady campus, the Department of History of the University and the Kerala Council for Historical Research jointly conducted a research workshop on the theme "Print and Traditional." The keynote address was delivered by Prof. Veena Naregal (Department of Sociology, Institute of Economic Growth, Delhi).

Consultancy -Mural Arts and Cultural Heritage

- July 10, 2025 - University's Centre for Preservation and Promotion of Mural Arts and Cultural Heritage (SSUS CMACH) has entered into an agreement with the Navarathri Trust on 10.07.2025 to undertake, on a consultancy basis, the restoration of the ancient murals—Gajendra Moksham, Srirama Pattabhishekam, and Venugopalam—painted on the walls of the Karuvelappura Malika (Fort Palace) in Thiruvananthapuram, along with the preservation of other murals in the palace, for a total cost of ₹12,99,648/-.

Lessons for Cosmopolitan Philosophers-Lecture

- July 18, 2025 – The International School for Sree Sankaracharya Studies organized an International Lecture Series on the theme "And Where is the Place of Understanding? Lessons for Cosmopolitan Philosophers." The lecture was delivered by Dr. Sonal Kachru, Assistant Professor, Department of Religious Studies, Yale University, USA.

Kargil Vijay Diwas Observed

- July 26, 2025 – Kargil Vijay Diwas was observed at the Kalady main campus of Sree Sankaracharya Sanskrit University in collaboration with the NCC unit of B.H.S.S. Kalady. Syndicate member Dr. V. Lissy Mathew was the chief guest. The ceremony included a Guard of Honour at the War Memorial, wreath-laying at Amar Jawan, and floral tributes. Captain Das P.M., Security Officer, shared his Kargil War experiences. As part of the programme, the patriotic film "Major" was screened for cadets.

Dollar Award for Language

- July 31, 2025 - The "Dollar Award for Language" was conferred upon Dr. Indulekha, a research scholar in the Malayalam Department under the guideship of Dr. Sunil P. Elayidom, for her PhD thesis "Silpakalayum Samskaracharithravum." The award, jointly instituted by the University of Kerala and the Federation of Kerala Associations in North America (FOKANA), is given for the best PhD thesis in Malayalam. This marks the fourth time that the award has been received by the Malayalam Department of the University.

Read and Interpret the Text-Scholarly Programme

- July 29, 2025 – The International School for Sree Sankaracharya Studies in association with the Sree Sankara Study Circle organized a scholarly programme on the theme "Read and Interpret the Text: Rasavaisheshika Soothre Pradhamadhyaye Dwitheeya Soothram – Chathurvidhyamadhikritamarogye." The session was led by Prof. K. Murali, Chief Editor, Centre for Textual Studies and Publications, Arya Vaidya Sala, Kottakkal, and Former Professor, Government Ayurveda College, Thripunithura.

Mahatma Gandhi University

Patent Granted to Research Scholar from School of Computer Sciences

- On 15 July 2025, Mahatma Gandhi University celebrated a significant achievement in its research journey when a patent was granted for a novel invention in the field of computer science. The patent was awarded to Mr. Mintu Movi, a research scholar from the School of Computer Sciences, along with his co-inventors. This innovation—though technical details remain confidential—was recognized by the Indian Patent Office, validating MGU's emphasis on applied and interdisciplinary research.

MGU Xchange: Academia–Industry Innovation Platform Launched

- As part of its entrepreneurial and translational research focus, Mahatma Gandhi University introduced "MGU Xchange", an innovation platform designed to connect students and faculty innovators with industry leaders and investors. Organized by the Business Innovation and Incubation Centre (BIIC) in association with the Confederation of Indian Industry (CII), this initiative invited applications for showcasing ideas in fields like renewable energy, health tech, education technology, and sustainable agriculture. Selected participants were promised access to mentoring, incubation support, and potential funding channels. MGU Xchange aims to convert research prototypes and student projects into scalable innovations that serve real-world needs.

₹100 Crore Central Grant for Biomedical Research Project

- The Department of Science and Technology (DST), Government of India, has approved a major biomedical research initiative with a ₹100 crore central grant. MGU is participating as a Spoke institution in this Partnerships for Accelerated Innovation and Research (PAIR) project. The substantial funding supports collaborative biomedical research, innovation, and translation of high-impact outcomes.

MGU Innovation Foundation Established

- MGU has launched the MGU Innovation Foundation, featuring a Digital Learning and Empowering Studio. This infrastructure supports technology-oriented teaching, content creation, and supports innovation-focused pedagogical practices. The Center enhances digital capabilities across disciplines.

Kerala University of Fisheries and Ocean Studies

MoU with Blue Aqua International

- On 3 July 2025, KUFOS signed a Memorandum of Understanding (MoU) with Blue Aqua International to boost aquaculture training and research. This collaboration is expected to enhance practical training, exchange of technological know-how in aqua farms, possibly introduction of innovative aquaculture practices, and joint research projects for sustainable aquaculture development in Kerala.

Kerala University of Digital Sciences, Innovation and Technology

Online FDP: "Lab to Life"

- The "Lab to Life" Online Faculty Development Programme organized by DUK was designed to bridge the gap between academic research and real-world application during 22 July 2025. It focused on how innovations and prototypes developed within university labs can be transformed into impactful societal or commercial solutions. The program emphasized translational research, entrepreneurial thinking, industry partnerships, and product development. Experts from innovation hubs, startups, and academia delivered sessions on funding models, technology transfer, and policy ecosystems that support innovation. Attended by faculty and early-stage researchers, the program encouraged a culture of problem-solving, innovation diffusion, and the conversion of research into scalable solutions.

Digital Science Park Project:

- The university is advancing the construction of India's first third-generation Digital Science Park at Technopark Phase IV in Pallippuram, near the university campus. The project, estimated at ₹1,515 crore, is expected to be completed by 2026. It will house research labs, digital incubators, and centers of excellence, focusing on areas like AI, robotics, and sustainable materials.

Thunchath Ezhuthachan Malayalam University

Research Conclave 2025

- TEMU hosted a national seminar titled "Research Conclave 2025" for two days. This event brought together researchers, faculty, and postgraduate scholars, likely across disciplines relevant to the university's mandates (Malayalam studies, cultural heritage, environment, media, etc.). Presentations, discussions and papers were part of the seminar to foster research networking, share progress on ongoing projects, and encourage collaborative scholarship

University of Calicut

Breakthrough in Nanocluster-Based LED (NC-LED) Technology

- Researchers from the Department of Nanoscience and Technology at the University of Calicut, led by Dr. Shibu Sidharth and his PhD student Dr. Rival Jose, developed an advanced nanocluster-based light-emitting diode (NC-LED). Their device uses atomically precise gold-copper (Au–Cu) alloy nanoclusters to generate a pure red emission with remarkable performance—achieving an external quantum efficiency (EQE) of 12.6%, which is among the highest EQE values reported globally for LEDs built from such nanoclusters.

Kerala Agricultural University

Safe to Eat Project – Pesticide Residue Analysis Report

- As part of the "Safe to Eat" initiative, KAU carried out pesticide residue testing on food / agricultural produce. The report for July 2025 documents sample analysis, levels of various pesticide residues compared to safety standards, and identifies which items are safe and which need further monitoring. This contributes to food safety research, helps shape extension advisory for farmers, and supports consumer health protection.

TEDx Event at College of Agriculture, Vellayani

- On 8 July 2025, Under KAU, the Vellayani Agriculture College organized a TEDx event with speakers from public administration, healthcare, entrepreneurship, etc. It was inaugurated by the Vice Chancellor, with department heads present. The college is among only three institutions in Kerala licensed for TEDx in 2025.

APJ Abdul Kalam Technological University

Smart Computing and Communications (ICSCC 2025)

- The 11th International Conference on Smart Computing and Communications (ICSCC 2025) was hosted by Muthoot Institute of Technology and Science (MGMIT) from 3rd to 5th July 2025. Organized jointly by the Departments of AI & Data Science, Computer Science, ECE, and EEE, the conference served as a multidisciplinary platform for researchers, academicians, and industry professionals. The event featured keynote speeches, technical paper presentations, and workshops covering areas like artificial intelligence, IoT, embedded systems, data analytics, and smart communication technologies. ICSCC 2025 fostered global collaboration, innovation, and the dissemination of cutting-edge research aligned with emerging smart technology trends.

Kerala Veterinary & Animal Science University (KVASU)

Stipendiary Training Programs:

- The university initiated training programs in Veterinary Nursing, Pharmacy, and Laboratory Techniques at the Teaching Veterinary Clinical Complex (TVCC), Pookode, starting September 1, 2025.

Livestock and Veterinary Services

- Vechur Cattle Sale: The university facilitated the sale of Vechur cattle at the Centre for Advanced Studies in Animal Genetics and Breeding (CASAGB), Mannuthy, promoting the conservation and propagation of this indigenous breed.

Kerala Kalamandalam Deemed University

International Kutiyattam Festival

- Celebrating the 60th anniversary of the Kutiyattam Department in July 29 – August 2, 2025 this five-day festival featured seminars, debates, lecture demonstrations, and performances of Kutiyattam and allied art forms. The event brought together practitioners, scholars, and enthusiasts from around the world to discuss the evolution and future of this ancient Sanskrit theatre tradition.

National University of Advanced Legal Studies (NUALS)

International Academic Collaborations

- In July 2025, NUALS is expected to continue its international collaborations with universities such as Leiden University (Netherlands) and the University of Melbourne (Australia). Faculty and students may participate in joint research seminars on maritime law, human rights, and environmental law, either online or in hybrid mode. These collaborations typically involve exchange of legal research findings, joint case studies, and discussion of comparative law practices. Students engaged in LL.M. programs may present papers in these seminars, while faculty gain insights into global legal frameworks. Such partnerships enhance NUALS's international profile and expose students to cross-border legal perspectives.

National Research Collaborations

- NUALS frequently engages with national institutions like the Indian Law Institute (ILI), New Delhi and NLSIU Bangalore. In July 2025, it is likely that collaborative research initiatives in constitutional law, human rights, and environmental jurisprudence will be underway. Faculty members may co-author articles with peers from these institutes and organize webinars on pressing legal issues. These activities contribute to producing policy-oriented research, strengthening the university's reputation in legal scholarship. Students often assist in research projects, gaining exposure to practical legal research methods, analytical writing, and drafting academic papers for national publications.

Student Exchange and Internship Programs

- NUALS often runs short-term student exchange and internship programs with partner institutions during summer months, including July. Students may visit collaborating universities like University of London or regional legal research institutes to participate in research projects, attend workshops, or gain practical exposure in legal clinics. These programs are designed to provide hands-on learning experiences, networking opportunities, and exposure to different legal systems. Participation also enhances the students' resumes and career prospects. Faculty supervise these programs, ensuring alignment with the students' academic requirements and learning outcomes.

Community Legal Initiatives

- **In** July is NUALS's community-oriented legal initiatives, often conducted in partnership with local NGOs, legal aid cells, and the Kerala High Court Legal Education Cell. These initiatives include legal literacy programs, awareness drives, and pro bono clinics. Students and faculty collaborate to provide legal guidance to underserved communities on issues like labor rights, environmental protection, and consumer law. By engaging in these activities, NUALS reinforces its mission of social justice, provides practical experience to students, and strengthens relationships with partner legal and social institutions across Kerala.

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Sunlight-Powered CO_2 Capture at Harvard

Researchers at Harvard University's Richard Y. Liu Lab have pioneered a low-energy method to capture carbon dioxide directly from the air using sunlight. The team designed special organic molecules known as photobases, which, when activated by light, generate hydroxide ions that bind CO_2. By shifting light conditions, the molecules release the gas, enabling a fully reversible capture-and-release cycle powered solely by sunlight. This innovative approach provides a far more energy-efficient alternative to current direct air capture technologies and marks a promising step toward scalable, light-driven solutions to reduce atmospheric greenhouse gases.

Even Pristine Ecosystems Face Insect Declines

A new study from the University of North Carolina at Chapel Hill reveals alarming insect declines even in untouched ecosystems. Conducted by biologist Keith Sockman in a Colorado subalpine meadow, the research tracked flying insect populations over 20 years, showing an average annual decline of 6.6%—a total drop of 72.4%. Despite minimal direct human impact, rising summer temperatures strongly correlate with these losses. Insects are vital for pollination, nutrient cycling, and ecosystem stability, making this trend a critical warning. The findings highlight climate change as a key driver and stress the urgency of monitoring and protecting biodiversity hotspots worldwide.

12,000-Year-Old Skeleton Uncovers Early Conflict

Science News report that a 12,000-year-old skeleton unearthed in Vietnam's Tràng An World Heritage Site offers some of the oldest evidence of human conflict in Southeast Asia. The remains belonged to a healthy 35-year-old man whose neck bone was shattered by a quartz projectile, likely an arrow or dart. He survived for weeks or months before succumbing to infection, highlighting both resilience and suffering. The quartz point is unusual for the region, suggesting distant origins and raising questions about ancient interactions. This rare find provides critical insight into early human violence, cultural history, and the lives of people in Southeast Asia's late Pleistocene era.

Antarctic Ice Cores Extend Climate Records

Researchers from the British Antarctic Survey have extracted ice cores over 1.5 million years old from a depth of 2,800 meters in East Antarctica, nearly doubling the previous climate record. These ice cores preserve ancient air bubbles and particles, offering insights into past atmospheric conditions, including greenhouse gas levels and temperature shifts. The data is vital for understanding long-term climate patterns and the Mid-Pleistocene Transition, when glacial cycles changed significantly. This breakthrough enhances our ability to model Earth's climate system and predict future changes, providing critical context for addressing the impacts of modern human-driven climate change.

Edible, Eco-Friendly Conductive Paste (FN-CoP)

Researchers at BITS Pilani, Hyderabad have developed a novel food-based nano-conductive paste (FN-CoP) tailored for wearable, ingestible, and edible medical devices. Led by Prof. Sanket Goel, the team formulated FN-CoP using 20.4% activated carbon, 8.1% gelatin binder, and 71.4% oral rehydration solution (ORS) as the solvent. The paste achieves high conductivity (~1,787 S/m) with particle sizes averaging 56 nanometers, enabling its use in precise printing methods like screen and inkjet printing. Biodegradable, non-toxic, and vegetarian-friendly, FN-CoP offers excellent electrochemical stability, biocompatibility, and affordability—costing just ₹129 per 100 g—making it a promising, sustainable alternative for biomedical diagnostics and sensing applications.

Image Source: Bits Pilani

Gene Switch Helps Rice Beat the Heat

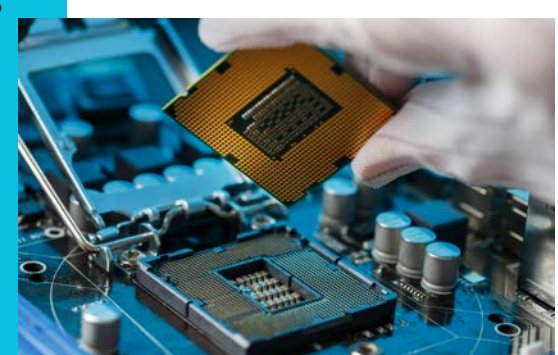
Researchers at the National Key Laboratory of Crop Genetic Improvement and Hubei Hongshan Laboratory, Huazhong Agricultural University (Wuhan, China) identified a natural gene on-off system involving the QT12 locus and NF-Y transcription factors, which controls rice heat tolerance while preserving both grain quality and yield. This work, published in Cell (July 2025), showed that natural variants of QT12 suppress its heat-induced activation, preventing damage to endosperm composition under high temperatures. In large-scale field trials, rice carrying the favorable variants maintained quality and achieved 31% to 93% higher yields than conventional varieties under heat stress.

Cancer Frontiers: Immunotherapy Boosts

A team led by researchers at Dana-Farber Cancer Institute and Brigham and Women's Hospital (Boston, USA) reported in The New England Journal of Medicine (June 2025) that adding the immunotherapy drug pembrolizumab before and after surgery significantly improved outcomes for patients with head and neck squamous cell carcinoma. In a large randomized trial, patients receiving peri-operative pembrolizumab had notably longer event-free survival compared to standard therapy alone. The findings mark a major advance in tailoring immune-based treatments to the surgical setting, offering new hope for cancers that often recur despite aggressive surgery and radiation.

DNA-Based Watermarking to Safeguard Hardware IP

In June 2025, researchers at IIT Indore introduced a pioneering DNA-fingerprint watermarking technique to protect hardware intellectual property (IP). Led by Prof. Anirban Sengupta and Aditya Anshul, the method embeds unique "DNA-like" signatures into hardware designs, inspired by biological processes such as sequencing, replication, and ligation. This creates a vendor-specific identifier resistant to tampering and piracy. The watermark can be applied to systems like multimedia codecs, digital signal processors, and medical devices including pacemakers. It ensures verifiable ownership, addressing IP theft in critical industries. Findings were published in Scientific Reports (Nature, 2024)



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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

GLOSSARY OF HIGHER EDUCATION

Peer Review

Peer review is widely recognized as the principal mechanism for evaluating the quality, credibility, and originality of scholarly work before publication. According to Benos et al. (2007), peer review "serves as a filter to ensure that only research meeting the standards of the scientific community is disseminated." It involves experts in the relevant field critically assessing manuscripts or proposals for methodological rigor, logical coherence, ethical compliance, and contribution to knowledge. Reviewers provide constructive feedback, identifying errors, biases, or gaps, and suggesting improvements. Different models exist—single-blind, double-blind, and open review—each balancing transparency and impartiality. As Ware (2008) emphasizes, peer review not only validates research but also fosters academic dialogue and professional development among scholars. While not infallible, peer review remains indispensable in maintaining the integrity, reliability, and advancement of science, ensuring that published work meets the highest standards of scholarly rigor.

Formative Assessment

Formative assessment is an ongoing, student-centered process of evaluating learning during instruction to provide timely feedback and guide improvement. Unlike summative assessment, which measures achievement at the end of a unit, formative assessment is integrated into daily teaching and learning activities. It includes techniques such as quizzes, questioning, peer review, self-assessment, discussions, and teacher observations, all aimed at identifying learning gaps and informing instructional adjustments. This continuous process encourages active student engagement, reflection, and self-regulation, making learners co-participants in their educational journey. In higher education, formative assessment fosters independent learning, critical thinking, and collaboration through projects, group tasks, and online feedback mechanisms. Supported by technology, it can be enhanced through digital tools, providing real-time insights into student progress. Ultimately, formative assessment strengthens the teaching-learning process by personalizing instruction, motivating learners, and ensuring that competencies and 21st-century skills are effectively developed and sustained.

Learning Management System (LMS)

A Learning Management System (LMS) is a robust, web-based platform that has transformed teaching and learning in the digital age. Rooted in distance education, an LMS is now a cornerstone of higher education, enabling institutions to integrate technology into dynamic, student-centered learning environments. It allows learners to authenticate, register for courses, access content, complete assessments, and collaborate through forums, video conferencing, and interactive tools. For educators, it streamlines the creation and delivery of content, automates administration, monitors participation, and evaluates learning outcomes. Unlike primary and secondary education, higher education requires students to engage in independent research and continuous interaction beyond classroom hours. LMS platforms support this through projects, group activities, and peer learning, fostering personalization, flexibility, and innovation. By cultivating 21st-century skills such as collaboration, critical thinking, and digital literacy, an LMS is considered a lifeline for managing, enhancing, and sustaining the teaching-learning process in modern education.

UPCOMING EVENTS

State-Level Higher Education Alumni Conclave

End of 2025 in Kerala

A State-level higher education alumni conclave will be held in Thiruvananthapuram on August 30 to leverage the strength and expertise of alumni across the State's universities and colleges to enhance the quality and global relevance of the higher education sector in Kerala.

Chief Minister Pinarayi Vijayan will inaugurate the event that is expected to witness participation from distinguished alumni who have achieved excellence across various domains, including academics, industry, media, governance and public policy, Higher Education Minister R. Bindu said at a press conference here on Friday.

As part of the initiative, all universities and colleges have been instructed to create an alumni database or update their existing ones. Institution-level alumni meets will be conducted before August 15. The institutions must then nominate at least two notable alumni from various fields for the State-level meet.

THE World Academic Summit 2025

Oct 7-9, Thuwal, Saudi Arabia

The THE World Academic Summit 2025, hosted at King Abdullah University of Science and Technology (KAUST), Saudi Arabia, is a premier gathering that brings together global university leaders, policymakers, and industry partners. The summit explores how higher education institutions act as catalysts for social and economic progress in an era of rapid change. Key sessions will focus on academic innovation, strategic partnerships, and leadership models that redefine the role of universities in addressing global challenges.

Andhra University Centenary Celebrations – Academic Lectures & Seminar Series

Sep 23-27 at MG University Kottayam

The One Week Faculty Development Programme (FDP) titled "Training of Faculty Trainers (ToFT): Transforming Higher Education – Reforms into Action" is organized by Kerala State Higher Education Council, Faculty Development Centre, Centre of Excellence for Teaching Learning & Training, and Mahatma Gandhi University, Kottayam. Scheduled from September 23–27, 2025, it covers themes such as reasoning across disciplines, technology-enhanced teaching, curriculum and skill-based education, outcome-based education (OBE), and internationalization of higher education. The programme includes interactive sessions, discussions, and concludes with a valedictory function and feedback session at Mahatma Gandhi University. The participants will be the selected faculty members of various colleges affiliated with MG University.

World Health Summit

Oct 12-14, Berlin & online

Although primarily focused on health, this summit strongly influences higher education and research. Universities and academic institutions contribute to discussions on global health security, science policy, and medical education. The event bridges academia, government, and industry to advance knowledge transfer, interdisciplinary training, and innovation in health sciences worldwide.

20th FICCI Higher Education Summit

Oct 6-7, 2025, New Delhi

The FICCI Higher Education Summit 2025, held at Bharat Mandapam, New Delhi, will bring together education leaders, policymakers, international collaborators, and innovators to discuss the future of higher education in a rapidly transforming world. With the theme "Higher Education in a Transforming World: Bridging Borders, Building Futures", the summit focuses on enhancing global engagement, advancing quality standards, and implementing policy reforms. Participants will explore emerging technologies, sustainable practices, and internationalization strategies to strengthen Indian institutions' global competitiveness. The event serves as a vital platform for collaboration, innovation, and thought leadership in reshaping India's higher education landscape for the future.

QS India Summit

Oct 15-16, 2025, Hybrid (India)

The QS India Summit 2025 is a key gathering for higher education leaders, researchers, and policymakers, offering insights into global trends and India's evolving role in academia. The summit will address pressing themes such as equitable partnerships, research and innovation, rankings, and international collaborations. With its hybrid format, it enables broad participation from both domestic and global stakeholders, fostering dialogue on positioning Indian institutions more prominently on the world stage. Discussions will emphasize improving quality assurance, advancing research ecosystems, and enhancing employability outcomes. The event reinforces India's ambition to become a global hub for education, knowledge creation, and innovation.

IIST Workshop

13-17 October 2025
Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram

The IIST Workshop on "The Variable Sun: Past, Present, and Future Perspectives" will be held from 13–17 October 2025 at the Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram, organized by the Indian Institute of Space Science and Technology (IIST) with ISRO collaboration. The event explores solar variability across timescales and its impacts on Earth and space environments. Sessions will cover solar magnetism, atmospheric dynamics, MHD waves, space weather, and future mission concepts. The workshop features invited talks, expert reviews, and poster presentations, fostering collaboration between leading scientists, researchers, and students to advance solar research and instrumentation for upcoming missions.

RIPS 2025 (Technology, Research, Innovation, and Policy Summit)

22–25 August 2025, Indian Institute of Technology, Kanpur

The four-day summit gathers leading scientists, policy experts, industry innovators, and academics across India. With the theme "Bridging Research, Innovation, and Policy for a Sustainable Future," it features keynote lectures, panel discussions, sessions across multiple venues (e.g. Royal Pavilion, Cambridge Court at IIT Kanpur), and aims to bridge gaps between research, technology innovation, and policymaking to address national and global sustainability challenges

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- 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).
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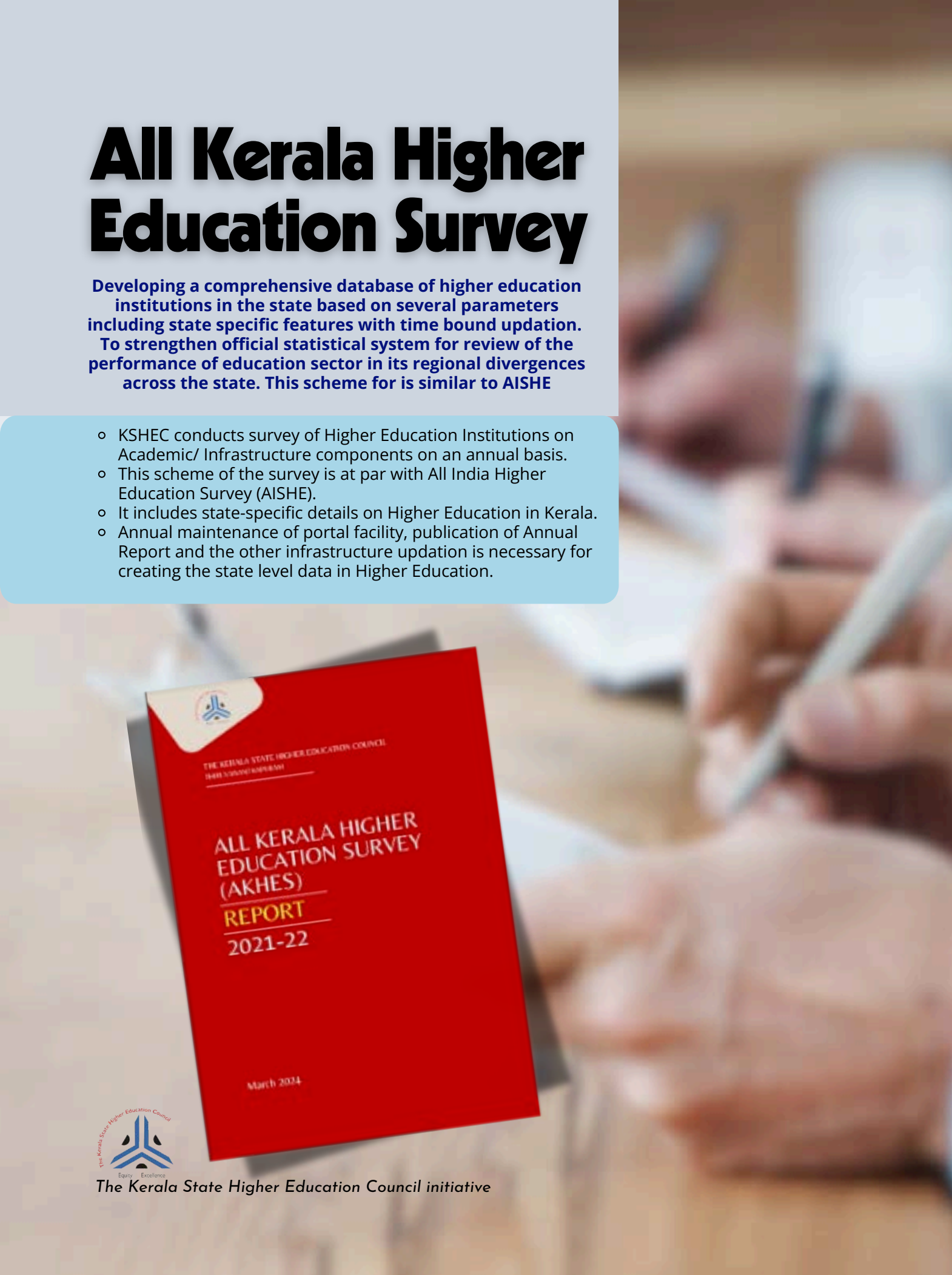
- Annual maintenance of portal facility, publication of Annual Report and the other infrastructure updation is necessary for creating the state level data in Higher Education.



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