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Leadership in a University System: Aspirations and Challenges

M M Saxena*

Although the leadership literally refers to one's ability to influence and guide followers, in education it is more a role of a manager that is accountable to students, their parents, teaching and non-teaching staff, management and in the public sector to the government. The stakeholders, primary as well as secondary, in an educational organisation are perhaps far greater as compared to any other sector; so is the more responsible role of a leader to satisfy their aspirations. At school and college levels, such responsibility is carried by a Principal and at university level by the Vice Chancellor.

The evolution of leadership is different among different sectors and it mostly emerges out of vast and varied experiences, not too often by chance. Leave aside the Principals of schools and colleges who are mostly promoted by virtue of seniority in their respective service, a Vice Chancellor is selected or nominated from amongst the academicians of high eminence, having a minimum required experience in senior academic positions. He/she is supposed to be one who is expected to uphold the highest integrity and standards of knowledge creation and dissemination within the academic community that he/she leads. While the job profile of a Vice Chancellor demands high levels of academic contributions as well as administrative management of an organisation of higher learning, his/her experience in the latter front is often limited. Most often, the newly appointed Vice Chancellors are not adequately exposed to the training of dealing with administrative and financial responsibilities like bureaucrats who are particularly groomed for the purpose. This is perhaps a big gap that is responsible for the conflicting issues before a Vice Chancellor relating to bureaucratic or secretarial influence, besides pressures from the government or management authority of a university. There is a standard saying that "Ignorance of rules holds no excuse". For a Vice Chancellor, this becomes a far greater challenge as compared to addressing the issues related to the student community or academic matters. To meet the aspirations and challenges of the Government or Governing Bodies on various issues often takes him to a crossroads of decision-making.

It is true that most of the Vice Chancellors, having served for about four decades in College/University organisations, join this position out of their own choice without any compulsion of service rules and there is all freedom to exit at any point of the term of the office. As such, blaming the system to be stressful or uncongenial, may be out of one's own incompetence to handle the situation, holds no merit. The expectations of the society from such a leader of high eminence are not only to manage the diverse situations for the stakeholders, but to take the organisation he leads to the next level of excellence.

Having attained this highest position in academia, one aspires to deliver the best to the cause of excellence, which may reflect in the overall transformation of the institution during the tenure. During a

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term of three years, as in most universities, in the first year, he/she studies the mission, vision and culture of the university, and sets goals with defined priorities as per his/her vision. In the second year he/she tries to translate the roadmaps into realities and succeeds which depends upon a number of factors such as how sincere and honest the efforts were, how favourable the environment around was, and to what extent the team and system were supportive! In the third and final year of the term, the person in leadership position spends time and energy in concluding his projects, sorting out problems and winding up to get discharged with dignity. Expectations of society from this highest chair are often out of proportion, and the evaluation is sometimes unreasonable. You cannot expect the realisation of cent per cent aspirations in a system governed by so many pulls and pressures along a hurdled road.

The challenges before a Vice Chancellor in public and private universities are a little different in certain aspects. In public-funded universities, it matters in which political regime a Vice Chancellor has been appointed; and if that regime continues during his term the things are relatively smooth. If not so, the Vice Chancellor, as for other nominated positions, is often recognized as a brand of previous regime and faces all possible odds in his day-to-day and even long-term working, whether it relates to the issues pertaining to student affairs, examination results, grievances of teaching and non-teaching staff unions, recruitments, expenditure, constructions, and even inviting guests on different occasions. Although the Vice Chancellor is the Chairman of the Board of Management/Senate, the attitude of government nominees and public representatives is many a time remains authoritative in its meetings. Expenditure on confidential work, as examinations and related printing, is often put to question. Establishing harmony and coordination between State with State-appointed Registrar and the Finance Officer is in general, a difficult and delicate task as each one is divided by their own interests. Further, how many public representatives, their minions, and media men of different levels could one keep in good humor! There are full-time Women Rights, Human Rights, RTI and other sorts of Activists roaming around the campus to be replied to. How much energy one would spare for managing such fronts! Success of a Vice Chancellor is thus measured on the scale that how efficiently he/she manages all such issues rather than what attempts he has put in for the academic excellence which is the core mission of Higher Learning Institution.

The ecosystem of self-funded universities is a little different and perhaps more friendly to execute aspired goals. Here, in contrast to public-funded universities, funds may be limited, but the freedom to spend them is unlimited. If honest in its cause, the external pressures are none or negligible. A right balance between the management body and the Vice Chancellor is of prime importance, which is mostly well-tuned as both are complementary to each other. Thereby, the Vice Chancellor finds time, space and energy to devote to upholding the academic standards, developing infrastructure and student-centric facilities, greater career opportunities and placements, and so attract more quality students. These are the fronts on which societal aspirations are high from private institutions that are not compromised only as degree-awarding bodies. Unlike state universities, private universities are often more accountable to the regulatory bodies. These are often inquired about, complying with the norms that may perhaps be ignored for state universities. For instance, it is well known on record that many teaching and non-teaching positions are lying vacant for years in many public universities without serious efforts for recruitment, but the private ones cannot go on like that. Different yardsticks and expectations for public and private sector institutions, though they cannot be justified but prevail.

In a country like India with world's largest population, and that too of youth, one cannot think of higher education only to be taken care of by public sector since of late there are only 552 Public Universities (495 State, 57 Central) compared to 640 Private Universities (502 Private, 138 Deemed to be- Mostly self funded) to handle the ever growing demand. As such, the onus is equally high on the shoulders of leaders in the higher education system managed by the private sector. Challenges for a leader in both sectors, although different in extent and nature, are high. The aspirations of the self and expectations of the society are to be met by employing the highest degree of wisdom and potential.

A successful Vice Chancellor has to have a sound knowledge about the working of a university system and be conversant with the Acts, Statutes, Ordinances, Laws and Bylaws; and if not, has to gain it beforehand. Bodies like the University Grants Commission and Association of Indian Universities may formulate a short course for imparting basic training to the newly appointed Vice Chancellors on these themes. This may strengthen the confidence and outlook of such leaders to tackle the day-to-day situations in a more efficient manner.

Disclaimer: The opinions expressed in this article are solely those of the author. ❑

Exploring the Perceptions of Stakeholders on Artificial Intelligence in Higher Education

Lokanath Mishra,* Sanchari Bhunia and K Lalrinchhana*****

The arrival of Artificial Intelligence in education is seen as introducing new products and benefits to the educational landscape. These could include AI-driven tutoring systems, personalised learning platforms, or AI tools for administrative tasks.AI has the potential to enhance teaching effectiveness, offer personalised learning experiences for students, and streamline administrative processes within higher education. This paper highlights possible scenarios with the arrival of AI and the kind of implications for the future of higher education. The researcher used a qualitative research approach for this study. The research was designed as a phenomenological study, a qualitative research method, in which the opinions of participants from different sectors were examined. The results show that schools and teachers will have new products, benefits and also face drawbacks with the arrival of AI in education. The findings point out some suggestions for the use of AI and the prevention of possible problems. While participants generally seem to have positive perceptions towards AI, there are also certain drawbacks.

Artificial Intelligence (AI) in higher education is transforming many aspects of teaching, learning, and administrative functions. Artificial intelligence has become pervasive in the lives of twenty-first-century citizens and is being proclaimed as a tool that can be used to enhance and advance all sectors of our lives (Górriz, et. al., 2020). The transformative power of AI in education is undeniable (Fullan, et. al., 2023). AI can analyse students' learning patterns, preferences, and performance data to tailor educational content and pacing to individual needs. This can lead to more effective and personalised learning experiences for students. AI-powered adaptive learning systems can dynamically adjust the difficulty level of content based on students' mastery of concepts. This helps in providing targeted interventions and support to students who are struggling and challenges those who are excelling. The public defines in general that AI as the capacity of machines or computers to think and behave like humans (Wartman & Combs, 2018). Accordingly, the fundamental concept of artificial intelligence is the ability of tools or programs to accurately mimic the thought processes and behaviors of humans (Mohammed & Watson, 2019) AI-powered chatbots can handle routine student inquiries, such as course information, schedules, and FAQs. Virtual teaching assistants can also provide personalised tutoring and support to students, helping to scale educational services. AI algorithms can automate grading for certain types of assignments and exams, providing immediate feedback to students. This not only saves instructors' time but also offers students quicker insights into their performance. It can assist researchers in processing and analysing vast amounts of data, accelerating the pace of scientific discovery and enabling new insights across various disciplines. AI can be integrated into classroom technologies, such as smart boards or virtual reality platforms, enhancing interactive and immersive learning experiences. Timms (2016) suggests that the idea that artificial intelligence will be incorporated into the home computer format may be a product of the current system.

It may enter our lives in a variety of ways and forms. The application of AI in the field of education in general and higher education in particular has attracted great interest from the public, governments and academia (Popenici & Kerr, 2017). The usage of Artificial Intelligence is growing at an unprecedented rate & it is rapidly changing the aspects of human life. (Xue & Wang, 2022a; S. Makridakis, 2017,) In recent years, the use of Artificial Intelligence (AI) & Learning Analytics (LA) has effectively been introduced in the field of education. (Salas-Pilco et al., 2022). The impact of artificial intelligence technology, in college education, is developing continuously in the direction of in with intelligent machines enabling high-level cognitive processes like thinking, perceiving, learning, problem-solving,

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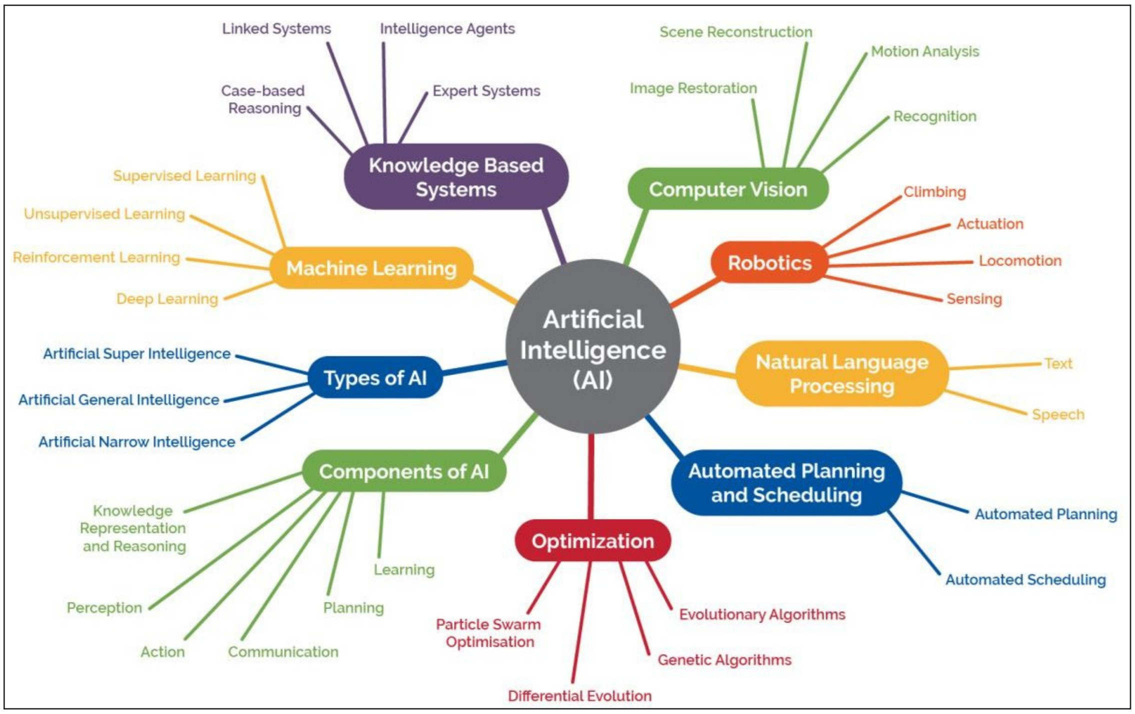
and decision-making, coupled with advancements in data collection and aggregation, analytics, and computer processing power, AI presents opportunities to complement and supplement human intelligence and enrich the way people live and work. (Kumar, et. al., 2019) Studying and using artificial intelligence is a crucial and essential part of the professional growth of teachers in higher education institutions. The use of AI in higher education in India has opened new possibilities and challenges (Silander & Stigmar, 2019). AI can enhance a technology's capacity to expand students' knowledge and abilities, build on their strengths, and meet them where they are. Due to AI's ability to process natural forms of input and the fundamental advantages of AI models. The application of AI has attracted great interest in HE, which is highly influenced by the development of information and communication technologies (Alajmi, et. al., 2020). In the Horizon Report 2020 (Brown, et. al., 2020), AI is listed as one of six technologies with the potential for high impact in higher education. AI is a tool used across subject disciplines, including language education (Liang et al., 2021), engineering education (Shukla, et. al., 2019), mathematics education (Hwang & Tu, 2021), law education and medical education (Winkler-Schwartz, et. al., 2019). Croxford and Raffe (2015) admitted that there is an urgent need for AI implementation in the architecture of Indian higher education. India is also gaining momentum for the application of AI in higher education (Chatterjee & Bhattacharjee, 2019). Haseski (2019) briefly states the results of these studies as follows: the use of artificial intelligence in education will make learning more individual, provide effective learning experiences, enable students to discover their talents, improve their creativity and reduce teachers' workload. AI can truly replace teachers (Felix, 2020). or emphasise that good teachers will continue to exist in the future Manyika, et. al. (2017). From the learner perspective in higher education, one of the crucial objectives of AI usage is to provide personalised learning assistance based on students' learning status, preferences, or personal characteristics (Hwang, et. al., 2020). For example, AI can provide learning materials based on learners' needs (Christudas, et. al., 2018), diagnose learners' strengths, weaknesses, and identify gaps (Liu, et. al., 2017), or provide automated feedback and promote collaboration among students (Aluthman, 2016; Benhamdi, et. al., 2017). Based on the study results, Sekeroglu, Dimililer and Tuncal (2019) stated that artificial intelligence could help teachers improve personalised education for their students.

Fig 1: Components, Types, and Subfields of AI-based on Regona, *et. al.* (2022)



AI-enhanced technology has played an essential role in higher education from the instructor, learner and administrator perspectives, with its potential to open new opportunities and challenges for higher education transformation (Ouyang, et. al., 2022). To facilitate large-scale skilling in Artificial Intelligence (AI), enable the remapping of AI courses, and create a new skilling landscape, the UGC has directed the Higher Educational Institutions (HEIs) to widely disseminate the 'National Programme on Artificial Intelligence (NPAI) Skilling Framework' report. In this regard, how the stakeholders from the school of social science, Science, education, language, commerce and mass communication and engineering perceive this development, and how they foresee artificial intelligence in regard to education, form the focus of this study. Thus, the purpose of this study is to examine the perceptions of stakeholders of higher education about the use of artificial intelligence in higher education and what kind of implications it can reveal for the future of education.

Research Method

The researcher adopted a phenomenological approach of qualitative research method for this study. Phenomenological research, as described by Yildirim and Simsek (2008), is a qualitative research methodology aimed at exploring and understanding the subjective experiences, perceptions, and meanings of individuals regarding a particular phenomenon. This approach seeks to uncover the underlying essence and structure of these lived experiences as described by the participants themselves. Thus, the researchers tried to examine the perceptions of the stakeholders of higher education in regard to the implementation of AI in higher education. In this study, triangulated data collection was considered. All the teachers, administrators, students, technical experts and parents of Mizoram University constitute the population of the study. A purposeful sampling method was adopted for selecting the participants in this study. Moreover, the snowball strategy, which is a type of purposeful sampling strategy, was used. Snowball sampling is used when accessing participants with the desired traits is challenging (Naderifar, et. al., 2017). In this strategy, the researcher asked the first few interviewees if they knew anyone with similar ideas or circumstances who would be interested in participating in the study (Naderifar, et. al., 2017). Five target groups, teachers (10), administrators (3), students (12), technical experts (3) and parents (4) that include 32 persons in total, have been identified by researchers for conducting the interviews regarding artificial intelligence in higher education. The snowball strategy is used since the individuals interviewed would lead the researcher and recommend other individuals who will be of use to the study. Semi-structured interview schedule was developed by the researchers by conducting a workshop with the veteran professors of different departments of Mizoram University. The content validity and reliability of the tool used for the study are tested by a pilot study in the education department of Mizoram University.

Procedure of Data Collection

The researcher collected the information at first from the university website about the different positions of teachers and students of different schools. Semi-structured interviews were employed in the study. In order to conduct the interviews with teachers, students and administrators, researchers personally visited the department and took permission from the head of the department and met the respondents for the same. The interview schedule was given to teachers, students and administrators to express their perceptions on what they think of AI, how it will be integrated into higher education, the future outlook, the positive and negative implications they have on AI in higher education, along with additional questions. Similarly, the selected parents were also interviewed in a face-to-face meeting. Three FGDs were conducted in order to reveal the points that needed more clarification, as assumed by the researchers. All the criteria developed from Tong A, Sainsbury P, Craig J. (2007) for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups, were adopted for the collection of data. All the data were analysed according to the content analysis method from codes to more holistic themes. The participants' views on AI are investigated within their existing experience and understanding of AI, with possible scenarios in their minds.

Findings

The data collected from the participants were coded. The codes specified within the scope of the themes are not sorted according to any frequency value. Themes are analysed based on the types of respondents.

Teachers' Perspective

From the teacher's perspective, it is found that almost all the teachers hold positive views on AI in higher education. Artificial Intelligence is an advanced technology for integrating teaching in higher education. Artificial intelligence in higher education can be used in many areas. It helps teachers to teach in the class through innovative pedagogy. It is also evident that doing internal tests and end-of-semester examinations, AI will be used. Similarly, with the response to student attendance of students, AI can be used for the same. At the entry level diagnostic test can be conducted by the use of AI. Almost all the teachers evident that vocational guidance to the students can be given by the use of AI. While preparing the syllabus, the teachers expected some learning outcomes which can be measured by the use of AI in higher education. The researchers looked at whether the participants' years of professional experience had any impact on their use of AI. In terms of experience, the teachers who have more experience in years use more technology tools in the classroom. Helping individuals at learning at their own speed. In terms of personalised uses of AI, teachers mentioned some technology tools such as Zoom, Google Classroom, Padlet, a slow-motion app, Canva, and Prezi. AI promotes an interdisciplinary/ multidisciplinary approach to teaching other subjects. AI is necessary for monitoring the learning process. Similarly, AI integration allows more time and freedom to provide understanding and adaptability and helps in creating an inclusive learning environment viewed by all the teachers. Using AI in higher education, the dropout rate decreases, and in total, the Gross Enrolment Ratio (GER) of higher education will increase. Teachers from the School of Engineering and the School of Physical Science are more habituated to the use of AI tools than teachers of other schools of Mizoram University. Teachers of the School of Education are also more habituated to the adoption of AI tools in the classroom. Teachers of the School of Social Science have a fear that mechanical teachers may replace human teachers in future. There is a possibility of uncontrolled intelligence technologies in education (e.g., data security). Teachers also acknowledge AI's potential to provide complementary resources, facilitate access to information, assist in material development, enhance learning outcomes, and contribute to achieving educational goals.

The statements that emerged from the FGDs which support the above analysis, are: One participant from the school of engineering opined that 'Artificial intelligence in education can be used in many areas from individual learning, examination opportunities, face recognition system to taking attendance at the entrance to the class.' and highlighted tools for the personalization of learning. this tool can work well in helping the faculty identify the students' strengths and weaknesses and adjust the material accordingly, and this is something an instructor cannot do on their own if they have a large number of students. Similarly, one professor from the education department of Mizoram University said that AI tools should be user-friendly and accessible to educators with varying levels of technical expertise. Training and support would be essential for successful implementation. In the same way, one associate professor from the school of education, having specialisation in curriculum planning and administration, said that AI-driven curriculum planning tools would need rigorous validation and testing within educational settings to assess their effectiveness and impact on learning outcomes.

Students' Perspectives

If we focus on the university students' perceptions, the three most important factors identified in the use of AI in higher education. Researchers attempted to find out common among them. It can be seen that they are related to detecting the opinions of students (negative and positive) considering their learning experiences; providing timely learning support, curricular pathways, and feedback; and anticipating their future performance. All of them may be related to the overcoming of different aspects of challenges arising from classical education, including working with large groups of students and not providing them with feedback. When students struggle with assignments, AI can act as a virtual tutor, providing personalised learning support and answering their questions immediately. A student from the school of engineering considered AI as "a brilliant teacher" in their class, because "When I have a doubt and couldn't find other people to help me out, ChatGPT seems like a good option." Besides immediate answers, customised recommendations and feedback were also valued by students. As one Ph.D. scholar of the education department remarked, “It would be useful if ChatGPT could help me find the most effective solution when I am checking my thesis for plagiarism. On the other hand, one student from the School of Social Science expressed that Increased use of AI may reduce opportunities for students to interact socially and collaborate with peers and educators. Almost all the students said that AI systems are susceptible to technical failures or errors that could disrupt the learning process. Our university students also expressed that a lack of access to reliable technology or internet connectivity may disadvantage by AI-based higher education. Moreover, one student from the department of Education also assumed that AI can assist them in future teaching, e.g., “I believe that the use of ChatGPT will reduce teachers’ workload for answering questions. I may also use it to generate some lesson plans.” Since AI was considered to “improve students’ motivation” and “help students learn better on their own”, in the future, it may potentially revolutionise traditional teaching and learning methods.

Others Perception

All the administrators in the study believed AI as a revolutionary force that presents both enormous obstacles and promising prospects. AI is viewed by many as a tool that can increase student support, expedite administrative procedures, and improve teaching and learning. By customising instructional materials to meet the needs of each student, AI, for example, provides individualised learning experiences that can boost student engagement and enhance learning results. AI can also help with administrative duties, including automating standardised test grading, freeing up faculty members to concentrate more on mentoring and teaching.

They all aware of the possible drawbacks, though. Since not all students may have equal access to the technology needed to take advantage of AI capabilities, equity is a concern. Additionally, the Vice Chancellor believed that even while AI might increase productivity, an excessive dependence on technology may reduce the human connections between teachers and students, which are crucial for a well-rounded education. Because AI-generated content has the potential to conflate plagiarism and undermine conventional evaluations of student work, the development of AI also calls into question academic honesty. Though they are wary of the ethical, social, and educational ramifications, university administrators generally acknowledge AI's potential to transform higher education. They are currently looking into how to include AI while maintaining the principles of integrity, equity, and access.

Administrators and others seem to be more cautious about the nature of AI applications (whether it is a form of plagiarism) as well as their benefits and drawbacks. AI use in Higher education is a Practical solution to chronic problems. AI camera will be useful to check the malpractices in the examination and to check the different anti-social activities (if any) on the campus. It will be helpful for the administration to check the regular attendance of the students as well as the teachers. AI applications must be banned in the field of academic writing. The Dean, school of education said that AI applications can be used only in learning academic writing, not in testing and assessment. All the administrators, technical experts and parents expressed that AI is still a new trend that is expected to have more positive effects on education in the future. The Dean school of Education expressed that teachers should be trained on AI. It should be a part of continuous professional development of university teachers. Educational institutions should conduct more research to create clear and appropriate guidelines and policies for the use of AI applications. One parent said students should not use AI in their learning processes. There should be a certain measurement system when using artificial intelligence in education, one of the technical experts opined that and applications or systems developed regarding artificial intelligence in education should be tested in pilot mode. Similarly, technical experts as well as heads of departments of the university highlighted data privacy: ‘The storage, protection, and confidentiality of personal data in coming AI systems must be essential; individuals are particularly concerned with mental analysis, and a measurement of persons will lead their entire life to be exposed.

Discussions

The findings of the study reveal that Artificial intelligence in education can provide strong technical support for personalised learning similar to the findings of Chang & Lu (2019). Goksel and

Bozkurt (2019), and Górriz, et., al. (2020). This means that adopting a one-size-fits-all approach can be replaced by the use of AI in higher education with tailored learning for each student. Thus, it follows that advancements in education can use AI and its auxiliary tools to meet the needs of optimal learning, greatly benefiting both educators and learners. In light of this, Abdelsalam (2014), Xue & Wang, (2022a) S. Makridakis, (2017) suggested an intelligent tutoring system (ITS) built on the mastery learning approach. competencies (e.g., Kong et al., 2021; Ng et al., 2021a, b; Xia et al., 2022), rarely do studies reveal what digital competencies teachers need to become ready in an AI-driven learning environment. AI promotes an interdisciplinary/ multidisciplinary approach to teaching other subjects. AI is necessary for monitoring the learning process. AI technologies have had a significant impact on how teachers teach and how students learn, improving students' learning outcomes, accomplishments, and attitudes in the post-pandemic era. Ahuja & Nair (2021) Liang, et. al. (2021). Through recommendation systems, tailored learning, and intelligent tutoring, AI-driven technologies can improve students' educational experiences Hwang, et al. (2022); Zawacki-Richter, et al. (2019). Artificial intelligence innovations like chatbots, robotics, and smart devices have permeated every aspect of our lives in recent years. People might not be aware of the underlying technology, ethical considerations, and guiding principles, though Ng et. al., (2021a, 2021b). The participants think there will be fewer places for teachers in higher education and more places for robot assistants. Parallel to those observations, Picciano (2019) asserts that the majority of people with displaced jobs will be in white-collar and professional areas. Teachers may now create relevant curricula and pedagogy to help students develop the information, skills, and attitude that will help them learn, live, and work more easily thanks to the availability of more age-appropriate technologies (Su et al., 2022). Proficiency in artificial intelligence has emerged as a crucial technological ability for the twenty-first century

The third theme was about the benefits incurred by AI. In order to assist institutions in making defensible choices regarding program development, facility investments, and other critical areas, it can study demographics, enrollment trends, and the evolving demands of the student population. AI is used to track pupils' academic performance and monitor their performance. This theme is similar to the findings of the study conducted by Crompton, Helen & Burke, Diane. (2023). AI is a tool used across subject disciplines, including language education (Liang et al., 2021), engineering education (Shukla, et. al., 2019), mathematics education (Hwang & Tu, 2021) and medical education (Winkler-Schwartz, et. al., 2019). The development and wider spread of AI create a flexible, editable curriculum in higher education. One significant role that learning analytics plays in AI systems is its function. Participants advocated that the inclusion of personal matters of AI should be limited. AI in education should not be assumed as an answer for all, but a medium that simplifies and tightens up processes in necessary areas.

Conclusion

The data obtained from the study exhibit four main themes:

Products: The emergence of possible products/ solid outcomes with the use of artificial intelligence in education;

Drawbacks: The possible drawbacks with the use of using artificial intelligence in education;

Benefits: The anticipated benefits with the use of artificial intelligence in education; and

Suggestions: Suggestions on the use of artificial intelligence in education.

The introduction of AI into education will undoubtedly have related advantages, disadvantages, and hazards for educational institutions. The majority of participants think AI will give students and learners new options that the traditional classroom or educational tools might not be able to provide. However, there can be issues as well. From the administrators' perspectives, they all agreed that AI will bring revolutionary force that presents both enormous obstacles and promising prospects and thus AI can also assist with administrative tasks, such as automating the grading of standardized tests, which frees up faculty members to focus more on teaching and mentoring and more but with some negative side like inequality in the ground of technical skills among administrators, teachers and even students. A proactive approach is necessary for schools to fulfil their tasks before the next industrial revolution. Legislators ought to heed the literature's recommendations in order to reap the rewards of artificial intelligence in the field of education.

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The authors declare that they have no competing interests related to this study.

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Role of a Library in the Digital Era

Souvik Koner*

In recent years, AI tools have played a crucial role in higher education in various aspects, especially in research. The article explores the impact of AI tools as a research support in higher education institutions. The education system of our country has experienced a digital revolution in the era of the 21st century, which is considered to be an era of collaborative academic strategies. The paradigm shift in higher education research has changed the global balance prevalent in Science, Technology, Engineering and Mathematics (STEM) education. Modern Library services can cope with the demands for solving the problem lying with the present-day higher education, as it is the most powerful tool to build a knowledge-based society.

A whole new arena named Education 4.O has also been evolved around smart-class products fueled by Artificial Intelligence (A.I.), extensive information and research and many more (Ateeq, et. al., 2024). The main focus of Education 4. O is to build a strong learning approach that demonstrates a prodigious intellect with a thorough scope, responding perceptively to many human challenges and inventing innovative criteria for assessing and improving both ancient and modern problems.

The substantial change in research would be that researchers have a choice in determining how they want to do a systematic literature review, and smart referencing with the help of modern AI tools (Selvam & Zakaria, 2024). India is striving to improve the quality of education through implementing the NEP 2020, and the policy has been formulated to bridge the gap between the current state of learning outcomes and what is required to bring the highest quality, equity and integrity into the system from early childhood care and education through higher education.

The New Education Policy (NEP 2020) has strongly recommended introducing contemporary subjects like Artificial Intelligence in the curriculum at relevant stages. All AICTE-approved institutions have been suggested to offer Artificial Intelligence as an elective course at B.Tech and M.Tech levels. Therefore, IITs are concerned, their acts and status allow them to develop their curricula, academic and research collaboration with Institutions and Universities across the world (Selvam & Zakaria, 2024).

In recent days, AI is playing a pivotal role in the promotion of some of the fundamental support to the whole gamut of academic research, like the application of intelligent learning systems (ILS), augmented reality, as well as advanced educational technology to optimise the smart research output. The aim of this article is to engage in a rigorous dialogue on AI's role in higher education research, like writing, data analytics, and automated content analysis in literature reviews are particularly susceptible to this disruption.

The Role of Academic Research in Higher Education

In academia and research, the use of Artificial Intelligence (AI) tools has significantly increased to support researchers in various tasks. Though there are huge concerns among the academic and research community related to ensuring academic community in the era of Artificial Intelligence (AI)(Chen, et. al., 2024). According to Perkins (2023) students frequently employ artificial intelligence tools to compose essays, reports, scientific papers, or various other academic projects without properly attributing original or credible sources, which constitutes a significant violation of academic integrity. Academic research serves as the cornerstone of higher education, profoundly influencing various facets of academia, institutional advancement, and societal development. This section elucidates the pivotal roles that academic research plays within higher education institutions.

Advancing Knowledge and Innovation

Academic research is fundamental in the pursuit of new knowledge and the advancement of existing disciplines. Through rigorous investigation, research contributes to the development of theories, methodologies, and technologies that drive innovation across various fields. Universities and colleges are often at the forefront of this knowledge expansion, providing a platform for scholars to explore uncharted territories and challenge established

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paradigms (Muhammad Roil Bilad, et. al., 2023). For instance, breakthroughs in medical research can lead to new treatments and improve public health, while advancements in engineering can result in novel technologies that transform industries.

Enhancing Teaching and Learning

Research enhances the quality of teaching and learning by integrating the latest findings into curricula. Faculty members who engage in research bring cutting-edge knowledge and current developments into their classrooms, enriching the educational experience for the researcher. These AI-enabled tools work like an intelligent agent of the researcher (Malik, et. al., 2021). This dynamic interplay between research and teaching not only helps students understand contemporary issues but also fosters critical thinking and analytical skills. The future of research is directly related to the innovative tools and computing competencies of the intelligent machines, opening to new avenues for research (Sethi, et. al., 2021) . Furthermore, research-active faculty often involve students in their projects, providing hands-on experience that complements theoretical learning and prepares them for professional challenges.

Fostering Critical Thinking and Problem-solving Skills

The learner of the 21st century is required to possess a variety of these specialised competencies to address the escalating demands necessitated by the increasingly intricate challenges presented by swift and intensifying transformations, and to address intricate challenges that emerge within the framework of the fourth industrial revolution (Linda Talib Ameen, et. al., 2024). Engaging in academic research cultivates critical thinking and problem-solving skills among students and researchers. By conducting research, individuals learn to approach complex problems systematically, analyse data rigorously, and interpret results accurately. These skills are essential not only for academic success but also for professional competence in various fields. Research activities encourage a mindset of inquiry and evidence-based reasoning, which are crucial for addressing real-world issues and contributing to informed decision-making (Albérico Travassos Rosário, et. al., 2021).

Contributing to Societal Development

Artificial Intelligence (AI) has gained significant attention due to its huge potential regarding learning and research experience, which is very useful in societal development on a large scale. Academic research has a significant impact on societal development by addressing pressing challenges and informing public policy. Research findings can lead to improvements in social, economic, and environmental conditions. For example, research on climate change can guide policy decisions and foster sustainable practices, while studies on social issues can influence legislative reforms and community initiatives. Higher education institutions play a critical role in generating knowledge that benefits society and promotes the public good.

Enhancing Institutional Reputation and Competitiveness

The research output of higher education institutions contributes to their reputation and global standing. Institutions that produce high-quality research attract top-tier faculty, students, and funding. Research achievements, such as publications in prestigious journals, patents, and collaborative projects with industry, enhance an institution's visibility and competitiveness. This reputation not only bolsters the institution's status but also facilitates partnerships and collaborations that further enrich the academic environment.

Supporting Professional Development

Academic research is integral to the professional development of faculty and researchers. It provides opportunities for career advancement, intellectual growth, and specialisation within their fields. Research activities often lead to professional recognition, such as awards, grants, and invitations to speak at conferences. For faculty members, a strong research portfolio is essential for career progression and tenure, while for researchers, it represents a path to contributing to their field of expertise and achieving personal and professional goals.

The Role of AI Tools in Modern-Day Research

AI technologies have fundamentally transformed contemporary research methodologies through the automation of various tasks, the analysis of extensive datasets, and the provision of insights that were heretofore beyond reach (Yaroshenko & Iaroshenko, 2023). The following delineates several prominent impacts:

Augmented Efficiency and Productivity

AI tools possess the capability to automate monotonous tasks, thereby liberating researchers to concentrate on more intricate and innovative dimensions of their inquiries. This transformation can markedly enhance productivity and efficiency, resulting in expedited discoveries and significant advancements.

Advanced Data Analysis

AI algorithms are proficient in processing enormous quantities of data with both speed and precision, discerning patterns and trends that would be challenging, if not impossible, for human analysts to detect. This capability can facilitate researchers in acquiring more profound insights into their investigative queries and enable them to make judicious decisions.

Enhanced Accuracy and Precision

AI models have the capability to be trained on large datasets to understand complex relationships and generate predictions with increased accuracy (Lionel, et. al., 2024). This development can improve the reliability and precision of research results, thus lessening the risk of errors and biases.

Designing Questionnaire

The formulation of a questionnaire frequently represents the initial phase in any scholarly research endeavour. Through the optimisation of question formulation via artificial intelligence-driven techniques, librarians can assist researchers in developing comprehensive questionnaires that are both relevant and concise. Furthermore, they can facilitate the integration of AI-generated insights to enhance the efficacy of survey questions, thereby promoting more dependable data collection methodologies.

Reference Management Support

Librarians have historically played a pivotal role in providing support to academics regarding reference management. In light of the fact that artificial intelligence now presents a multitude of tools to facilitate these tasks with increased efficiency and effectiveness, librarians are positioned to assist scholars in fully leveraging these resources. This section undertakes a critical assessment of the different types of support that librarians can extend to researchers in addressing the challenges of reference management and utilizing AI tools to boost both efficiency and effectiveness (EndNote, Zotero, Mendeley, RefWorks, etc.).

Accelerated Discovery

AI can assist researchers in traversing novel research pathways and identifying prospective breakthroughs with greater expediency. Through the automation of tasks and the efficient analysis of data, AI can expedite the tempo of discovery and innovation.

New Research Possibilities

AI tools are empowering researchers to address previously unsolvable issues and to investigate new realms of inquiry. Artificial Intelligence (AI) has opened up a vast array of new research possibilities across multiple fields. By enhancing data analysis, pattern recognition, and automating repetitive tasks, AI is transforming how research is conducted and expanding the frontiers of scientific inquiry.

Librarian's Role in Supporting Research Activities

Librarians play a crucial role in helping researchers effectively use AI tools. With their knowledge of information management and research, librarians can guide researchers to make the most of AI tools in their work.

Information Access and Retrieval

- *Locating Relevant Resources*: Librarians help researchers find the most up-to-date and reliable information sources, including books, articles, journals, databases, and online repositories.
- *Teaching Research Skills*: They provide guidance on effective search strategies, database usage, and critical evaluation of information.

Research Consultation and Guidance

- *One-on-one Assistance*: Librarians offer personalised support, answering questions, suggesting resources, and helping researchers develop their research plans.
- *Research Design and Methodology*: They can assist with designing research projects, selecting appropriate methodologies, and understanding ethical considerations.

Data Management and Curation

- *Data Organisation and Preservation*: Librarians help researchers manage and organise their data, ensuring its long-term preservation and accessibility.
- *Data Analysis and Visualisation*: They can provide training and support in using data analysis tools and techniques, as well as creating visualisations to communicate research findings effectively.

Scholarly Communication and Publication

- *Author Training*: Librarians can educate researchers on best practices for writing and publishing research papers, including formatting, citation styles, and copyright issues.
- *Open Access Advocacy*: They promote open access initiatives, ensuring that research is freely available and accessible to a wider audience.

Technology Integration and Training:

- *AI Tool Expertise*: Librarians can help researchers leverage AI tools effectively, providing guidance on their capabilities, limitations, and best practices.
- *Digital Literacy Training*: They offer training on using various digital tools and technologies relevant to research, such as citation management software, research collaboration platforms, and data visualisation tools.

Community Building and Collaboration

- *Networking Opportunities*: Librarians can connect researchers with other scholars, experts, and potential collaborators, fostering interdisciplinary research and knowledge exchange.
- *Research Dissemination*: They help researchers share their findings through conferences, publications, and other channels, increasing their visibility and impact.

Challenges and Opportunities

The application of Artificial Intelligence technologies provides avenues for greater efficiency and creative progress in research; however, substantial challenges persist, including data manipulation, intrinsic bias, ethical considerations, and the need for careful governance to ensure adherence to academic integrity (Yaro & Iaro). Through the deliberate allocation of resources aimed at improving data quality, the development of ethical guidelines, the advancement of technical skills, and the exploration of economically feasible options, researchers are empowered to utilise the capabilities of artificial intelligence to stimulate innovation and advance the frontiers of understanding.

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Serving Humanity: The Noble Path of Medicine

Vinai Kumar Saxena, Hon'ble Lieutenant Governor of Delhi, delivered the Convocation Address at the 3rd Convocation Ceremony at the North Delhi Municipal Corporation Medical College on September 18, 2024. He said, "I sincerely wish that you all become Noble Doctors, who, with their clinical acumen, change the misguided perception of some patients about the Health System. Never stop learning, never stop asking questions and never forget that medicine is an art as well as a science practised by doctors. You have to bring to your patients not only technology and training but also humanity, compassion, care and concern." Excerpts

At the outset, I would like to extend my congratulations and good wishes to the graduating doctors and awardees of the 2016 & 2017 batch of the North DMC Medical College. It is indeed a red-letter day for all present here, especially the parents and students.

The profession of a doctor is one of the most sought-after professions globally. Though each year more than a million students apply for it, only a few make it through the other side.

You have been the scholars of one of the most difficult disciplines in the world and as you walk out of the portals of your alma mater, you will be the practitioners of one of the most difficult and yet the most gratifying and noble professions globally. As you move ahead pursuing your internships, postgraduate and doctoral degrees, I would as an elder like to underline the following for you. "Those who suffer need you to be something more than a doctor; they need you to be a healer. And to become a healer, you must do something far more difficult than putting your white coats on."

You will be, as you move ahead, managing, treating, healing and eliminating the sufferings of humankind. Indeed, you will be expected to have God like qualities, despite your being humans. As you go ahead with the healing of human beings, when they are at their most vulnerable, the first thing that you would need to inculcate and enhance is compassion. Let me tell you that a patient hearing on your part and a gentle pat will work as much as the drugs you would prescribe.

The profession that students and faculty of medicine pursue requires, life-long commitment to continuous and constant upgradation, updation and enhancement of knowledge. Practising doctors as well as faculty consistently need to take cognisance of the latest technological advancements and cutting-edge research, and innovation. At the same time, you will have to simultaneously apply these for the benefit of your patients and students. You will be committing your entire careers, if not your lives, to the pursuit of knowledge. Let me tell you, dear friends, this is easier said than done. However, I would like to inspire you with an oft-repeated couplet…

"कौन बताता है समुंदर का रास्ता नदी को....!
जिसे मंजिल का जूनून है वो मशवरा नहीं लेते....!!

ये आपका जूनून था जो आपको कठिन परिश्रम के बाद यहाँ तक ले आया और आगे आपका जूनून ही होगा जो आपको अपनी मंजिल तक पहुंचाएगा.

At this juncture, I would also like to quote one of our greatest philosophers, Swami Vivekananda, and I quote, "Arise, Awake and Stop not till the goal is reached".

Health is among the topmost priorities of the Government of India. Our way forward in the health and medicine sector is going to shape India @2047. A healthy nation is what will ensure the goal of 'Viksit Bharat', as envisioned by our Prime Minister, Shri Narendra Modi Ji.

While the governments at various levels are doing their best with the available resources, the impoverishing impact of health and medical expenses on the common citizen is concerning. Data suggests that as many as 4 crore people of our country slip into poverty each year due to medical expenses. However, the same, despite challenges, is gradually changing.

Various schemes like the Ayushman Bharat, Jan Aushadhi and Pradhan Mantri Jan Arogya Yojna are playing an instrumental role in correcting this anomaly. At the same time, our Doctors and other Health Professionals in the Public Health infrastructure are playing a yeoman's role despite severe constraints and the volume of patients. I take this opportunity to call upon the Medical Professionals in the Private Sector in Delhi, to come forward and contribute their own bit, by making the Health Industry think beyond just profits.

India has had a long-standing tradition of serving humanity. It is rooted in our very basic cultural ethos of सर्वे भवन्तु सुखिनः,सर्वे सन्तु निरामयाः। As a nation, we have evolved into one of the largest medical reservoirs, with about 600 medical institutions that annually provide more than 90,000 Doctors. We have a Doctor Population ratio of about 1.83 per thousand people, which is better than the WHO standard of 1:1000. However, this is no reason to be happy and complacent. The other side of the same statistics shows grave regional disparities in these numbers. While Delhi has one Doctor for about 330 people, States like Bihar, Haryana, and Jharkhand have one Doctor for around 3,300, 6,000 and 8,000 people, respectively.

To my mind, this is an area of grave concern. While on one hand, it underlines the need to upgrade Medical Infrastructure where it is required, on the other hand, it is also indicative of the increasing load of patients from such areas to places which have better medical facilities. This also leads to a huge burden – financial as well as emotional burden on the already suffering patients and their families.

Even as we wait for an enduring solution to this problem, it should be our endeavour to help, mitigate the problems caused by such imbalances at our levels. In this regard, I applaud North DMC Medical College under MCD for working tirelessly in not only providing services to an estimated population of 11 million but also imparting Medical education.

At this juncture, I would like to turn my attention towards the recent rising trends of violence against doctors and the medical fraternity. Apart from the skirmishes between attendants of patients and doctors and hospital staff, what we witnessed recently in Kolkata at a Medical College, makes our heads hang in shame. While at one level, this could be indicative of degenerating governance and social ethos, on another level, it requires serious introspection and concrete steps that ensure that the guilty are brought to book and such tragedies never happen again.

As young Physicians about to embark on a fabulous journey, you would continue to develop your clinical skills day after day and become fine Physicians, Surgeons and Teachers. On this red letter day of yours, I urge you to hold steady, your child's curiosity and amalgamate it to contribute to academia.

I sincerely wish that you all become Noble Doctors, who, with their clinical acumen, change the misguided perception of some patients about the Health System. Never stop learning, never stop asking questions and never forget that medicine is an art as well as a science practised by doctors. You have to bring to your patients not only technology and training but also humanity, compassion, care and concern. I have, as an elder, my two bits of advice for you.

डिग्रियाँ तो पढ़ाई के खर्च की रसीदें हैं,
ज्ञान वही है जो व्यवहार दर्शाता है.

I would conclude with these words and once again wish the students and the Institution, Godspeed.

Jai Hind.

CAMPUS NEWS

International Workshop on Data Analysis for Social Science

A two-day International Workshop on 'Data Analysis for Social Science' was organised by the Postgraduate and Research Department of Economics, The American College, Madurai in collaboration with the Indian Economic Association, New Delhi, recently. Dr. Justin Jebaraj, Secretary of the event, welcomed the gathering. Dr. K Usha explained the objectives of the event and detailed the theme of the event. Dr. Davamani Christober, Principal and Secretary, The American College, Madurai delivered the Presidential Address. He welcomed the special speakers of the Indian Economic Association (IEA), New Delhi. He expressed that the introduction of E-views in SPSS is expected and reliable for data analysis. He also pointed out that data analysis is an important tool for mathematics and computer science, as well as in the social sciences. For E-views, R' language is very helpful for learning data analysis.

Dr. V K Malhotra, President of the Indian Economic Association (IEA), New Delhi inaugurated the event. In his address, he explained the importance of data analysis in social sciences research and how people in various departments are trained in data analysis. He spotted that economics is a disciplined subject because of its handling of data. Data analysis is very important for social activities, sustainable development activities, and others. He also mentioned the three Nobel Prize winners in Economics of 2024, they almost deal with the portion of data analysis. Why, when, and where these questions help to provide the national economy. He pointed data is good for future uses. Dr. S Jeyarani proposed a Vote of Thanks in the inaugural session.

During the Technical Session, Dr. M Kannan, Director, Research, M S Chellamuthu Trust and Research Foundation, Madurai delivered on 'Introduction to Quantitative Research'. He gave a brief outline on quantitative research variables, which is the basic language for research. He explained that anything that varies from person to person, place to place, and time to time is called a variable. Variables can be measured by qualitative and quantitative types, and the entire statistics belongs to the two variables, he added. Qualitative variables are classified by nominal (only categorisation) and exclusive and exhaustive, least powerful variable. Quantitative variables classified by Interval (number + absence of real zero) and ratio (number + presence of real zero) most powerful variables. Nominal, ordinal variables can be converted into intervals but not as ratios. The process of converting nominal and ordinal values to intervals is called the scaling technique, he added.

Dr. M Kannan explained the hypothesis and its testing in social sciences research. Hypothesis tests are very much useful for research in terms of **guiding research questions (**A hypothesis helps to focus the research by providing a specific question or prediction that the study aims to answer), **establishing variables (**It identifies the independent and dependent variables, clarifying what is being tested and measured), fa**cilitating experimental design (**A well-formed hypothesis informs the methodology, helping researchers design experiments or studies that effectively test their predictions), pr**oviding a framework for analysis (**Hypotheses set the groundwork for statistical analysis, allowing researchers to determine if the data supports or refutes their predictions), d**riving further inquiry (**The results of hypothesis testing can lead to new questions and hypotheses, contributing to the iterative nature of scientific research), **enhancing communication (**Clearly stated hypotheses help communicate the purpose and direction of research to others, including peers, funding bodies, and the public) and **testing theory (**Hypotheses can be used to test existing theories, either supporting or challenging them based on the evidence gathered). He also dealt with the difference between the null and alternative hypotheses. Dr. T Selva Kumar proposed a Vote of Thanks in the session.

The session on 'Application of Data Analysis' started with the welcome address by Dr. K Usha. In the session, Dr. T Aathy Kannan, Head, Economics Department, Hindustan Institute of Technology and Science (Deemed University), Chennai, explained about the application of data analysis. Data analysis involves examining, cleaning, transforming, and modelling data to discover useful information, draw conclusions, and support decision-making. It applies across various fields like business, healthcare, finance, and social sciences, enabling insights and trends identification, he added. Techniques include statistical analysis, predictive modelling and machine learning, which can help optimise operations, identify patterns, forecast trends, and support research. Dr. Vanitha proposed a Vote of Thanks in the session.

The session on 'Interpretation of Statistical Research' was handled by Dr. S S Jeyaraj, Faculty of Accounting and Finance, Sino-British College, Guangxi Minzu University, Nanning, Guangxi Province, P R China. Dr. M Sheela welcomed the gathering. Dr. S S Jeyaraj presented various valuable insights on data analysis in social sciences. Understanding the data (Descriptive Statistics: Summarise the basic features of the data, including means, medians, modes, standard deviations, and ranges. Visualisations: Use charts and graphs to represent data distributions, trends, and relationships), Hypothesis Testing (Null Hypothesis **(**H0**)**: Understand the assumption being tested, which typically states that there is no effect or difference. Alternative Hypothesis (H1): The hypothesis that indicates the presence of an effect or difference. P-value: Assess the significance of the results. A low p-value (commonly < 0.05) suggests rejecting the null hypothesis in favor of the alternative), Confidence Intervals (Calculate confidence intervals to provide a range within which the true population parameter is likely to fall, offering insight into the precision of estimates) and Effect Size (Look at effect size measures to understand the magnitude of differences or relationships, beyond just statistical significance) are key illustrations, he made.

He also explained the Contextual Interpretation (Consider the practical implications of the findings within the broader context of the field. The results relate to existing theories or previous research), Limitations and Assumptions (Acknowledge any limitations in the study design, data collection, or analysis. Check whether the assumptions of the statistical tests used were met), Generalizability (Assess whether the findings can be generalized to a larger population, based on sample size and selection methods) and Reproducibility and Validity (Consider whether the study can be reproduced and whether the methods used were valid for the research questions posed). Dr. R Jasmine proposed the Vote of Thanks.

Dr. B Senthilkumar, Assistant Professor of Statistics, Thanthai Periyar Government College of Arts and Science, Trichy, Tamil Nadu, acted as the special guest in the session on 'Using R'. He trained the students on the use of the R language and its uses in social sciences research. He explained data manipulation, data cleaning, transforming, and reshaping data, and the role of R in making it easier to prepare datasets for analysis. R supports a wide range of statistical tests, from basic descriptive statistics to advanced modelling techniques like regression, ANOVA, and time series analysis. Researchers can perform hypothesis testing and calculate p-values, confidence intervals, and effect sizes. Data visualisation i.e. R package, allows for sophisticated and customizable data visualisations, helping researchers present their findings clearly and effectively. Visualisations can include scatter plots, histograms, box plots, and more complex graphics, he added. He also explained about importance of the R views package in reproducible research, machine learning, time series analysis, spatial analysis, integration with other tools, statistical reporting and community and support.

The Panel Discussion on 'Data Analysis for Social Science' was organised to share basic concepts, literature and tools of research among students. The discussion was chaired by Dr. M Kannan as moderator and Dr. Senthilkumar, Dr. D Adi Kannan, and other Committee Members are acted as panel members. The panel discussion was open to all participants the Committee answered the questions asked by the participants.

Prof. Avathi Ramaiah, Professor, Tata Institute of Social Sciences (TISS), Mumbai was the Chief Guest for the session on 'The Philosophy and Relevance of Qualitative Research', and he spoke on statistical research. He covered the areas regarding research design and types of studies. It determines whether the research will be experimental, observational, cross-sectional, longitudinal, *etc*. Sampling Methods: Choose appropriate sampling techniques (random, stratified, cluster) to ensure that the sample is representative of the population. Data collection, surveys and questionnaires are the tools for gathering qualitative and quantitative data. Experiments or controlled studies are used to observe the effects of independent variables on dependent variables in social sciences research. Descriptive Statistics help to summarise and describe the characteristics of the data using measures such as mean, median, mode, variance, and standard deviation. Visualisation tools like histograms, box plots, and scatter plots help illustrate data distributions and relationships. He also illustrated the use of inferential statistics and techniques to make inferences about a population based on sample data. This includes hypothesis testing, confidence intervals, and regression analysis. Hypothesis testing and test hypotheses to determine whether observed effects are statistically significant.

Use P-values to assess the strength of the evidence against the null hypothesis. Use of models like linear regression, logistic regression, and ANOVA to explain relationships between variables and make predictions is also discussed. Analyse the outcomes of statistical tests, consider practical significance, and discuss implications within the context of the research question. Present results, often including tables, charts, and graphs, alongside narrative explanations of what the results mean for the research question and ensure that data collection and analysis adhere to ethical guidelines, including informed consent, data privacy, and accurate reporting of findings, he added. Applications of statistical research in Health Sciences (Clinical trials, epidemiological studies, and health surveys), Social Sciences (Analysing survey data, studying social phenomena, and testing theories), Economics (Economic modelling, forecasting, and policy analysis) and Environmental Studies (Assessing environmental data and impacts) are to be learned. Statistical research is integral to generating knowledge, guiding policy, and informing practice across various domains.

Dr. A Duraisamy, Dean, Faculty Science and Humanities, SRMIST, Kattankulathur, Chennai, acted as a guest speaker and delivered on 'Introduction to E-Views'. E-Views (Econometric Views) is a powerful software tool designed for econometric analysis, forecasting, and data management. It is widely used by economists, researchers, and analysts for its user-friendly interface and robust capabilities, he said. E-views allow users to perform a range of statistical analyses, including time series and panel data analysis, regression modeling, and forecasting. The exploration of complex datasets, making it easier to model economic relationships and test hypotheses, is highly relevant. E-Views supports various data formats and provides graphical tools for data visualisation, enhancing the interpretability of results. E-Views have become a valuable resource in both academic and professional settings for conducting empirical research, he added.

Prof. D K Madaan, Secretary, Indian Economic Association, New Delhi and Dean, Punjabi University, Patiala, felicitated the workshop. Dr. Senthamarai Kannan, Former ADGP, Government of Tamil Nadu gave the valedictory address. Dr. A Martin David, Vice Principal, The American College, Madurai, distributed the certificates to the participants. Dr. S Vanitha proposed the Vote of Thanks.

International Conference on Sustainable Materials and Infrastructure

A three-day International Conference on 'Sustainable Materials and Infrastructure' is being jointly organised by the Centre for Strategic and Sustainable Infrastructure, Department of Civil Engineering, Indian Institute of Technology Jammu and Indian Concrete Institute, J&K Centre from December 16-18, 2025. The academicians, research scholars, students, admixture manufacturers, builders/contractors/site supervisors, cement manufacturers/construction companies, Govt. agencies/officials, practising engineers/ consultants/ architects, manufacturers / RMC professionals, project management consultants/construction professionals may participate in the event. The event offers an engaging forum to explore cutting-edge advancements in eco-friendly materials, energy-efficient technologies, and innovative design approaches. Participants may exchange knowledge, present groundbreaking solutions, and build collaborations to accelerate the adoption of sustainable practices in the construction industry. Aligned with the principles of the United Nations Sustainable Development Goals (SDGs), the event addresses critical global challenges, including climate resilience, resource efficiency, sustainable urban development, and access to clean energy. The themes of the event are:

- Advanced Cementitious Material for Durability.
- Advanced Testing, Inspection and Monitoring Techniques for Materials and Structures.
- Computational Modelling for Durability.

- Corrosion Monitoring and Mitigation.
- Earthquake-Resistant Structures, Seismic Response Control.
- Eco-Sustainable Materials.
- Environmental Monitoring and AI.
- Geosynthetics for Sustainable Construction.
- Ground Improvement Method for Foundation and Tunnelling.
- High-performance Concrete.
- Highway Safety and Risk Assessment.
- Innovative Materials and Construction Techniques.
- Innovations In Bridge Design and Sustainable Construction Practices.
- Low-Carbon Cements, Cement Chemistry and Green Concrete.
- Microstructure of Sustainable Concrete/ Composites.
- Nanotechnology in Concrete and Construction.
- Non-destructive Testing of Concrete Structures.
- Pavement Design and Materials.
- Resource Conservation, Recycling, and Circular Economy.
- Service Life and Life Cycle Assessment of Buildings and Infrastructure.
- Sustainable Environment Management.
- Sustainable and Emerging Smart Transportation Systems.
- Sustainable Tunnelling Technologies.
- Utilisation of Waste Materials in Concrete.
- Valorisation/bio-remediation of Construction-based Materials.

For further details, contact Ms. Sharu Slathia, Room No: 01-AC-0327, Dean's Block, Indian Institute of Technology Jammu, Jagti, PO Nagrota NH-44, Jammu -181 221 J&K, Mobile No: 08082489865 / 07693095503, E-mail: *icsmi@iitjammu.ac.in.* For updates, log on to: *https://iitjammu.ac.in/post/icsmi*

International Conference on Climate Change and Emerging Technologies

A two-day International Conference on 'Climate Change and Emerging Technologies' is being organised by the Lovely Professional University, Phagwara, Punjab from September 11-12, 2025. The event aims to bring together researchers, industry experts, and policymakers to discuss innovative solutions for climate resilience.

Climate change is a serious global challenge, affecting the environment, economy, and human life. To address this, green technology and sustainability have become essential. Innovations in renewable energy, carbon reduction, and digital solutions are key to ensuring a sustainable future. The event will focus on renewable energy technologies such as solar photovoltaics, wind energy, and green hydrogen, along with carbon capture techniques and AI-based emission control strategies. It will also highlight sustainable urban development, including smart cities, electric vehicles, and energy-efficient buildings, as well as the role of biotechnology in developing bio-fuels and biodegradable materials. The Thrust Areas of the event are:

Renewable Energy Technologies

- Innovations in Solar Photovoltaic and Thermal Systems.
- Wind Energy Systems and Turbine Optimisation.
- Next-Generation Energy Storage Technologies.
- Development of Green Hydrogen Production and Utilisation Systems.
- Hybrid Renewable Energy Systems and Smart Grid Integration.

Carbon Management and Mitigation Technologies

- Carbon Capture, Utilisation, and Storage Innovations.
- Direct Air Capture and Negative Emissions Technologies.
- Biochar and Other Advanced Carbon Sequestration Methods.
- Blockchain Applications for Carbon Footprint Tracking.
- AI-Driven Optimisation of Carbon Reduction Strategies.

Sustainable Urban Technologies

- Smart Cities: Integrating Technology for Sustainable Urban Living.
- Green Building Materials and Construction Technologies.
- Energy-Efficient HVAC Systems and Smart Appliances.

- Autonomous Electric Vehicles and Charging Infrastructure.
- Urban Water Recycling and Smart Waste Management Systems.

Sustainable Power Systems

- Innovations in Floating Solar Farms and Offshore Wind Farms.
- Microgrid Technologies for Remote and Rural Electrification.
- Thermoelectric Materials for Renewable Energy Harvesting.
- AI-Powered Energy Forecasting and Management Systems.
- Waste Heat Recovery Systems in Industrial Applications.

Climate-Specific Advanced Materials

- Advanced Materials for Climate Resilience.
- Energy-Efficient and Sustainable Materials.
- Renewable Energy Material Innovations.
- Water and Resource Management Materials.
- Future-Oriented Material Design.

Transportation and Mobility

- Hydrogen-Powered Vehicles and Fuel Cell Technology.
- Autonomous Public Transport Systems and Climate Impacts.
- Electrification of Maritime and Aviation Sectors.
- Smart Traffic Systems for Emission Reduction in Urban Areas.
- Hyperloop Technology and its Environmental Benefits.

Climate-Smart Manufacturing

- Green Manufacturing Technologies for Emission Reduction.
- Circular Economy Models in Industrial Production.
- Energy-Efficient Manufacturing Processes for Sustainability.
- Sustainable Materials in Manufacturing for Climate Adaptation.
- Smart Factories and IoT for Sustainable Production.
- Low-Carbon Manufacturing and Decarbonization Strategies.
- Additive Manufacturing for Eco-Friendly Components.
- Waste Minimization and Resource Recovery in Manufacturing.

Climate-Smart Bioengineering

- Genetic Engineering for Drought and Flood-Resistant Crops.
- Algae-Based Biofuels and Carbon Absorption Mechanisms.
- Synthetic Biology for Sustainable Agriculture and Food Security.
- Microbial Engineering for Bioplastics and Biodegradable Alternatives.
- Biomimicry-Inspired Engineering for Sustainable Systems.

Data and Communication Technologies

- Edge Computing for Decentralised Climate Solutions.
- Low-Power Communication Systems for Remote Monitoring.
- Blockchain for Transparency in Climate Action and Funding.
- Virtual and Augmented Reality for Climate Education and Advocacy.
- Open Source Platforms for Climate Collaboration and Innovation.

Environmental Restoration Technologies

- Drone and Robotic Systems for Reforestation and Restoration.
- Advanced Water and Wastewater Treatment Technologies.
- Nanotechnology Applications for Pollution Control and Resource Recovery.
- Bioremediation and Synthetic Biology for Soil and Water Restoration.
- Ocean-Based Renewable Energy and Carbon Capture Technologies.

Climate Risk Management and Adaptation Technologies

- Artificial Cloud Seeding and Weather Modification Systems.
- Controlled Lighting and Microclimate Systems in Agriculture.
- Automated Greenhouse Systems for Harsh Climate Zones.

- AI and ML for Predictive Climate Risk Analytics.
- Real-Time Monitoring via Cloud and Autonomous Drone Networks.

Next-Gen Waste Management Technologies

- AI-Powered Smart Waste Sorting and Recycling
- Circular Economy Solutions for Zero-Waste Cities.
- Waste-to-Energy Innovations for Sustainable Power.
- Blockchain for Waste Tracking and Efficiency.
- Advanced Wastewater Treatment and Resource Recovery.
- Industrial Waste Minimisation and Eco-Friendly Practices.
- Sustainable Plastic Waste Solutions through Biotechnology.

For further details, contact Organising Secretary, Division of Research and Development Cell, Lovely Professional University, Phagwara, Punjab- 144411, Phone No: 01824-517000 / 01824-404404. For updates, log on to: *www.lpu.in/events/*

Seminar on Emerging Fields in Education Research

A two-day Seminar on 'Emerging Fields in Education Research: Shaping Future Directions with NEP-2020' is being organised by the MIER College of Education, Jammu from November 14-15, 2025. The event is sponsored by the Indian Council of Social Science Research, New Delhi. The event aims to advance academic and policy-oriented discussions on critical areas of educational transformation outlined in the National Education Policy (NEP)- 2020. It will provide a platform to engage in dialogues and workshops focused on understanding the challenges and opportunities of NEP 2020's implementation across diverse educational contexts. The key themes of the Event are:

Digital Education and Learning Technologies

- Blended Learning: Combining classroom and online approaches to improve engagement.
- AI in Education: Using AI for personalised learning and smarter assessment.
- Digital Literacy: Building essential digital skills for students and educators.

Skill-Based and Experiential Learning

- Vocational Training: Aligning education with industry needs through partnerships.
- Project-Based Learning: Developing critical thinking through hands-on experiences.
- Lifelong Learning: Creating opportunities for continuous skill development.

Social-Emotional Learning and Mental Health

- SEL in Curriculum: Building resilience and interpersonal skills.
- Mental Health Support: Addressing student wellbeing challenges.
- Positive Learning Environments: Creating inclusive and supportive spaces.

Global Citizenship and Environmental Education

- Global Awareness: Understanding cultural diversity and global issues.
- Sustainability Education: Incorporating UN Sustainable Development Goals.
- Environmental Responsibility: Promoting ecofriendly practices and climate awareness.

Cyber Safety and Digital Citizenship

- Online Safety: Teaching privacy protection and responsible online behaviour.
- Digital Citizenship: Promoting ethical engagement and critical thinking online.
- Safety Frameworks: Implementing effective policies for digital learning environments.

Ethics and Responsible Technology Use

- AI Ethics: Navigating privacy, bias, and automated decision-making.
- Human Connection: Balancing technology with meaningful personal interaction.
- Ethical Guidelines: Developing frameworks for responsible technology use in education.

For further details, contact Convener, Dr. Nishta Rana, MIER College of Education, B.C. Road, Jammu-180 001, Mobile No: 09086033747/ 09419186287, E-mail: *principal@miercollege.in*. For updates, log on to: *www.miercollege.in/events/* ❑

STUDENT COLUMN

Aligning Higher Education with NEP—2020: The Roadmap for Outcome-based Education

Chiranjit Mandal*

This research examines the implementation of Outcome-Based Education (OBE) in the context of the National Education Policy (NEP) 2020, with a focus on its impact on higher education in India. NEP 2020 envisions a shift from traditional rote learning to an outcome-based model, emphasising the development of critical skills and competencies necessary for the modern workforce. This study explores the core principles of OBE, its alignment with NEP 2020, and the transformative changes it brings to educational practices. The paper also highlights the challenges faced in adopting OBE, such as faculty readiness, institutional infrastructure, and resistance to change, while offering solutions like faculty development, technological investment, and flexible curriculum structures. The findings suggest that successful implementation of OBE will require institutional commitment, continuous faculty training, and innovative assessment methods. By focusing on student-centred learning and measurable outcomes, OBE can better prepare students for real-world challenges, aligning with global educational standards and enhancing employability. This research contributes to the understanding of how NEP 2020, with its focus on OBE, can redefine India's higher education system, making it more responsive to both student needs and societal demands.

The National Education Policy (NEP)- 2020 is a landmark step towards revolutionising India's education system, emphasising a shift from traditional rote learning to an Outcome-based Education (OBE) model, which prioritises the development of critical skills and competencies essential for the 21st-century workforce (Kumar & Verma, 2020 and Singh & Rani, 2021). OBE is designed to focus on measurable learning outcomes, ensuring that students acquire the necessary knowledge and skills to excel in their careers and contribute to societal progress (Biggs & Tang, 2007 and Reddy, et. al., 2022). The NEP–2020, which integrates OBE at the core of its educational framework, emphasises holistic development, innovation, and creativity, facilitating a robust educational ecosystem that aligns with the global demands for skilled professionals (Sharma & Patel, 2020 and Agarwal & Bansal, 2021). According to Boud & Falchikov (2007), OBE is crucial in enhancing student performance by setting clear educational goals and continuously assessing learning achievements. The policy also advocates for curriculum reformation, promoting interdisciplinary learning and an emphasis on critical thinking, communication, and problem-solving skills (Singh, et. al., 2021 and Gupta & Mehta, 2020). While the NEP's vision is ambitious, its success largely depends on how higher education institutions adapt to these shifts, incorporating OBE principles into their teaching methodologies and assessment systems (Yadav & Soni, 2021 and Sharma, 2022). Implementing OBE, however, is not without its challenges, such as faculty readiness, institutional preparedness, and the need for continuous professional development (Kumar, et. al., 2020 and Singh & Sethi, 2021). Nonetheless, adopting OBE can significantly enhance the employability of graduates by ensuring they possess the relevant skills and competencies demanded by the global job market (Hodges, et. al., 2021 and Sharma & Jadhav, 2022). This research delves into how Indian higher education institutions can align with NEP- 2020's OBE framework, discussing the strategic roadmap required for successful implementation, addressing the challenges faced by educators, and proposing solutions that ensure a seamless transition to outcome-based learning (Boud, 2022 and Kaur & Gill, 2021). By focusing on innovative teaching practices, faculty training, and a redefined assessment strategy, the research aims to provide actionable insights that can assist in achieving the NEP's vision of a world-class education system (Mishra & Sharma, 2020 and Rani & Singh, 2022).

Objectives

i. To understand the main ideas of Outcome-based Education (OBE).

ii. To explore how the NEP 2020 changes the way education is given in colleges and universities.

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iii. To identify the challenges and solutions in applying OBE in colleges.

Discussion

Objective 1: To Understand the Main Ideas of Outcome-based Education (OBE)

Outcome-based Education (OBE) is an educational approach that focuses on the specific outcomes or skills students are expected to achieve by the end of their learning process. The central idea of OBE is that education should be designed to ensure students gain clear, measurable, and relevant skills that are directly applicable to real-world challenges (Biggs & Tang, 2007). According to Spady (1994), OBE shifts the focus from traditional methods, which were often centred on time-based learning and teaching, to student-centred learning where the emphasis is placed on the actual achievements or competencies students acquire during their education. This model aims to ensure that students not only understand theoretical concepts but also acquire the practical skills necessary to succeed in their careers and contribute to society (Hodges, et. al., 2021).

OBE promotes a clear alignment between teaching methods, curriculum design, and assessments to measure how effectively students are learning and achieving the set outcomes (Boud & Falchikov, 2007). It involves setting specific learning outcomes before teaching begins, and then designing lessons and assessments that help students achieve those outcomes. This approach has been shown to improve students' ability to apply knowledge in practical situations and solve problems creatively (Reddy et al., 2022). For example, in a course on engineering, students are not just expected to memorise facts but also to develop problem-solving skills, hands-on experience, and the ability to work collaboratively—key competencies that are critical in the workforce (Sharma & Patel, 2020).

The idea of OBE is further supported by the work of Singh, et. al. (2021), who note that this system shifts the focus of assessment from merely testing recall and memorisation to evaluating how well students can apply what they have learned in different contexts. This makes OBE highly relevant for today’s rapidly changing job markets, where employers increasingly value critical thinking, adaptability, and practical skills over theoretical knowledge alone (Agarwal & Bansal, 2021). Overall, the purpose of OBE is not just to measure academic success but to ensure that students are well-prepared to tackle challenges in their personal, academic, and professional lives.

Objective 2: To Explore How the NEP–2020 Changes the Way Education is Given in Colleges and Universities

The National Education Policy (NEP)–2020 brings transformative changes to India’s higher education system, aiming to make it more inclusive, flexible, and aligned with global standards. One of the primary ways it changes education in colleges and universities is through a shift toward student-centred learning, where students' individual needs, interests, and learning outcomes are prioritised (Kumar & Verma, 2020). The policy emphasises a more personalised approach, encouraging students to take ownership of their learning journey rather than passively absorbing content. This is a marked departure from the previous approach, which often focused on traditional, one-size-fits-all methods of teaching and learning (Singh & Sethi, 2021).

The NEP–2020 also advocates for flexible curriculum structures that allow students to choose courses across disciplines. This interdisciplinary learning approach is designed to break the boundaries between traditional academic silos, enabling students to explore subjects outside their primary field of study. As Sharma and Jadhav (2022) note, this flexibility fosters creativity and critical thinking, essential skills for adapting to the rapidly changing global job market. The policy encourages the introduction of courses that blend academic learning with practical skills, thereby aligning educational outcomes with industry needs (Reddy, et. al., 2022).

Another significant change is the introduction of multiple entry and exit points in degree programs. This allows students to leave a program after completing a certain number of credits and return later without losing their progress, promoting lifelong learning and making higher education more accessible to non-traditional students (Singh et al., 2021). The NEP also focuses on blended learning by incorporating technology into the educational process, which enhances accessibility and flexibility. Online learning platforms and digital tools are increasingly becoming an integral part of the curriculum, allowing students to engage with material at their own pace and convenience (Sharma & Patel, 2020).

The policy also emphasises improving quality and accountability in higher education institutions through the establishment of accreditation bodies that assess institutions on their performance rather than just their input measures. This will help ensure that colleges and universities are evaluated based on the real outcomes they achieve in terms of student learning and development (Agarwal & Bansal, 2021). Additionally, the NEP–2020 advocates for increased focus on research and innovation, pushing for a higher level of collaboration between academic institutions and industries to foster innovation, entrepreneurship, and job creation (Gupta & Mehta, 2020).

Overall, the NEP–2020 seeks to reshape higher education by fostering a more dynamic, accessible, and outcome-driven system. These changes aim to align Indian higher education with global trends, making it more responsive to the evolving needs of the economy and society.

Objective 3: To Identify the Challenges and Solutions in Applying OBE in Colleges

Implementing Outcome-based Education (OBE) in colleges poses several challenges, despite its potential to transform the educational landscape. One of the major obstacles is faculty readiness. Many educators, especially in traditional systems, are accustomed to content-based teaching methods and may lack the skills or training required to design and implement an OBE framework effectively (Kumar, et. al., 2020). According to Sharma and Patel (2020), the shift towards an OBE framework requires a paradigm change in teaching strategies, assessments, and overall classroom management, making professional development for faculty a necessity.

Another significant challenge is the lack of institutional support in terms of resources, infrastructure, and strategic planning for OBE adoption. Colleges may not have the necessary technology or systems in place to effectively track and assess student outcomes in real-time (Singh & Rani, 2021). The integration of digital tools, Learning Management Systems (LMS), and data analytics platforms, essential for tracking learning outcomes and progress, often requires substantial financial investment and expertise (Gupta & Mehta, 2020). Without proper institutional backing, the implementation of OBE can be uneven, leading to disparities in learning experiences and assessment standards.

Resistance to change from both faculty and students is another barrier that can hinder the successful implementation of OBE. As noted by Reddy, et. al. (2022), there is often reluctance to move away from traditional assessment models that focus on exams and rote learning. Both educators and students may find it challenging to adjust to a more dynamic, competency-based assessment structure. To mitigate this, the NEP–2020 emphasises the importance of creating awareness and building consensus around the benefits of OBE through training programs and information campaigns (Singh, et. al., 2021).

Furthermore, defining and measuring learning outcomes in a clear and standardised manner is a major challenge. Designing measurable, specific, and achievable learning outcomes for each course requires a deep understanding of the course content and its real-world applications (Agarwal & Bansal, 2021). Additionally, traditional assessment methods may not be suitable for evaluating complex competencies such as critical thinking, problem-solving, and collaboration, which are central to OBE (Sharma & Jadhav, 2022). In response, colleges must adopt more comprehensive assessment tools, such as project-based assessments, peer reviews, and continuous formative assessments that capture a wider range of student abilities (Boud & Falchikov, 2007).

To address these challenges, colleges need to invest in faculty development programs that focus on training educators in OBE methodologies, assessment strategies, and the use of technology for tracking outcomes (Hodges, et. al., 2021). Additionally, institutional support for infrastructure development, including digital tools and LMS, is essential to ensure that data-driven decisions can be made regarding student performance and educational improvements. Finally, fostering a culture of continuous feedback and reflection can help overcome resistance to change by demonstrating the positive impact of OBE on student learning and career readiness (Sharma & Patel, 2020).

While the implementation of OBE in colleges presents several challenges, these can be addressed through a combination of faculty training, technological investment, and strategic institutional planning. By overcoming these hurdles, colleges can create a more student-centred, skills-based learning environment that prepares graduates for success in a rapidly changing world.

Conclusion

In conclusion, the implementation of Outcome-Based Education (OBE) under the National Education Policy (NEP)- 2020 presents a significant opportunity for transforming India's higher education system. By focusing on clear, measurable outcomes, OBE ensures that students acquire not only theoretical knowledge but also practical skills that are essential in today’s rapidly evolving job market. The NEP-2020 promotes student-centred learning, interdisciplinary curricula, and flexible learning pathways, aligning educational practices with global standards. However, challenges such as faculty readiness, institutional support, and resistance to change must be addressed for successful implementation. These obstacles can be overcome through targeted faculty development, investment in infrastructure, and fostering a culture of continuous feedback and adaptation. Furthermore, the integration of technology and innovative assessment methods will be crucial in tracking learning outcomes and ensuring that students meet the required competencies. By addressing these challenges and adopting a systematic, outcome-driven approach, higher education institutions can create a more effective, inclusive, and dynamic educational environment that equips graduates with the skills and knowledge to thrive in both local and global contexts. Ultimately, the NEP-2020, combined with OBE, holds the potential to reshape the future of higher education in India.

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COMMUNICATION

100 Years' Luminous Legacy of being a First Grade College

Sanjo Jose*

For St Thomas College Thrissur, which stands as a beacon of higher education in the heart of Thrissur city of Kerala, 1925 is a landmark year. It was in March 1925, the College became a first-grade college affiliated to the University of Madras by starting BA degree programmes in History and Economics. In 1926, BA Mathematics was started. Let us have a glimpse of the landscape of secondary, higher secondary and graduate education prevailing a century before and later, through the historical milestones of St Thomas College Thrissur.

Secondary Education

From the inception of the University of Madras in 1857, most of the educational institutions, including high schools in most of the geographical areas under the present states of Tamil Nadu, Karnataka, Andhra Pradesh, Telangana and Kerala were affiliated to the University of Madras. High schools were recognised by the university for matriculation. Till the establishment of the University of Travancore at Thiruvananthapuram in 1937, all the colleges in the Travancore area (southern part of present Kerala state from Kanyakumari to the southern part of Ernakulam district) were affiliated to the University of Madras. On 1st November 1956, Kerala state was formed. Colleges in the geographical areas in Cochin and Malabar (middle and northern parts of the present Kerala state) were affiliated to the University of Madras till 1957, when the University of Kerala was formed.

Higher Secondary Education

The formal inauguration of the affiliation of St Thomas as Second Grade College in Arts (Group III) was done by His Highness Sree Ramavarma, the Maharaja of Cochin in August 1919. Further affiliation in Mathematics, Physics and Chemistry (Group I) in Intermediate was done in 1922.

During those years, a two-year pre-university programme was conducted in the affiliated colleges, and the examination of that programme was known as the Entrance Examination in Arts. In 1866, the name of the examination was changed to First Examination in Arts or First in Arts (FA). Colleges offering this course were rated as second grade, while those offering degree programmes were affiliated as first grade by the University. In 1908, FA was renamed as intermediate, and later it became pre-degree. Pre-degree was abolished by an Act in 1997 and the programme was renamed as 'Plus Two' (+2), which was attached to schools, elevating many existing secondary schools to Higher Secondary. After the delinking of pre-degree, which was completed in the academic year 2000-2001, the colleges in Kerala are offering programmes at undergraduate (UG) and postgraduate (PG) levels. Some of them have research centres offering PhD programmes.

Reprint from the Calendar of the University of Madras 1928-1929

The following is a complete reprint of the description of St Thomas College taken verbatim from the Calendar for 1928 -1929 of the University of Madras.

General

In 1889, Bishop Adolphus Edwin Medlycott, the first Vicar Apostolic of Trichur, opened the St. Thomas College Boarding School and his successor and first Indian Bishop of Trichur, Dr. John Menacherry, made it a complete High School (recognised by the University of Madras and the Cochin Durbar) in 1904. Trichur, being a progressive educational centre, the need for a College was keenly felt and early in 1919, Bishop Menacherry undertook to raise the High School to a College. In 1925, Monsignor Francis Vazhapilly, the Bishop of Trichur, got the institution affiliated as a First Grade College.

Management

The College is owned and maintained by the Syrian Catholic Diocese of Trichur and its management is therefore vested primarily in the Bishop. His Lordship invariably appoints one of

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his clergy as the Official Manager with powers to make all appointments and administer the finances of the College. In 1925 a Managing Committee was constituted with the Bishop as President, the Manager as Secretary, the Principal and the Senior Lecturer as ex-officio members, with two of the former Managers of the College as additional members.

Courses of Study

The College was first affiliated as a Second Grade College in 1919 in Group (iii) of the Intermediate course, and Group (i) (Mathematics, Physics and Chemistry) was added in 1922. In 1925, the College was further affiliated in Groups v-A & B of the old B.A. course, Group (i) (Mathematics) being finally started in June 1926.

Library

There are 5,500 volumes in the Library, of which 2500 are on English Language and Literature, 1,500 on History and Economics, 750 on Mathematics and Sciences, 600 on Indian Language and 150 on miscellaneous subjects. The total expenditure on Library books till July 1929 is approximately Rs. 25,000.

Scholarships

In each of the four classes, the Management grants four half fee concessions, and these are supplemented by State scholarships and stipends, which last year were awarded to as many as 56 students of the College. The greater number of these scholarships invariably go to students of the backwards and depressed classes. About a dozen medals and as many prizes are annually awarded to the most deserving students, and the necessary funds are contributed by benefactors and the Management.

Games

Provision has been made for Football, Tennis, Badminton, Basketball and Volleyball. Last year, a junior member of the staff was sent up for Physical Training at Madras, and he has rejoined duty after taking the prescribed Diploma. Regular arrangements for Physical Training according to the new methods will be made during the next academic year.

Other Arts and Science Colleges in Kerala before 1925

At the beginning of 1925, Kerala had 13 second-grade colleges. Among them, only four were offering degree programmes and affiliated as first grade by the University of Madras:

1. Maharaja's College of Science Trivandrum (Present University College, Thiruvananthapuram started as H. H. The Maharaja’s College, Trivandrum) which started degree programmes in 1884.
2. Maharaja's College for Women, Trivandrum (Present Government College for Women, Thiruvananthapuram) started degree programmes in 1920.
3. Union Christian College, Aluva, which was raised as a first-grade college in July 1923.
4. Maharaja's College of Arts Trivandrum (Present Government Arts College, Thiruvananthapuram) separated from H. H. The Maharaja’s College, Trivandrum (mentioned as 1) in 1924.

Professional colleges

Maharaja's Law College, Trivandrum (Present Government Law College, Thiruvananthapuram) separated from H. H. The Maharaja’s College, Trivandrum (mentioned as 1) in 1894 offered Bachelor of Laws (BL) and First Examination in Law (FL).

Maharaja’s Training College for Teachers, Trivandrum (Present Government College of Teachers Education, Thiruvananthapuram established in 1911, offering Licentiate in Teaching (LT)

Oriental titles institutions

1. Central Sanskrit College, Pattambi (Present Sree Neelakanta Government Sanskrit College, Pattambi) was established in 1889 and recognised by the University of Madras in 1911, offering Vidwan Sanskrit and Malayalam courses
2. Mahajana Sanskrit College, Perdala, Kasargode (Present MSC Higher Secondary School, Perdala) established in 1911 and recognised by the University of Madras in 1920 in Vidwan Sanskrit and Kanarese course.

Strength

The total strength of the College this year (July) is 375. Of these, 98 are Christians, 240 are Caste Hindus, 4 are Muslims, and 33 belong to the backwards and depressed classes.

Affiliation as First Grade College

Considering the application of Thrissur St Thomas College for raising it to First Grade, the University of Madras appointed a Commission for local enquiry consisting of Professors Corely and Renganathan of Madras. The Commission inspected the College in August 1924 and recommended affiliation. The Syndicate approved the recommendation in March 1925 and St Thomas' College was elevated to the level of a first-grade college affiliated to the University of Madras. The Principal of the college at that time was Msgr John Palocaren, who had taken his MA in English from the University of Edinburgh.

In June 1925, Maharaja's College, Ernakulam and in July, Government Victoria College, Palakkad also were raised as first-grade colleges to start degree programmes.

CMS (Church Missionary Society) College, widely known as the first college in Kerala and one of the first colleges in India, was established in 1815. It became a second-grade college only in 1890. The college had to wait for 60 more years to become a first-grade college in 1950.

Milestones in the history of St Thomas' College

The Father of the Nation, Mahatma Gandhi, visited the college in 1927. The college has hosted the Presidents of the nation, Sri Neelam Sanjeeva Reddy for its Diamond Jubilee in 1980, Dr APJ Abdul Kalam for Navati Celebrations in 2008, and Shri Ram Nath Kovind for the centenary as a second-grade college in 2018. The Platinum Jubilee was inaugurated by Sri PV Narasimha Rao, then Prime Minister in 1994.

Established only for boys, the college opened its doors for girls in 2002. In 2014, St Thomas College became the first college in the University of Calicut to attain autonomous status, officially announced by Sri Oomen Chandy, then CM. The college gained the College with Potential Excellence (CPE) status from the University Grants Commission in 2016. The National Assessment and Accreditation Council (NAAC) reaccredited the college with A++ grade, securing a GPA of 3.70 out of 4 in its fourth cycle in 2022. The college is ranked 57th in the National Institutional Ranking Framework (NIRF) 2024.

Alumni and Teachers of the College

Many prominent figures who shaped the history of Kerala were part of St Thomas. Sri E. M. S. Namboodiripad, the first Chief Minister of Kerala, was an alumnus of the college. Joseph Mundassery, Minister for Education in that Ministry, was a teacher at the college. Sri A. Sreedhara Menon, who compiled the history of Kerala, was a teacher at the college. To name a few, Sri Panampilly Govinda Menon, Sri C. Achutha Menon, Sri C. Raveendranath, Sri V. M. Sudheeran, Swami Chinmayananda Saraswati, etc. were alumni of the college. The college has contributed Padmashri and Arjuna awardees to the nation.

Present Status of the College

3399 students are currently studying in the UG and PG streams of the college. St Thomas College currently has 23 UG, 13 PG and an integrated PG programme. The college has research centres in 10 disciplines. 104 research scholars registered at the college have been awarded PhDs to date. 143 research scholars have enrolled for PhD, who are guided by 47 research supervisors. The college is led by Dr Martin KA, who is the current principal.

Today, the college has the distinction of having the highest number of campus placements offered among the arts and science colleges in Kerala. The college library has an impressive structure, which became a trend setter among the colleges in Kerala to remodel their libraries. Let the college continue as a lighthouse of wisdom and illuminate the minds of upcoming generations to form an enlightened society.

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THESES OF THE MONTH

SCIENCE & TECHNOLOGY
A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of May-June, 2025)

AGRICULTURAL & VETERINARY SCIENCES

Dairy Science & Technology

1. Yadav, Ajay Kumar. **Development of sensor-based portable instrument to test milk quality**. (Prof. Kavya Dashora and Prof. Vivek Kumar), Centre for Rural Development & Technology, Indian Institute of Technology Delhi, New Delhi.

Forestry

1. Swetha, P. **Molecular and functional characterization of the endophytic microorganisms of Indian sandalwood (Santalum album Linn) for the management of its soil-borne seedling diseases**. (Dr. R Sundararaj and Dr. A Kandan), Department of Forest Biotechnology, Forest Research Institute, Deemed to be University, Dehradun.
2. Tyagi, Keshav. **Climate change vulnerability assessment of forests in the Indian Western Himalayan region using process based model**. (Dr. Manoj Kumar and Dr. Hitendra Padalia), Department of Forest Geoinformatics, Forest Research Institute, Deemed to be University, Dehradun.

Genetics & Plant Breeding

1. Gautam, Upendra. **Assessment of combining ability and heterosis for grain yield and its components based on line X tester analysis in bread wheat (Triticum aestivum L EM Thell)**. (Dr. Satish Chandra Gaur and Dr. U P Singh), Department of Genetics and Plant Breeding, Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur.

BIOLOGICAL SCIENCES

Biochemistry

1. Chouksey, Sarika. **Characterization of Senna (Cassia Angustifolia Vahl) germplasm using random (Non-genic) and functional (Genic) DNA derived SCAR markers**. (Dr. Maneesha Pandey and Dr. Mohd Ashraf Ashfaq), Department of Biochemistry, Indira Gandhi National Open University, New Delhi.
2. Gupta, Parul. **Genetic polymorphisms of candidate genes associated with diabetic nephropathy and retinopathy**. (Prof. Parvesh Bubber and Dr. S V Madhu), Department of Biochemistry, Indira Gandhi National Open University, New Delhi.
3. Phogat, Jatin Kumar. **Green Synthesis of iron nanoparticles from ocimum sanctum and syzygium cumini and their application as anti-oxidant and anti-bacterial agents**. (Dr. Vijay Kumar and Dr. N S Chauhan), Department of Biochemistry, Maharshi Dayanand University, Rohtak.
4. Prakash, Deena. **Evaluation of antioxidant and hepatoprotective activity of Selaginella Bryopteris (L) in rat model**. (Dr. Arvind Kumar Shakya and Dr. Ramesh Kumar), School of Sciences, Indira Gandhi National Open University, New Delhi.
5. Sharma, Pinki. **Systemic exploration of wheat rhizosphere microbiome for sustainable agriculture**. (Dr. N S Chauhan and Dr. Mitali Mukerji), Department of Biochemistry, Maharshi Dayanand University, Rohtak.
6. Tarun Kumar. **Divulging immuno-modulatory role of vitamins, prebiotics and tryptophan in host microbes interaction**. (Dr. N S Chauhan), Department of Biochemistry, Maharshi Dayanand University, Rohtak.

Botany

1. Dar, Asif Hamid. **Taxonomy, ethnomycological studies and biochemical characterization of mushrooms growing in South Kashmir**. (Prof. Ab Hamid Wani), Department of Botany, University of Kashmir, Srinagar.
2. Divakar. **Studies of water pollutants released from industries of GIDA and their impact on water quality and macrophytic diversity of river AMI**. (Prof. Anil Kumar Dwivedi), Department of Botany, Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur.
3. Srivastava, Amrita. **Phytoremediation of arsenic contaminated water**. (Prof. Anil Kumar Dwivedi), Department of Botany, Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur.

Life Sciences

1. Banerjee, Chayan. **Involvement of monoamine oxidase in neurodegeneration: Therapeutic aspects**. (Dr. Joy Chakraborty and Dr. Deepak Kumar), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

2. Chauhan, Divya. **Combinatorial delivery of cladrin and raloxifene for the treatment of osteoporosis**. (Dr. Jiaur R Gayen), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

3. Gagandeep Singh. **Identification of potential inhibitors of HSP70-HSP90 organizing protein (HOP), a multifaceted co-chaperone involved in multiple diseases**. (Prof. Tapan K Chaudhuri), Kusuma School of Biological Sciences, Indian Institute of Technology Delhi, New Delhi.

4. Madhu Lata. **Biochemical studies on bacterial carbohydrate binding modules and sialidases**. (Dr. Ramya T N C), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

5. Maqsood, Aalim. **Exploring the cellular, molecular and pathophysiological mechanisms of skin melanogensis as a strategy against melanoma; therapeutic intervention by (2-methylbutyryl) shikonin, a naturally occurring napthoquinone compound**. (Dr. Sheikh Tasduq Abdullah), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

6. Verma, Pratibha. **Nutrient solubilisation and transportation in Glycine max by microbial intervention under sulphur deficient condition**. (Dr. Lal Bahadur and Dr. Aradhana Mishra), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

7. Yadav, Ranu. **Studies on isolation and characterization of pesticide metabolizing rhizospheric microbes from aromatic crops grown in contaminated soil**. (Dr. Puja Khare), Faculty of Biological Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

Zoology

1. Gautam, Sameer. **Valuation of ecosystem services in Harike Wildlife Sanctuary, Punjab: A case study**. (Dr. B S Adhikari), Department of Wild Life Science, Forest Research Institute, Deemed to be University, Dehradun.

2. Gogoi, Keshab. **Land, lion and locals: Understanding the distribution of lions and large carnivore human interactions in the Greater Gir landscape of Saurashtra**. (Dr. Y V Jhala), Department of Wildlife Science, Forest Research Institute, Deemed to be University, Dehradun.

EARTH SYSTEM SCIENCES

Environmental Science

1. Parmar, Himakshi Bhaveshkumar. **Water quality index of water bodies of Vadodara**. (Dr. Prakash Samnani), Department of Environmental Science, M S University of Baroda, Vadodara.

Geophysics

1. Ramandeep Kaur. **Landslide hazard appraisal using artificial intelligence and geospatial techniques in the Upper Beas Valley, Himachal Pradesh, India**. (Dr. Bhagwan Singh Chaudhary and Dr. Vikram Gupta), Department of Applied Geophysics, Kurukshetra University, Kurukshetra.

ENGINEERING SCIENCES

Biomedical Engineering

1. Anju. **Advancements in nanoparticle-enabled approaches for sustainable plant disease management and genetic enhancement**. (Prof. Neetu Singh), Centre for Biomedical Engineering, Indian Institute of Technology Delhi, New Delhi.

2. Manleen Kaur. **Advancing 3D modular cell culture platforms: Exploring vascularization and in -situ electrochemical protein marker detection**. (Prof. Neetu Singh), Centre for Biomedical Engineering, Indian Institute of Technology Delhi, New Delhi.

3. Smriti Bala. **Muscle synergy-based functional electrical stimulation and predictive modelling in post-stroke muscle fatigue management**. (Prof. Deepak Joshi), Centre for Biomedical Engineering, Indian Institute of Technology Delhi, New Delhi.

Chemical Engineering

1. Haseena, K V. **Understanding the role of impurities, solvents, and catalytic active sites in the valorisation of biorenewable platform chemicals**. (Prof. Mohammad Ali Haider), Department of Chemical Engineering, Indian Institute of Technology Delhi, New Delhi.

2. Shrivastava, Anuj. **Next generation platforms for analytical characterization of biosimilars**. (Prof. Anurag S Rathore), Department of Chemical Engineering, Indian Institute of Technology Delhi, New Delhi.

Civil Engineering

1. Das, Rishab. **Metapile: Resonator impregnated pile foundation for vibration mitigation**. (Prof. Bappaditya Manna and Prof. Arnab Banerjee), Department of Civil Engineering, Indian Institute of Technology Delhi, New Delhi.

Computer Science & Engineering

1. Ahanger, Mohammad Munzir. **Design and evaluation of new deep learning based approaches for classification of scientific literature**. (Prof. M Arif Wani), Department of Computer Science, University of Kashmir, Srinagar.

2. Ahmed, H Ateeq. **Reliable broadcasting techniques for vehicular ad- hoc networks using hybrid protocols**. (Dr. Dhanaraj Cheelu), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

3. Bhupinder Kaur. **Enhanced IRIS recognition system in disruptive conditions**. (Dr. Surender Singh Saini), Faculty of Engineering Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

4. Sangeeta Devi. **Study analysis and performance enhancement of some real-world application using data science**. (Dr. Upendra Nath Tripathi), Department of Computer Science, Deen Dayal Upadhyaya Gorakhpur University,Gorakhpur.

Design Studies

1. Ganesh, S. **Development of methods to assess thermoformed tactile diagrams**. (Prof. P V M Rao), Department of Design, Indian Institute of Technology Delhi, New Delhi.

2. Jolly, Kanika. **Design of functional jacket for Indian motorcycle riders**. (Prof. P V M Rao and Prof. Deepti Gupta), Department of Design, Indian Institute of Technology Delhi, New Delhi.

Electrical & Electronics Engineering

1. Bose, Bibaswan. **Health-aware battery fast charging strategy using zonal equivalent circuit model**. (Prof. Deepak Kumar and Prof. Akhil Garg), Centre for Automotive Research and Tribology, Indian Institute of Technology Delhi, New Delhi.

2. Gupta, Sonal. **Improving performance of edge tracing and tracking of a linearly-moving object using mesh and torus connected parallel processors**. (Prof. Subrat Kar), Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi.

3. Khushbu. **Design and development of compact quadrupole mass analyzer for in-field applications**. (Dr. Deepak Bansal and Dr. Kamaljit Rangra), Faculty of Engineering Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

4. Patekar, Rakesh Shamrao. **Innovative advancements in anti-islanding protection for enhanced power quality and minimal NDZ**. (Prof. B K Panigrahi), Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi.

5. Pathak, Shruti. **Low frequency noise characterization and modeling of advanced CMOS devices**. (Prof. Abhisek Dixit), Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi.

6. Prateek. **Modelling and analysis of algorithms for efficient content distribution in next-generation content delivery solutions using Fog-CDN**. (Prof. Subrat Kar), Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi.

7. Singhal, Dristi. **Compact and wide beamwidth filtering antennas for high power applications**. (Prof. Kirti Dhwaj), Centre for Applied Research and Electronics, Indian Institute of Technology Delhi, New Delhi.

8. Yadav, Anchal. **Improving brain activity mapping through enhanced EEG source localization**. (Prof. Monika Aggarwal and Prof. S D Joshi), Centre for Applied Research in Electronics, Indian Institute of Technology Delhi, New Delhi.

Material Science and Engineering

1. Abhijith, N V. **Development of TiNbMoMnFe bulk multi-principal element alloys and their coatings**. (Prof. Deepak Kumar), Centre for Automotive Research and Tribology, Indian Institute of Technology Delhi, New Delhi.

2. Fatima Saeed. **Synthesis and characterization of novel membranes and adsorbents for niche separation processes and fuel cell applications**. (Dr. S Sridhar and Dr. B Satyavathi), Faculty of Engineering Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

3. Ghosh, Kunal. **Self-lubricating Mo/MOS2 reinforced zirconia toughened alumina composites for wear resistant applications**. (Dr. Nilrudra Mandal and Dr.Poulomi Roy), Faculty of Engineering Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

4. Mehrotra, Shivansh. **Diffusion and oxidation kinetics of β and γ phases in refractory metals alloyed TI-AI system**. (Prof. Sangeeta Santra), Department of Material Science, Indian Institute of Technology Delhi, New Delhi.

5. Thejas, T S. **A study on electrical and strain properties or rare earth doped barium titanate based lead-free piezoelectric materials**. (Dr. P K Panda and Dr. Benudhar Sahoo), Faculty of Engineering Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

Mechanical Engineering

1. Shekh, Asfakahemad Abdulmunaf. **Development of a technique to mitigate NOx for an engine using bio-diesel as a fuel**. (Dr. Nikul K Patel), Department of Mechanical Engineering, M S University of Baroda, Vadodara.

Textile and Fiber Engineering

3. Maurya, Sandeep Kumar. **Electrothermal characterization of conductive yarn-integrated weft knitted fabrics for wearable applications**. (Prof. Bipin Kumar and Prof. Apurba Das), Department of Textile and Fiber Engineering, Indian Institute of Technology Delhi, New Delhi.

4. Pramod, S. **Design and investigation of thermal compression system**. (Prof. Apurba Das, Prof. R Alagirusamy and Prof. Bipin Kumar), Department of Textile and Fiber Engineering, Indian Institute of Technology Delhi, New Delhi.

MATHEMATICAL SCIENCES

Mathematics

1. Dubey, Rajan Kumar. **Implementation of differential equations in transmission dynamics of infectious diseases**. (Dr. Rajesh Pandey), Department of Mathematics, Deen Dayal Upadhyaya Gorakhpur University,Gorakhpur.

2. Praveen. **Reliability modeling for redundancy optimization of N-unit active/passive standby units.**. (Dr. Dalip Singh and Dr. Anil K Taneja), Department of Mathematics, Maharshi Dayanand University, Rohtak.

3. Renu. **Nonlinear dynamical behavior of difference maps using iterative algorithms**. (Dr. Renu Chugh), Department of Mathematics, Maharshi Dayanand University, Rohtak.

4. Sarkar, Sourav. **A study on homology manifolds and normal pseudomanifolds**. (Prof. Biplab Basak), Department of Mathematics, Indian Institute of Technology Delhi, New Delhi.

5. Sharma, Virendra. **Specific contributions to wavelet analysis and its applications**. (Dr. Vivek Kumar Sharma), Department of Mathematics, Deen Dayal Upadhyaya Gorakhpur University,Gorakhpur.

Statistics

1. Kuldeep. **Stochastic analysis of cold standby repairable systems with installation time for the unit**. (Dr. S C Malik), Department of Statistics, Maharshi Dayanand University, Rohtak.

MEDICAL SCIENCES

Biotechnology

1. Ravina. **Evaluation of potential biomarkers through non-Invasive methods for early prediction of Oral Squamous Cell Carcinoma (OSCC) in tobacco consumers**. (Dr. Rashmi Bhardwaj), Department of Biotechnology, Maharshi Dayanand University, Rohtak.

Pharmaceutical Science

1. Anjali. **Formulation development and evaluation of Terminalia catappa L fruit for antidiabetic potential**. (Dr. Harish Dureja and Dr. Anju Dhiman), Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak.

2. Jadeja, Preeti Siddharthsinh. **Development and evaluation of polyherbal formulation for inflammatory conditions**. (Dr. Rajashree Mashru), Department of Pharmacy, M S University of Baroda, Vadodara.

3. Kaushik, Prerna. **Formulation, optimization and evaluation of taste masked medicated chewing gum(s)**. (Dr.Deepak Kaushik), Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak.

4. Manju Bala. **Formulation development and antidiabetic potential of ploypeptide K from Momordica charantia linn**. (Dr. Anju Dhiman), Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak.

PHYSICAL SCIENCES

Chemistry

1. Butt, Fayaz Ahmad. **Physico-chemical characterization of some surface active ionic liquids and their catalytic role in chemical and electrochemical transformations**. (Dr. G M Rather and Prof. Mohsin Ahmad Bhat), Department of Chemistry, University of Kashmir, Srinagar.

2. Nazir, Irfan. **Synthesis and characterization of metal chalcogenide based nanomaterials for environmental applications**. (Dr. Ghulam Nabi Dar and Prof. Syed Wajaht Amin Shah), Department of Chemistry, University of Kashmir, Srinagar.

3. Soniya Rani. **Phosphite catalyzed regio-and stereoselective N to C rearrangement of pyridinium salt: synthesis of chiral N-Heterocycles**. (Dr. Pradeep Maity), Faculty of Chemical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.

Physics

1. Bhatt, Piyushkumar Jayantilal. **Investigation of properties of recombination inhibiting barrier layer for dye sensitized solar cell**. (Dr. B S Chakrabarty), Department of Applied Physics, M S University of Baroda, Vadodara.
2. Gupta, Pankhuri. **Investigating spin-transfer and spin-orbit torques in magnetic heterostructures and advanced radio frequency devices**. (Prof. P K Muduli), Department of Physics, Indian Institute of Technology Delhi, New Delhi.
3. Pathak, Ankita. **A study on quantum information processing (Continuous variable quantum state)**. (Prof. Ravi Shankar Singh), Department of Physics, Deen Dayal Upadhyaya Gorakhpur University,Gorakhpur.
4. Rai, Jyoti. **A study of environment friendly, flexible solid polymer electrolyte membrane for electrochemical device applications**. (Dr. Manindra Kumar), Department of Physics, Deen Dayal Upadhyaya Gorakhpur University,Gorakhpur.
5. Sharma, Charu. **Piezoelectric two-dimensional transition metal dichalcogenides nanostructures based flexible nanogenerator for energy harvesting**. (Dr. Manoj Kumar Gupta and Dr. Avinash Kumar Srivastava), Faculty of Physical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.
6. Sharma, Ruchi Kumari. **Design and development of graphene oxide incorporated PEDOT:PSS/ silicon hybrid heterojunction solar cells**. (Dr. Sanjay Kumar Srivastava), Faculty of Physical Sciences, Academy of Scientific and Innovative Research, Ghaziabad.
7. Singh, Nidhi. **A study on multi-party quantum teleportation: Discrete variable quantum state**. (Prof. Ravi Shankar Singh), Department of Physics, Deen Dayal Upadhyaya Gorakhpur University,Gorakhpur.
8. Singh, Nikhita. **A study on quantum communication within a quantum network**. (Prof. Ravi Shankar Singh), Department of Physics, Deen Dayal Upadhyaya Gorakhpur University,Gorakhpur.

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Attention Readers!

The article titled '*Citius, Altius, Fortius*: Advancing Education, Research, Innovation and Entrepreneurship for *Viksit Bharat*@2047' authored by Prof G D Yadav was published in the University News in two parts in Vol 63 No 29, July 21- 27, 2025 and Vol 63, No 30, July 28- August 03, 2025. As informed by the Author, the article was written in honour of Prof. Shivajirao S. Kadam, Chancellor of Bharati Vidyapeeth, on his 75th Birthday, and a shorter version of the same was published in the Festschrift volume on Shivajirao S. Kadam titled 'Education Vision for Viksit Bharat: A Strategic Roadmap for Higher Education Reforms', edited by Prof. Bhushan Patwardhan, Prof. B.P. Sabale, and Prof. Sanjay Deshmukh, and published by Sakal Publications, Pune."

INSA History of Science Young Associate-2025: Call for Nominations

INSA History of Science Young Associate is instituted by Indian National Science Academy, New Delhi, a professional body of Dept. of Science & Tech., Govt. of India with the aim of recognizing historians of science of extraordinary promise and creativity who have made notable research contributions in areas relating to History of Science in India. This award, considered to be the highest recognition of promise, creativity and excellence is given annually to those historians of science who have distinguished themselves by their research work carried out in India or abroad. Only those born on or after **January 1, 1985** are eligible for consideration in the year 2025. The selected INSA HS Young Associate will receive a certificate and fellowship of Rs.10,000/- per month for one year through their host Institute subject to TDS. Candidates may be nominated by (i) Fellows of the Indian National Science Academy, (ii) Vice-chancellor of the Universities, (iii) Head of the Institutes, (iv) Candidate's Departmental Head. **Nomination proforma** may be availed from website **www.insaindia.res.in**. Last date of Submission: **30th August, 2025.**

इन्सा विज्ञान का इतिहास युवा एसोसिएट -2025: नामाकंन के लिए आमंत्रण

इन्सा विज्ञान का इतिहास युवा एसोसिएट की स्थापना भारतीय राष्ट्रीय विज्ञान अकादमी, नई दिल्ली, विज्ञान और प्रौद्योगिकी विभाग, भारत सरकार के एक वृत्तिक निकाय द्वारा असाधारण प्रतिभा और रचनात्मकता वाले विज्ञान के इतिहासकारों जिन्होंने भारत में विज्ञान के इतिहास से संबंधित क्षेत्रों में उल्लेखनीय अनुसंधान योगदान दिया है, को मान्यता देने के उद्देश्य से की गई है। प्रतिभा, रचनात्मकता और उत्कृष्टता की सर्वोच्च मान्यता माना जाने वाला यह पुरस्कार प्रति वर्ष विज्ञान के उन इतिहासकारों को दिया जाता है जिन्होंने भारत या विदेश में किए गए अपने अनुसंधान कार्यों से खुद को प्रतिष्ठित किया है। 1 जनवरी 1985 को या उसके बाद जन्मे लोग ही वर्ष 2025 में विचार के पात्र होंगे। चयनित इन्सा विज्ञान का इतिहास युवा एसोसिएट को उनके मेजबान संस्थान के माध्यम से एक प्रमाण पत्र और एक वर्ष के लिए 10,000 रुपये प्रति माह की फेलोशिप मिलेगी, जो टीडीएस के अधीन होगी। अभ्यर्थियों को (i) भारतीय राष्ट्रीय विज्ञान अकादमी के फेलो, (ii) विश्वविद्यालयों के कुलपति, (iii) संस्थानों के प्रमुख, (iv) उम्मीदवार के विभागाध्यक्ष द्वारा नामित किया जा सकता है। नामांकन प्रपत्र **www.insaindia.res.in** से डाउनलोड किया जा सकता है। नामांकन की अंतिम तिथीरू 30 अगस्त, 2025

Mahatma Basweshwar Education Society's

Mahatma Basweshwar College, Latur

"NAAC Re-accreditation Grade A"

WANTED

Applications are invited for the post of Principal, Assistant Professors and Librarian in Mahatma Basweshwar College, Latur Dist. Latur (Granted) run by Mahatma Basweshwar Education Society, Latur. Eligible candidates should submit their application along with all necessary documents within fifteen days from the date of publication of the Advertisement by Registered post only.

Permission as per NOC No. JDHENanded/NOC/2025/49 Date 09/06/2025.

Sr. No.	Subject	Post	No. of Post	Full Time	Reservation
01	Computer Science	Assistant Professor	1	Full Time	Open – 3, SC - 01, SBC - 01, OBC – 04, EWS - 01, SEBC – 01.
02	Economics	Assistant Professor	1	Full Time	
03	Dairy Science	Assistant Professor	1	Full Time	
04	Public Administration	Assistant Professor	1	Full Time	
05	Geography	Assistant Professor	1	Full Time	
06	Commerce	Assistant Professor	1	Full Time	
07	English	Assistant Professor	1	Full Time	
08	Hindi	Assistant Professor	1	Full Time	
09	Mathematics	Assistant Professor	1	Full Time	
10	Electronics	Assistant Professor	1	Full Time	
11	Librarian	Librarian	1	Full Time	

For academic eligibility conditions, application form and other details, please visit: (www.srtmun.ac.in) also (www.basweshwarcollegelatur.com).

Note :

1. Prescribed application form is available on the University website (www.srtmun.ac.in).
2. No T.A./D.A. will be paid for attending the interview.
3. Eligible candidate should submit their application through the proper channel.
4. Attested Xerox copies of necessary documents should be attached to the application.
5. The original certificates must be provided at the time of interview.
6. The Vacant Posts are being filled subject to the decision of Hon. High Court, Aurangabad Bench, Petition No. 12051/2015.
7. Reserved caste candidates shall also submit their application to Asst. Registrar, Special Cell, Swami Ramanand Teerth Marathwada University, Nanded.
8. 4% seats will be reserved for the handicapped persons.

Correspondence Address:

Mahatma Basweshwar Education Society, Mahatma Basweshwar College Campus, Khandoba Galli, Latur-413512.

Sd/-
President
Mahatma Basweshwar Education Society, Latur

Sd/-
Secretary
Mahatma Basweshwar Education Society, Latur

Jai Bhavani Shikshan Prasarak Mandal Georai
Tq. Georai Dist. Beed

WANTED

"Applications are invited from eligible candidates for the post of Principal, along with duly attested copies of the requisite documents, for the post mentioned below, **within 15 days** from the date of publication of this advertisement."

Sr. No.	Name of the Post	Name of the College	Number of the Posts	Reservation	Nature of Post	Remark
1	**Principal**	1. Mahila Mahavidyalay Georai. 2. Arts and Science College, Patoda	02	Open to All	Full Time Granted	Posts are approved by Joint Director Subject to the final decision in the writ petition no. 12051/2015

Permission as per NOC No. JDHE Chhatrapati Sambhajinagar/NOC/2025/49, Dated: 25/07/2025.

Terms and Conditions:-

1. Qualification, Age, API, Pay Scale and Selection Norms are as per the University Grants Commission, New Delhi, State Govt. of Maharashtra and Dr. Babasaheb Ambedkar Marathwada University Chhatrapati Sambhajinagar.
2. Applicants who are already employed must send their application through proper channel.
3. Candidates must bring all original documents along with two attested copies of the same, and a resume.
4. Incomplete applications and those received after the stipulated period will not be considered.
5. No T.A / D.A. will be paid to attend the interview.
6. All the posts are transferable among Jai Bhavani Shikshan Prasarak Mandal's College.

Address for the correspondence:
To,
The Secretary,
Jai Bhavani Shikshan Prasarak Mandal Georai
At. Jagdamba ITI College Campus, Georai
Tq.Georai Dist. Beed Maharashtra 431127

Sd/-
President
Jai Bhavani Shikshan Prasarak, Mandal Georai

Bharati Vidyapeeth, Pune

Bharati Vidyapeeth Bhavan, Lal Bahadur Shastri Marg
Pune - 411 030 (Maharashtra)

WANTED

Applications are invited from eligible candidates for the following Post:

Sr. No	Name of College	Name of Post	Vacant Post	Reservation
1.	Dr. Patangrao Kadam Mahavidyalaya, Sangli (Permanently Granted) (Affiliated to Shivaji University, Kolhapur)	Principal	01	Open to All - 06
2.	New Law college, Kolhapur (Permanently Granted) (Affiliated to Shivaji University, Kolhapur)		01	
3.	New Law College, Sangli (Permanently Granted) (Affiliated to Shivaji University, Kolhapur)		01	
4.	Yashwantrao Chavan Law College, Karad. (Permanently Granted) (Affiliated to Shivaji University, Kolhapur)		01	
5.	Yashwantrao Mohite College, Pune (Permanently Granted) (Constitute Unit of Bharati Vidyapeeth (Deemed to be University), Pune)		01	
6.	New Law College, Pune (Permanently Granted) (Constitute Unit of Bharati Vidyapeeth (Deemed to be University), Pune)		01	

Place :

Date :

Secretary,
Bharati Vidyapeeth, Pune
Bharati Vidyapeeth Bhavan,
Lal Bahadur Shastri Marg, Pune

Note : For detailed information about post, qualifications and other terms and conditions please visit University **website : www.unishivaji.ac.in and bvp.bharatividyapeeth.edu/index.php/careers**

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