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Effective Implementation of National Education Policy–2020: Impediments and Some Structural Shifts[#]

A D N Bajpai*

After about 36 years, a well-thought-out education policy was formulated in the year 2020, widely known as the National Education Policy-2020, in India. As such, five years have passed since its formation and implementation. As we know, there have been, on the one hand, many scientists, educationists and administrators who were the members of the committee who played their key role, while on the other hand, various organisations related to education, politicians, lakhs of panchayats, students and parents, NGOs, too have participated and offered many valuable suggestions and comments. Initially, the education policy was presented as a draft, and then, after several rounds of discussions, it was given its final shape. It will not be an exaggeration that ever since the National Education Policy 2020 has come out, and was duly approved by the Union Cabinet, there has been a flood of seminars, symposia, lectures, etc., organised on this topic. Similarly, many monographs, books and research papers have also been published, but in reality, the transformation that was expected in the field of education with the implementation of NEP-2020, at the national or regional level, has not yet happened. This needs to be seriously examined. The present piece of paper is a humble attempt towards examining the basic impediments in the implementation of NEP-2020 and offering some suggestions for institutional and structural changes to fulfil the objectives of the same.

Confusion between 'New' and 'National'

The title of this education policy is National Education Policy 2020, but some people often call it the *New Education Policy*, because their mind is conditioned in favour of 'New', which is not correct. Hon'ble Prime Minister himself, in different academic forums, has clarified in many speeches that its name is National Education Policy 2020. Indeed, the title contains the basic transformation in the vision towards the whole education system in India.

Indicators of the National Education Policy being National

The following are some indicators that this education policy can be termed as truly national:

- Expansion of big educational institutions in every district of India.
- Priority to education in all mother tongues of the nation.
- Coordination of rural and urban areas.

[#]The present paper is based upon the author's report submitted to the Government of Madhya Pradesh for the implementation of National Education Policy–2020, as Convener of the High Power Committee.

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- Continuity from pre-school education to the pinnacle of higher education.
- Integration between formal and informal education.
- Integration between Indian indigenous knowledge traditions and modern science and technology.
- Integration between traditional classroom-based education and effective distance mode education, including self-learning.
- Integration between studies and research.
- Integration between studies and skill building, i.e. education and employment together.
- Introduction of multidisciplinary, multi-faculty, holistic courses.
- Integration of central, state and private institutions.
- Coordination and collaboration with foreign premier institutions (IVY League) and Indian institutions.
- Special schemes for relatively backward States/ areas.
- Special schemes for students of relatively backward classes.

The above are some indicators based on which it is appropriate to call the education policy.

National Education Policy–2020 is nationalist in nature. In other words, the soul, culture and values of India are very much intertwined in the National Education Policy.

Basic Impediment: Higher Education in the Concurrent List, and Lack of Centre-state Mutual Cooperation

The first and a bit difficult step towards the implementation of the National Education Policy 2020 is to ensure mutual improvement and cooperation in the relations between the Centre and the States. According to Section 246 of the 7th Schedule of the Indian Constitution, education has been placed in the concurrent list. Both the Centre and the State can equally make laws on it and implement them. From this point of view, the Central Government made the National Education Policy, but the responsibility of its implementation lies with both the Central and State Governments. In fact, this creates a situation of dispute. In the states where the political parties are at the centre, and the states are common, the implementation of the National Education Policy 2020 is being done rapidly, and wherever the state governments belong to some other party, either the implementation has not started, or it is happening at a very slow pace.

In this context, it is proposed that a constructive, respectful, and collaborative dialogue be facilitated among the following key stakeholders, with the purpose of promoting a shared vision that advances the national interest and safeguards the wellbeing of future generations: the Honourable President of India and the Honourable Governors (in their capacities as ex officio Chancellors of State Universities); the Honourable Prime Minister and the Honourable Chief Ministers of the various states; the Union Minister of Education and the Education Ministers of the respective states; and the Union Education Secretary together with the Education Secretaries of all states.

Such an inclusive and harmonious engagement would not only strengthen cooperative federalism in the domain of education but also contribute significantly to the development of a coherent, future-ready policy framework that benefits the nation as a whole.

Legal Complications in the Implementation

A significant impediment to the implementation of the National Education Policy 2020 is the multiplicity of laws governing different types of institutions. Hence, there is an urgent need to amend these laws on priority. The Central and State Governments have established many general universities, technical specialised universities like science and technology, law, medical, agriculture, horticulture, veterinary, language and culture, minorities, *divyang,* etc. Moreover, almost all states have established private universities by enactment in their respective assemblies. Needless to mention, the number of private universities is increasing exponentially, surpassing the number of state universities.

In the same sequel, it is worth mentioning that in each state, the central government has established IITs, IIMs, IIITs, IESERs, NITs, NITTRs, and AIIMs, etc. The number of these institutions is also quite large. To my worry, each institution has its own structure, governance

paradigm, resource endowment, jurisdiction, legal protection, and then how the purpose of integration and cooperation among different institutions may be achieved. Therefore, it is necessary to make decisions regarding making certain amendments in the existing laws to avoid any legal complications impeding the implementation of the National Education Policy–2020.

One Umbrella of Governance by Integration of Ministries

They will prioritise the integration of universities run by various ministries in the third phase of priority. Under the federal system of governance, the central and state governments are bestowed with special powers for creating a system of school education, secondary education, higher education (graduate, postgraduate), technical education, medical education, agricultural education, culture and legal education, etc. These Universities are being governed by different Ministries. A case study of the state of Madhya Pradesh is carried out to substantiate my statement, which is presented as follows:

Table-1 depicts how different types of universities and institutions are governed by different administrative systems. Broadly, they may be clubbed as being governed by the state government and the central government. In this context, it is better to develop an appropriate mechanism through which these state and central Universities/institutions work in a cooperative and coordinated manner so that teaching and research activities flourish.

So far as state universities are concerned, they have two major mandates to perform. One is related to teaching and research, and the other is related to the applied part of education. For example, the agriculture universities provide a B.Sc. (Ag), M.Sc. (Ag.), Ph.D. degree courses and farming and cultivation activities. Therefore, I suggest bringing all teaching and research-related programs under a single higher education umbrella, and leaving the remaining applied activities to the control of the respective ministries. Although it is quite an innovative step towards streamlining the administrative control of higher education, but certainly would have far-reaching effects on the quality as well as developing an interdisciplinary model of education, which is the ultimate objective of NEP–2020.

Preparation of Institutional Development Plan

In the National Education Policy 2020, every institution will have to prepare its development plan

Table 1: Universities/Institutions and their Governing Bodies

S No	University/Institution	Governing Body	Numbers
1.	General Universities	Ministry of Higher Education	08
2.	Medical University	Ministry of Health	01
3.	Agricultural Universities	Ministry of Agriculture	02
4.	Music University	Ministry of Culture	01
5.	Sanskrit University	General Education	01
6.	Buddhist University	Ministry of Culture	01
7.	Journalism University	Ministry of Public Relations	01
8.	Hindi university	General Education	01
9.	Technical University	Ministry of Technical Education	01
10.	University of Law	High Court of M.P. and State Government	02
11.	Institute of Social Sciences	Ministry of Higher Education	01
12.	Central Universities	Central Government	02
13.	IIT	Central Government	01
14.	IIITs	Central Government	02
15.	IIM	Central Government	01
16.	NIT	Central Government	01
17.	NITTR	Central Government	01
18.	SIFR	Ministry of Agriculture	01
19.	TFRI	Central Government	01
20.	Weed Research Institute	Central Government	01
21.	ICMR Tribal Research Institute	Central Government	01

in a time-bound manner, which will outline a set of targets to achieve its goals by 2030.

Universities must prepare a detailed plan representing future targets as well as requirements. It may be termed as a Vision Document. All universities and colleges of the Centre and the States should be directed to prepare their institutional development plan. This development plan will have the following components:

i) Administrative,
ii) Academic: curriculum, number of students, number of teachers, examination and evaluation methods,
iii) The institution's relationship with society and industry, Financial Requirements,
v) Cooperation and coordination,
vi) Use of IT infrastructure, and
vii) Any other.

To achieve long-term effective results of the National Education Policy --2020, it is essential to give necessary directions to all the institutions for preparing the institutional development plan with a timeline framework to achieve the targets.

Restructuring of Academic Faculties and Clubbing of Subjects Therein

The National Education Policy–2020 encourages multidisciplinary education and research, therefore, restructuring of various faculties will be required. Nowadays most commonly faculties are Faculty of Arts and Humanities, Faculty of Social Sciences, Faculty of Sciences, the Faculty of Law, the Faculty of Education, Faculty of Biosciences, Faculty of Engineering, the Faculty of Management, etc. These are the worldwide accepted faculties. Actually, these are carrying the British legacy of education. To transform each institution into a multidisciplinary education system and that too on the Indian Knowledge System, it will have to restructure its subjects and faculties. The nomenclature should use *'School'* in place of faculty. Because the concept of faculty appears to be exclusive, whereas that of a school is inclusive. The format is proposed as follows:

School of Spiritual Pursuits

Under this, school subjects like Philosophy, Yoga and meditation, *Antarpanth* study, Oriental knowledge study, Ancient Indigenous Literature, Manuscripts, Astrology, Sanskrit, Vedic knowledge, etc. can be clubbed.

School of Natural Order Studies

Under this school, the subjects like Botany, Zoology, Biology, Biodiversity, Geology, Forestry, Environmental Studies and Agriculture may be enveloped.

School of Studies in Social Values

This school may include subjects like Language and Literature, Economics, Political Science, Sociology, History, Psychology, Law, Public Administration, Management, Education, Physical Education, Anthropology, Journalism and Mass Communication, Tourism, Medicine, subjects related to Liberal Arts, Fine and Performing Arts, Entrepreneurship, Skill and State of the Art.

School of Experimental Sciences

This school may include Physics, Chemistry, Mathematics, Engineering, and Technology.

The above schools, along with their subjects, would certainly offer a better combination to the students in the tune of holistic education or trans - disciplinary education.

Contents of the Curriculum

The ultimate success of the National Education Policy–2020 depends on the structure of the curriculum being offered at different levels of students. For this, it is necessary that;

- In every course, there should be a compulsory paper on Indian knowledge systems.
- Consultation of experts of Indian Knowledge Systems is necessary for preparing the syllabus of different subjects in each course.
- Sanskrit language and literature should be given special attention to discover the contents of modern science and social science already existing in it.
- Integration of local culture, folk language/ environment is essential in the curriculum.
- Local arts and skills should be given full place in the curriculum.

Scheme of Education in Mother Tongue

It is a known fact that different languages are spoken in different states of India. For example, Hindi is the most commonly spoken language in

Madhya Pradesh, Chhattisgarh, Jharkhand, Bihar, Uttar Pradesh, Rajasthan, Gujarat, Haryana, Punjab, Himachal Pradesh, but Hindi has still not reached the subjects of medical, law, justice, agriculture, management, engineering and technical education. Therefore, special efforts should be made to introduce Hindi in the above-mentioned subjects in addition to the humanities and social sciences. In this context, other Indian languages should be included in the three-language formula. There is a need to give priority to the inclusion of any one Indian language other than Hindi and Sanskrit under the three-language formula. In my opinion, Sanskrit should be made compulsory to discover the vast reservoir of Indian Knowledge as well as to resolve many issues related to diversity in languages. This will also strengthen national unity.

Special Development Plan for Relatively Backward Areas

The National Education Policy–2020 gives priority to the development of education in relatively backward sections of the society, as well as relatively backward districts/areas of the state. The NEP-2020 also envisages the development of one big institution in each of these districts. If we take the example of Madhya Pradesh, we find that the major centres of education in Madhya Pradesh are mostly concentrated in Bhopal, Ujjain, Indore, Jabalpur, Gwalior, Sagar, and Rewa.

A survey of such geographical areas should be conducted where there is a dire need for higher education centres. It would be appropriate to give priority to tribal dominated areas also. For example, in the case of Madhya Pradesh, the districts of Jhabua, Dhar, Rajgarh, Bhind, Tikamgarh, Raisen, Balaghat, Dindori, Umaria, Sidhi, and Damoh should be given priority in educational development plan.

In the same manner, an ambitious plan may be made for the entire nation.

Statistical Forecasting

For the success of the National Education Policy–2020, it is necessary to estimate the GER and the actual number of students pursuing higher education. Currently, approximately 3.5 crore students are studying with a GER percentage of about 27%. The NEP targets 50% GER in 2030.

The number for achieving this target would mean bringing about 7.5 crore students into the ambit of the higher education network. The ratio of the number of these students will have to be determined for each year according to the state, district, course, university, college, formal, informal, traditional, distance, etc. This is an essential exercise to be undertaken by the very specialised experts for the effective implementation of NEP–2020.

Estimation of the Requirement of Infrastructure and Teachers

The arrangements of classrooms, library, laboratory, ICT (Wi-Fi, Internet, apps, etc.), building, furniture, sports, music, dance, etc., are essential infrastructural facilities for any institution.

The National Education Policy–2020 emphasises on the appointment of institution-based teachers, and the ratio has been kept as 1:10, 1:20 according to the courses. Therefore, when the number of students is estimated for the future, the requirement of teachers and their appointment will have to be estimated in advance, and the selection will have to be ensured accordingly. A guestimate for the year 2030, when GER is expected to touch 50% the requirement of teachers would be about 70 lakh according to teacher student ratio of 1:10 and about 35 lakh according 1:20 teacher student ratio. As of now Indian higher education system has only about 11 to 12 lakh teachers. It is the most difficult task, but can be obtained with the commitment of the governments. Similarly, the requirements of infrastructural facilities will have to be estimated in advance and a road map for their availability.

In this context, it is worth mentioning that there is a huge community of retired professors and scientists. A plan should be made to avail their services with respect. Similarly, experts available in the informal sector, industry, law, medicine, agriculture and other service sectors, can also be associated with teaching and research.

Enhanced Plan for Integrated Courses

To increase the Gross Enrolment Ratio, there is an urgent need to prepare a detailed plan that takes the School and higher education streams together. It is a fact that the admission of students to higher education institutions depends on the students of Secondary Education, and the admission of students to Secondary Education institutions depends on the students of School Education.

At present, integrated courses are prevalent in some subjects, such as BBA, BCA, B.A.L.L.B., etc. By expanding this scheme, school education can

be linked with higher education at various levels. A separate policy can be made for this.

Seven-Year Graduation Plan: Minimum Qualification: 8th Passed (2+2+3)

Five-Year Graduation Plan: Minimum Qualification-10th Passed (2+3)

Seven-Year Postgraduate Scheme: Minimum Qualification-10th Passed (2+3+2)

Five-Year Postgraduate Scheme: Minimum Qualification-12th Passed (3+2)

Ten-Year Doctoral (PhD) Scheme: Minimum Qualification -Postgraduate Pass (but starts from 12th Pass) (2+3+2+3)

Area-wise Cluster Education Development Plan

This plan will have to be made by combining pre-school education, school education and higher education, which will start from Anganwadi, play school and go up to colleges and universities. The data will have to be collected at every level. For this entire process, the Input-Output Analysis technique may be applied. The entire education will work in a cluster system, which can be created at the level of a district or a division. Under this cluster plan, the number of pre-schools, schools, colleges and universities will be collected according to their respective disciplines.

It is expected that there will be continuous monitoring between pre-school education and school education. Information on the choice of course, skills and interests of students entering secondary education from school/primary will also have to be collected, and thereafter, an environment for easy entry into higher education will have to be created for all the students of secondary education, along with information on the vision of the cluster officials. This will certainly help in making a holistic plan for area education development. Also, it will make it easy to disseminate information regarding the institutions, availability of seats, scholarships, courses, etc. Finally, it will improve GER, which is one of the main purposes of NEP–2020.

Students' Unique Registration Number Scheme

Under this scheme, the sooner a student seeks admission in Anganwadi, play school, etc., he/she will have to obtain the Unique Registration Number (URN) from the very first institution of entrance. This should be made compulsory for the parents of the students and the managers of the institutions as well. This student's unique registration number should include the number of students along with the details of the state, district, block, village, year and the initial institution. This registration number will be maintained on a digital portal. Through this number, information can be received at once about the class in which a student has taken admission and gradually information about higher classes or which institutions or places he/she is going to.

This student's unique registration number scheme will also be useful in knowing the dropouts between pre-school to school, school to secondary education, and secondary education to higher education. The social, economic and other profiles of dropout students and students deprived of education can also be easily estimated from the students' unique registration number and consequently, an effective plan can be made for their future educational development. The following are similar examples, already in vogue, in different sectors of society:

- Registration number for vehicles.
- Permanent Account Number.
- Aadhaar Card.
- Registration number of books and research journals (ISBN, ISSN, etc.).

Conclusion

In this paper, I have attempted to dissect the main impediments to the effective implementation of NEP 2020 like lack of harmony between Union and the state governments belonging to different political parties and offered some important suggestions related amendments in laws, integrated governance, restructuring of faculties, designing of courses to intertwine Indian Knowledge Systems, launching of integrated courses, generation of unique registration number of students, statistical forecasting of the students population and the requirements of infrastructure and teachers, cluster development plan etc. to make National Education Policy 2020 successful in true sense. Most of the suggestions offered in this paper have not been discussed, nay, not even thought of, yet. Generally, most of the so-called experts of NEP-2020 simply reproduce the proposals of NEP-2020. Needless to mention, society and the Nation expect some concrete steps so that both the purposes of the National Education Policy–2020, viz., *creating a realm of functional education and making India a globally accepted superpower (Vishwa Guru)* in Education can be achieved. ❑

Enabling the *Atmanirbhar Bharat* by Honing Creativity and Innovation in the Undergraduate Students Enrolled in Professional Courses at CHARUSAT: A Case Study Part I[#]

Bhaskar K Pandya*, Kaushik R Trivedi and Anil S Patel*****

"*No matter what kind of creativity I studied, the process was the same. Creativity did not descend like a bolt of lightning that lit up the world in a single brilliant flash. It came in tiny steps, bits of insight, and incremental changes."*

- Sawyer in Zig Zag (2013)

In the contemporary world, the global landscape is evolving rapidly, marked by unprecedented challenges and opportunities. As highlighted in the Global Competitiveness Report (2019) and the World Economic Forum's report on New Vision for Education (2015), certain skills have emerged as crucial pillars for success in this dynamic, volatile world. The skills such as critical thinking, problem-solving, communication, and collaboration are vital. Critical thinking enables individuals to analyse information, evaluate arguments, and make informed decisions. The ability to think critically is essential for navigating complexities from misinformation. Problem-solving goes hand in hand with critical thinking, as individuals must not only identify issues but also devise effective solutions. The rapid pace of technological advancement and societal change demands innovative problem-solving skills to address emerging challenges and seize opportunities for growth and development. Communication skills are fundamental for conveying ideas, building relationships, and fostering understanding in an increasingly interconnected world. Whether it is expressing thoughts clearly, listening actively, or leveraging various media effectively, strong communication abilities are essential for success in both personal and professional contexts. Collaboration, too, has become indispensable in today's globalised and interdependent world. Thus, among all, critical thinking, problem-solving, and innovation have become essential not only for individual success but also for driving innovation and sustainable development on a global scale. Recognizing the importance of these skills, the given reports emphasize the need to integrate them into the curriculum of the institutes of higher education to prepare individuals for the contemporary era of 21st Century world Moreover, the quality of life for people and communities could be substantially improved and changed by innovations in different sectors such as industry, education, healthcare, and technology (Flessa and Huebner, 2021). Challenges and problems are frequently addressed by creative solutions and innovations, which benefit society. Scientific and technical advancements depend heavily on creativity (Mackenzie, 2020). Innovative thinkers can explore unknown territory and make discoveries that change the world in which we live. Creative minds can encourage and inspire others to pursue their goals and aspirations. They promote a culture that fosters creativity and exploration by serving as role models (Amabile and Khaire, 2008). Therefore, people must talk, learn, and practice creativity.

Likewise, a collaborative work environment and conversations frequently foster innovative thinking and creativity. When individuals get exposure to a positive environment and work culture, they are more motivated to be inventive (Price, 2019). They promote a range of opinions and diverse strategies, gathering together people with various backgrounds and specialities to address difficult problems. In one of the excerpts, Steve Jobs states, "Creativity is just connecting things." It is all about connecting people, ideas, and diverse experiences to change the world. By presenting fresh thoughts, opinions, and sentiments, it benefits society by creating a more thorough understanding of human experiences. The shape of the world and the advancement of human civilisation depend heavily on creativity and invention. Fundamentally, creativity can be

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considered a catalyst for innovation and growth in all spheres of the world (Forgeard, 2021; Schachter, 2018). Accepting and fostering these advancements can lead to outstanding achievements, constructive change, and a more dynamic and inventive civilisation.

For students, creativity is of the utmost importance as it is essential to their personal growth, educational success, and potential career aspirations (Krueger, 2022 and Anglia, 2022). Students who are allowed to be innovative are more likely to address issues creatively and unconventionally. It improves their capacity for reasoning and equips them with creativity. Students are more inclined to get involved in the learning process when they indulge in innovative tasks, activities, and experiential learning (Northern Illinois University Centre for Innovative Teaching and Learning, 2012 and Nord Anglia Education, 2022). When learning becomes more interesting, employing unique educational methods that enhance understanding, learners connect and express their views, ideas, and emotions. It builds positive surroundings and encourages artistic expression and creativity, strengthening a learner's sense of self-worth and creativity. Subsequently, it gives learners the capacity for adaptability and growth they need in a world that is changing quickly (Maria, 2022). They gain the ability to adapt to varied circumstances and limitations, welcome change, and pursue new possibilities (Markov, 2017 and Ware, 2019).

Entrepreneurship and innovation are propelled by creativity (Okpara, 2007; Akanbi and Aun, 2015). Colleges and universities foster future entrepreneurs and innovators to make them reflect proactively and creatively and contribute to the advancement of society. It leads them to work on innovative tasks and accept responsibility for their actions and decisions. This creative empowerment and responsibility boost their passion for innovations in different phases of their life.

In essence, a lifelong commitment to the pursuit of knowledge and intellectual curiosity is fostered by creativity. When given the opportunity to express their creativity, students are more likely to go into novel circumstances with curiosity and a desire to learn. In addition to improving academic achievement and encouraging creativity in the classroom gives students significant skills and traits that are crucial for their personal development, career success, and capacity to thrive in a constantly changing global world. Therefore, efforts are required from both the teacher and the students to unleash their creative potential to develop a creative mindset. Stephen Covey has rightly stated, "*Ineffective people live day after day with unused potential. They experience synergy only in small, peripheral ways in their lives. But creative experience can be produced regularly, consistently, almost daily in people's lives. It requires enormous personal security and openness and a spirit of adventure*" (Zig Zag, 2013). Thus, any educational strategy that aims to empower students and get them ready for the future should include creativity in it, and the same is envisioned in the National Education Policy–2020 in India.

NEP–2020 : Focus on Developing Good, thoughtful, Well-rounded, and Creative Individuals

The ultimate aim of NEP–2020 in the Indian Education System (Ministry of Education) is to create individuals who are capable of reasonable action and thought, with feelings of compassion, perseverance and endurance, intellectual curiosity and inventiveness, and who also have high ethical foundations and principles. It seeks to create efficient and contributory citizens for the purpose of constructing a democratic, equitable, and diverse community as foreseen in our Constitution. As per the suggestion given in NEP–2020 draft, the Curriculum should be streamlined to the fundamentals in order to make opportunities for creativity, critical thinking and inquiry and analysis-based teaching-learning process. It further suggests that the curriculum should emphasise creative ideas, practical applications, and methods for solving problems. Teaching and learning will be more engaging through creative activities and tasks to promote inventiveness among the students. Curriculum and Credit Framework for Undergraduate Programmes (CCFUP) based on the recommendation of NEP–2020, has proposed a new framework to develop thoughtful, well-rounded, and Creative individuals. It has the following learning outcomes, wherein the emphasis is on honing creativity and inventiveness is clearly visible.

Literature Review

Creativity has a significant role to play in our journey to the future (Brown cited in Zig Zag, 2013). American cognitive scientist Scott Barry Kaufman (2014) states that there is little that has such a profound and ubiquitous impact on the human experience as

creativity. Creativity propels human advancement in all fields, from the arts to science, economics, and technology, and people are commemorated and honoured for their creative achievements. Creativity is a form of artistic expression and an integral part of who we are. As a result, one may expect creativity to be a major term in philosophy (Kaufman, 2014). Innovation and creativity are the primary factors behind growth and accomplishment in a variety of spheres of life, from personal success to advancements in society and technology. Creativity has a significant and pervasive impact on how we live our lives (Stanford Encyclopaedia of Philosophy, 2023). The concept of creativity has always fascinated some of the most significant figures of philosophy and thinkers. To name a few examples: German theologian M. J. Eckhart (1260 -1327) says that peace is there where creativity and solutions can be found. Creativity, for Plato and Socrates, was the outcome of the divine thought process and inspiration, while Randell Collins, in his 'A Micro-Macro Theory of Intellectual Creativity' (1987), states creativity is all about an individual's cultural capital, a stock of novel ideas and innovative concepts, he brings from his previous encounters. In the *Karma yoga* of the *Bhagavad Gita*, Krishna states that anxiety about how our creative ideas will be interpreted is oppressive (Translated in blog on *What the Bhagavad Gita Teaches About Creative Expression* by Ricky, 2020). Thoughts should be allowed to breathe freely and ripple into the minds of others. Terasa Amabile, Head of Entrepreneurial Management Unit at Harvard Business School, states that Knowledge, reasoning, and motivation foster creativity.

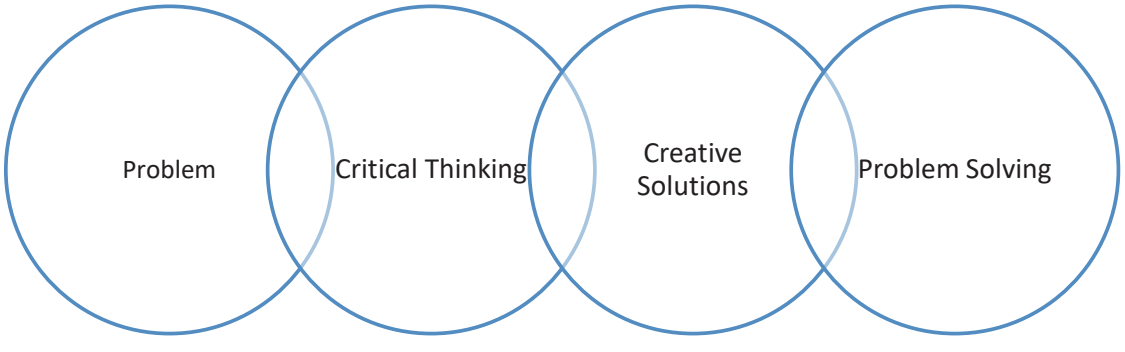
Dr. Anil Patel believes that creativity is the ability to think of new ideas or make new things. Poets, artists, scientists, engineers, and ordinary citizens are capable of creativity. However, in realising creativity in the real world, one faces many problems. Problem-solving solving for this reason is defined as a creative way to find a solution to the problem. Innovation is the end result of transforming a creative idea into reality by solving encountered problems.

Individuals as well as groups capable of thinking beyond boundaries may come up with original solutions to challenges. The intent of creative thinking is to generate fresh, original, or valuable ideas. Great creative minds use simultaneously critical and creative thinking (Foundation for Excellence, 2023). The success of problem-solving initiatives across multiple disciplines is increased by this capacity for discovering innovative ideas and divergent points of view.

Innovation and creativity are essential for decision-making and problem-solving in a competitive business environment. Knowledge, reasoning, and motivation foster creativity. By promoting the emergence of novel businesses, producing employment opportunities and raising efficacy, creativity promotes economic growth. It enables the introduction of innovative technologies and the efficient use of resources, which boosts output and raises living standards. Innovation and creativity are essential for adaptability in a world that is changing quickly and requires an innovation strategy (Pisano, 2015, in Harvard Business Review). Thus, institutions that value innovations are able to respond to changing consumer needs, modern technology breakthroughs by inspiring young minds to investigate novel concepts.

Dr. Keith Sawyer, Professor, Psychologist, Pianist, and Video Game Designer, is one of the world's leading creativity experts. To develop his

Image 1: Problem-Solving Model through Creativity



accessible eight-step creativity program, Sawyer explored the domain of creativity through his years of research and discovered many secrets of highly creative people and learned the way they have overcome the creative blocks and succeeded in their lives. His book *Zig Zag* (2013) talks about the eight-step program to achieve greater creativity to excel in career and live a satisfying life through problem-solving and decision-making. The book has been divided in the eight chapter as follows: (i) Step One ASK: How the right questions lead to the most novel answers; (ii) Step Two LEARN: How to prepare your mind for constant creativity; (iii) Step three LOOK: How to be aware of the answers; (iv) Step four PLAY: How to free your mind to imagine; (v) How to have way more ideas than you will ever need; (vi) Step six FUSE: How to combine ideas in Surprising; (vii) Step seven CHOOSE: How to pick the best Ideas and then make them even better; and (viii) Step eight MAKE: How getting your ideas out into the world drives creativity forward. The activities presented in the book have played a significant role in designing the activity material used during the teaching-learning of the course CPI.

Unique Course Implemented at CHARUSAT

Charotar University of Science and Technology (CHARUSAT) has been established by the promulgation of the Gujarat Private University Act No. 8 of 2009. CHARUSAT aims at bringing world-class education to the doorsteps of rural students. It strives, initially, to be among the Top Universities at the National Level. Marching towards achieving its goal, CHARUSAT, has become the first private university of Gujarat to be accredited with "A Grade" in the first cycle and "A+ Grade" in the second cycle by NAAC, Bangalore. CHARUSAT has also been accorded the status of Centre of Excellence by the Government of Gujarat.

- Thrust, at CHARUSAT, is on Innovation and socially relevant Research. Several initiatives have been taken to strengthen teaching, learning and research. One such initiative is taken up and supported by Dr. Anil S. Patel. He was a chief scientist of Cavitron Corporation (USA company) in New York where the Ultrasonic Phacoemulsifier was created. He was the leader of the Research team at Cooper Vision Inc. (USA company) and Alcon Inc. where the world's most successful Intraocular Lens (IOL) was created. More than 100 million eyes have received them since 1993. He has more than 25 US and International patents awarded to him, and more than 50 are awarded to scientists under his supervision who were mentored by him.

He has More than 150 publications and presentations at meetings in the USA, Europe, Japan, and India. He has written invited chapters in books. He is a Reviewer for Journal for Cataract and Refractive Surgery, the combined main journal for the USA & Europe. He has designed a TURNKEY implementable course on CPI.

The course facilitates the learners to: (i) gain familiarity with the mechanics of creativity and problem solving, (ii) develop an attitude for innovation, (iii) develop creative thinking skills using cone of learning components leading to understanding of strategies of creativity, problem solving and innovation, (iv) explore applications of the concepts of creativity and problem-solving skills in personal, social, academic, and profession life. Studying creativity, problem-solving solving and innovation is an excellent way for enhancing skills which are extremely valuable in every aspect of life. A course like this can teach students how to think more critically, come up with original ideas, and tackle problems creatively.

Dr. Anil Patel studied 27 books and more than 400 videos and several online resources, including TED talks. He researched courses offered in the University of Washington and Johns Hopkins University, as well Stanford D. school approach. "Cone of learning" by Edger Dale helped to design the best strategies for learning. It took 2 years from mid-2015 to create a unique 2 credit course with a new pedagogy for 15 weeks, consisting of 30 hours of teaching course content. It covers various components in five different modules, namely, Introduction to Creativity, Problem Solving and Innovation; Questioning, Learning and Visualisation; Creative Thinking and Problem Solving; Creativity Testing through Individual and Group Activities; and Contemporary Issues and Practices in Creativity and Problem Solving. In detail the modules include: Definitions of Creativity and Innovation; Need for Problem Solving and Innovation; Scope of Creativity in various Domains; Types and Styles of Thinking; Strategies to develop Creativity, Problem Solving and Innovation skills; Strategy and Methods of

Questioning; Asking the Right Questions; Strategy of Learning and its Importance; Sources and Methods of Learning; Purpose and Value of Creativity Education in real life; Visualization strategies - Making Thoughts Visible; Mind Mapping and Visualizing Thinking; Creative Thinking and its need; Strategy of Thinking Fluency; Generating all Possibilities; SCAMPER Technique; Divergent Vs Convergent Thinking; Lateral Vs Vertical Thinking; Fusion of Ideas for Problem Solving; Applying strategies for Problem Solving; Brainstorming at Individual level; K. T. Decision Analysis at Individual level; Lateral Thinking Problems / Puzzles; Creating Maker's Asylum; Group Brainstorming; K. T. Decision Analysis at Group level; Application of Six Thinking Hats Method; Creating Maker's Asylum; Cognitive Research, and Case Studies.

The Course on CPI is offered by CHARUSAT under Dr. Anil and Asha Patel Endowment Fund for a Course on Creativity at CHARUSAT. Since the academic year 2017-18, the course has been offered in the Third Semester of the Undergraduate Programmess across the university.

At present, the Course is implemented at 9 different Institutes of the university as follows: (i) CS Patel Institute of Technology, (ii) Ramanbhai Patel College of Pharmacy, (iii) Smt. Chandaben Mohanbhai Patel Institute of Computer Applications, (iv) Indukaka Ipcowala Institute of Management, (v) PD Patel Institute of Applied Sciences, (vi) Ashok & Rita Patel Institute of Physiotherapy, (vii) Manikaka Topawala Institute of Nursing, (viii) BD Patel Institute of Paramedical Sciences, (ix) Devang Patel Institute of Advanced Technology and Research. The course is offered in a practical mode.

The year-wise summary of students who attended the course on CPI at CHARUSAT is as follows:

Teaching of the course is being facilitated by Presentations, Reading Material, Discussions, Case Studies, Puzzles, TED talks, Videos, Task-Based Learning, Projects, Assignments and various Individual and Interpersonal activities like, Critical reading, Group work, Independent and Collaborative Research, Presentations, etc. There are no end-of-semester university examinations. Students are being evaluated continuously in the form of internal as well as external evaluations. At the end of the course, learners will be able to: (i) demonstrate creativity in their day-to-day activities and academic output, (ii) solve personal, social and professional problems with a positive and an objective mindset, (iii) think creatively and work towards problem solving in a strategic way, (iv) initiate new and innovative practices in their chosen field of profession.

Vision and Mission of Dr. Anil Patel behind Developing the Course

There is an old saying, *"Give a man a fish, and you will feed him for a day. Teach a man to fish, and you have fed him for a lifetime."* The above concept is the foundational basis for the goal of Dr. Anil Patel to "GIVE BACK" to India. Dr. Anil Patel, supported by Dr. Asha Patel, decided to create and donate a course on "Creativity, Problem solving and Innovation" as *Gyan-daan* to the next generation of Undergraduate students in India and enable them to learn how to creatively think and solve problems of their lives and also of India. Thus, instead of seeking jobs, at least some of them can become potential job-creating innovators. In light of the same, the Course on CPI enhances knowledge, sharpens the cognitive skills, fosters an attitude for creativity and innovation so as to create a self-reliant India by creating a talent pool in India itself that is educated, trained and hence, capable of solving the problems of the Country in-

Table 1: The Year-wise Summary of the Students

Faculty	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
Technology & Engineering	783	957	1076	1096	1089	1103
Pharmacy	91	84	104	97	105	106
Computer Science & Applications	105	166	209	289	341	385
Management Studies	68	70	91	128	200	247
Sciences	126	120	119	131	115	135
Medical Sciences	187	196	186	195	169	174
Total Students	**1360**	**1593**	**1785**	**1936**	**2019**	**2150**
Grand Total	**10,843**					

house. With the same vision, CHARUSAT has been funded around Rs. 40 million by Dr. Anil and Asha Patel towards the establishment of Anil and Asha Patel Endowment Fund for a Course on Creativity at CHARUSAT, which is being offered to all the Undergraduate Students of Semester III across the University. This shall definitely boost the mission of the Hon'ble Prime Minister of India, Shri Narendra Modi – *Atmanirbhar Bharat*.

Acknowledgements

The authors are grateful to Dr. Devang Joshi, former Registrar, CHARUSAT and Dr. Govind B. Dave, former Principal, Indukaka Ipcowala Institute of Management, a constituent of CHARUSAT and former Dean, Faculty of Management Studies, CHARUSAT, for their tireless efforts and immense contribution in institutionalising the Course on CPI at CHARUSAT. Gratitude is also due to the Faculty Members (both former and incumbent) who initiated the training in the first batch of FDPs offered at CHARUSAT by Dr. Anil S. Patel and then, joined him in imparting the same training as Co-trainers and as Teachers with specific mention of Dr. Mrunali Patel, Dr. Aditi Buch, Dr. Gaurav Kapse, Dr. Reshma Sable, Dr. Ritesh Patel, Dr. Kirti Makwana and Dr. Binit Patel.

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Web Scale Discovery: Transforming Access to Library Resources

Bipin B Nargide*

To forward march on the path towards the envisioned *'Viksit Bharat'*, every library as a physical entity has been refurbishing itself due to unceasing advancements happening in the Information and Communication Technology domain, and libraries being a knowledge hub offer access to its resources to their users, whether they are in a hybrid library setting or on a physical location. Understanding how users seek information is crucial, how they browse & their searching patterns would be inconsistent and unpredictable. Libraries and information centres are providing users with the information they need for their information cravings, for their teaching or learning, research and development activities so on and so forth. Information dissemination from the library's overall collection, along with the subscribed or authentic Open Access electronic resources, is the primary responsibility of the library fraternity (Edavath & Prasanth, 2018).

The information resources are nowadays available in a diverse electronic formats; Additionally, a wealth of top-rated information resources can also be available online beyond existing library collections. Web-scale discovery tools have recently been heralded as a solution that offers library collection searching through a single search box as many search engines host on their portals (Vaughan, 2011). Managing the complexity of information is a difficult mission for librarians altogether. It can be difficult for librarians to grant access to these electronic resources because of their complexity. Library websites, which usually include gateways to the subscribed resources and an Online Public Access Catalogue (OPAC) that operates independently of one another, reflect this complexity.

Web Scale Discovery is a "pre-harvested central index coupled with a richly featured discovery layer providing a single search across a library's local, open access and subscribed collections" (Hoeppner, 2012).

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Consolidating these contrasting access options made it necessary to enable an effective and efficient searching mechanism for users to handle their search behaviours. Discovery tools have been created to deal with and manoeuvre. The concept of 'NextGen Catalogues' thrilled libraries a few years ago. 'EBSCO', 'ProQuest's Ex-Libris Primo & Summon', 'OCLC's WorldCat Discovery', 'Ovid Discovery', 'TDNet Discover' and many other commercial WSD service providers, along with 'VuFind' & 'Blacklight' are the best examples of integrated open source web-scale discovery tools that are being discussed by the library fraternity these days. In an effort to improve search results, libraries are starting to implement new discovery tools to effectively and efficiently expedite the seamless search process and render the web-based information services for their patrons.

It is one of the master keys that has a significant potential to change the structure of library systems is a Web Scale Discovery. These services may swiftly and easily search through a large variety of local and distant content, returning with the consolidated results that are prioritised according to relevancy in the kind of user-friendly interface that modern information seekers are used to or well-versed with. Users are more inclined to use search engines than local metadata tools, which are crucial for locating unique resources stored locally in their information gathering endeavours. It is proposed that libraries should prioritise making these assets accessible if they want to survive in the rapidly evolving information landscape. The prospect of Web Scale Discovery tools excites library professionals and libraries worldwide.

Objectives

The primary objective of this study is:

- To explore the Web Scale Discovery (WSD) Services discoverability and use of the varied library information resources.
- To investigate the potential of WSD in addressing the challenges faced by modern libraries and their patrons.

- To explore the impact of the WSD technology on the Electronic Resources Management and administration.
- To evaluate the WSD for improving the efficiency and effectiveness of the library services.

Overview of the Technology

Web Scale Discovery is getting a wide acceptance from the library community, it is evidenced by the fact that many libraries are switching from 'Federated Search' to 'Web Scale Discovery'. A discovery product is an interface designed to help library patrons locate materials in the collections and then follow the proper procedures to access the items of interest (Breeding, 2014). A discovery system is a platform that allows users to search all of the resources in a library collection using a single search box and returns results that are relevant (Sachin & Prasanna Kumara, 2018). A collection of interconnected technologies called Web Scale Discovery services has the power to completely change library systems. Web-scale discovery technologies can readily link to large knowledge repositories and are available as cloud computing models.

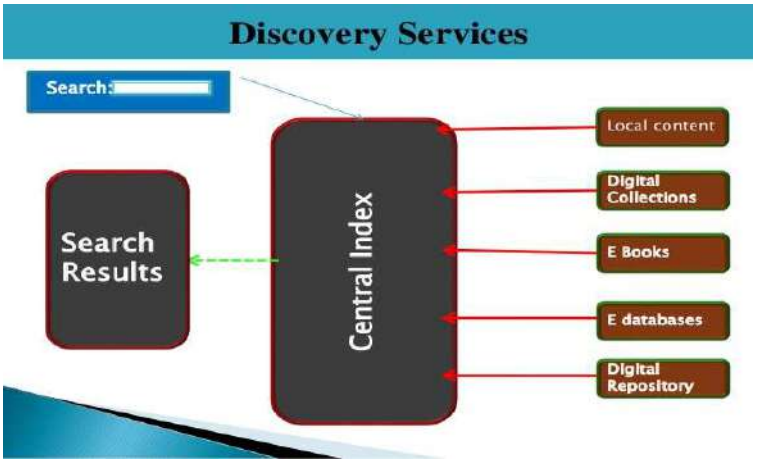
The particular programs that libraries use to manage resources, such as electronic resource management systems, integrated library systems, library services platforms, or repository platforms, are typically unrelated to discovery tools. Regardless of the management platform being used, they typically offer access to a variety of materials. Discovery products offer a search and retrieval interface with features like relevance-based search result ordering, selectable facets that allow you to filter results based on particular categories, authors, or time periods, and tools to find related content or hone your search terms. The Web Scale Discovery Service allow users to search through a range of sources, including electronic resources, catalogues, institutional repositories, and metadata indexes (Sujatha & Reddy, 2014).

Technologies that make it easier to gather, index, rank, search, and retrieve material with user interface platform characteristics are included in the web scale. This seeks to give patrons an environment that is easy in use. Through a single web interface, Web Scale Discovery systems use an integrated set of technologies and tools to gather, store, search, and retrieve content in response to user queries (Hodge, 2000). With just one search box, Web Scale Discovery services offer unparalleled research productivity, adding value to the library. With more discoverable and distinctive options for patrons to search and interact with librarians, this service aids libraries in enhancing their offerings. Web Scale Discovery Service can be illustrated through Figure 1 to understand the system contents and its processes.

Web Scale Discovery enhances the role of libraries and satisfies the user needs while enhancing the research experience without prejudice. The ability to search simultaneously yields incredibly quick search results with the highest level of relevance. Some of the key conceptual understandings of Web Scale Discovery Services:

- A single search box to search through multiple library resources,
- A unified platform to search all the integrated resources,
- Pre-harvested central index of the metadata of the available resources,
- Displays consolidated results of the search query,
- Fetch highly Relevant Results,
- Result based on rankings,
- Web-based, Featured and user-friendly interface,
- Facet-oriented navigation,
- Provision to access resources remotely as well, and
- Inclusion of Social media handles & other features.

Fig 1: Web Scale Discovery Search Model



Features

The following are the notable key features of the WSD:

- ***Contents Index*:** WSD consist of the largest unified index, which can accommodate and search through numerous e-resources simultaneously.
- ***Unified Search*:** It provides a single search box, viz. Google-like search experience; it also provides advanced search options.
- ***Enhanced Discoverability*:** It improves the visibility of the library resources, including physical and digital collections.
- ***Easy Customisation*:** It's provided with highly customizable features with the customised search facility.
- ***Faceted Navigation:*** This allows users to explore the results by applying multiple filters as per the requirements.
- ***Improved User Experience*:** It's a streamlined search process that provides access to a wider range of materials can attain a more positive user experience.
- ***Mobile Accessibility*:** Some services offer applications or optimised interfaces for accessing the information from any handheld device, like smartphones and tablets.
- ***Searching Assistant*:** It helps in proper search techniques to achieve faster and reliable results.
- ***Relevance in Results***: It gives relevant results with easy navigation, filtering and sorting features to cut down the time of information retrieval.
- ***Real Time Research Assistant*:** provides assistance during search, real-time reference help, and suggestions can be given by the library staff to improve the overall experience of the user.
- ***Saving and Exporting Results*:** It supports exporting the results via email, making a print, citations management, and bibliographic management using Reference Manager.
- ***Usage Statistics*:** Using administrative tools, it provides usage reports on most search queries, successful full-text downloads, number of searches, etc., required for the ERM.

Web Scale Discovery and Library Services

The impact of the Information and Communication Technology (ICT) has altered how people hunt for the required information online, and nowadays their expectations have gone to the next level as they expect their required information to be retrieved in a single set of results from all of the library's integrated resources. Hence, to satisfy the patron's information demands, libraries must periodically evaluate their collections as well as their information services. Libraries should benchmark their collection and services with those of other libraries, along with a focus on information retrieval services rendered by the libraries. Many e-resources, including e-books, e-journals, and other e-databases, are being acquired by libraries. Libraries should simultaneously make it easier for patrons to search through their whole collection by offering a sophisticated search environment through a single search box similar to a search engine. Web Scale Discovery makes e-resources more visible, accessible and enables users to obtain all pertinent information from a range of sources through a single gateway.

Web Scale Discovery system makes it easier for users to find the library's collection, it links users with the librarians and boosts the footfall and usage of the extensive information repository. Additionally, it enhances patrons' favourable perceptions towards the library. Users are in the driver's seat to access the required material from the library, but they frequently don't know where to begin or which resources to cover. A single solution to this problem is a single search box, i.e. Web Scale Discovery, which gives users a niche search environment to find all the pertinent information from a variety of integrated/indexed resources.

Libraries can use cloud computing technology to share the data and the required infrastructure for the success of WSD, which ultimately lowers the cost of IT infrastructure, but the libraries must collaborate to operate in a Web Scale setting. Through networks, shared resources, and extensive cooperation among the participating libraries, libraries operating at WSD can enhance their value (Deodato, 2015). Evaluating library services is a big task since it can be hard to gauge how essential a piece of information is to a certain person or the organisation.

Benefits of WSD

- It helps to bring back the users to the library.
- It also helps to increase direct usage of existing library resources (Way, 2010).

- It satisfies the fourth as well as the fifth law of library science laid down by Prof. S R Ranganathan.
- It helps to improve the image of the library amongst the users.
- It improves the search experience and meets the user's demands, which confirms the success and survival in this digital ecosystem.
- Next-generation catalogue helps the user in every other way with its extravagant features & technological capability.
- Challenges of WSD
- WDS is a costly affair; small and mid-size libraries may face challenges in adapting the system.
- Metadata is not provided by the WSD service providers.
- Most of the time, the local content is not included in the interface.
- Proficient vendor support and periodic user trainings should be countered judiciously.
- Statistical databases integration in the WSD system would be a challenging task.

WSD Evaluation Criteria

Many academic libraries are considering WSD technologies that allow users to search fast and simply across a wide range of library resources seamlessly. However, there can be a lot of difficulties in selecting the best fit WSD tool for the library, as there are many commercial players as well as Open Source products available, as narrated earlier. To select the suitable WSD product for the libraries, the following evaluation checklist can be a helpful guide to make a perfect decision. In addition to this, a cross-functional committee established by the Colorado State University Libraries in the year 2010 thoroughly examined the 'Top Rated' WSD service providers, viz. 'EBSCO Discovery Service', 'Primo Central', 'Summon', and 'WorldCat' in order to suggest the best WSD tool for the libraries to go ahead with (Sujatha, & Reddy, 2014). The following evaluation criteria are the gist of the committee recommendations and the detailed analysis of the WSD, and these have been recommended while selecting the WSD for the libraries:

- ***Simple Single Search Box*:** All library materials, including references to articles in electronic databases, book records, and other digital collections, should be retrieved through a single search box. All pertinent materials should be found in a single search.
- ***State-of-the-art User Interface*:** Library catalogues ought to look contemporary, like commercial e-business websites, due to their high degree of subjectivity. This criterion is challenging to measure. A next-generation catalogue needs to resemble well-known websites like Amazon, Google, Netflix, etc. in both appearance and feel.
- ***Augmented Contents*:** Book cover photos and user-generated content like ratings, comments, descriptions, and tag clouds should be included in library catalogues. The trained cataloguing expert has the ability to create or add content to the bibliographical records.
- ***Facet-based Navigation*:** It should be possible for library catalogues to present search results as collections of categories according to various criteria, including dates, languages, formats, locations, and availability. Users can perform a very basic first search using their favourite keywords, and then should be able to click on the different results aspects to further narrow down their results.
- ***Relevancy*:** With greater accuracy, the next-generation library catalogue performs better in relevance rankings. The relevancy results should also be influenced according to the circulation statistics. In the display, they ought to be arranged higher. Higher relevancy rankings should also be given to the items that are thought to be significant enough to have many copies.
- ***Recommendations*:** The user should be suggested with the additional items with a suggestion; a next-generation catalogue should recommend books for readers on transaction logs. This should take the form of "Readers who borrowed this book also borrowed the following like wise.
- ***Noting*:** The user should be able to add a note about the particular item in the next generation catalogue, like review, additional information, feedback, rating, etc.
- ***Social Connection*:** Users can share links to library resources with their friends on various social media handles if a library's catalogue is connected with these social media platforms.
- ***RSS Feeds*:** Users can connect to frequently updated information with Really Simple Syndication feeds. Newly added book listings,

lists of the most circulated books, automated searches, and 'watch this topic' links would be the attention grabber.

- ***Relevant Links*:** Next-generation catalogue records contain relative links to the particular record.

Conclusion

One of the cutting-edge technologies for searching through the integrated library collections is the Web Scale Discovery System. Even though the WSD technology is still relatively young, discovery tools are expanding their user bases, adding features, and acquiring materials at a rapid pace. Technology has been used in libraries to revolutionise their collection and services and reputation as well. At a time when mobile devices are starting to alter how we work, the unified index allows libraries to make their materials more discoverable and easily accessible with its extravagant features. WSD not only help libraries to increase the usage of the resources but also gives an enhanced and sophisticated search experience along with the ranked results; this updated library ecosystem will definitely upscale the image of the libraries in the minds of the user fraternity.

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Invitation to Authors

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Dr Sistla Rama Devi Pani, Editor

How and Why I Write: A Personal Lens on Social Science Research

B Devi Prasad*

Sociological writing is an art, but its path is full of difficulties and challenges. Novices in the field spend a lot of their time looking for tips for the writing and narratives of personal experiences of writers to understand the process. In a seminar on writing led by Howard Becker, authors shared their peculiar habits and intimate details of their personal writing experiences (2007, pp. 1–25). Such accounts are immensely useful for both new entrants and seasoned writers. Most social scientists wrote about how research is done. But how writing is done and its nitty-gritty details also need attention. In this article, some of these challenges are addressed.

How I write?

For me, a piece of writing always begins as a small thought, an idea, or a feeling. Usually, it occurs to me (it may be different for others) while taking a morning walk, or attending to my morning routines in the bathroom, or reading an absorbing book, or sitting quietly in a favourite place of mine.

Once the idea surfaces, it gathers a few words around it to become a sentence, a question, a provocative statement, or simply a tentative title. I jot it down in a notebook by capturing a few more thoughts hovering around the question or title. It may turn out to be either a few sentences or one or two paragraphs. It may also include titles of books that I have read or bring back an idea that caught my attention a long time back and was still there at the back of my mind. It is an interesting process. There will be restlessness, excitement, with a passionate engagement in terms of brooding and reading.

To keep track of this process, I religiously kept a journal by noting down whatever came to my mind during the period. I must confess here that I immensely benefited from the journal-keeping idea. I learnt about this practice from reading 'On Intellectual Craftsmanship' in C. Wright Mills' The Sociological Imagination (1959) and Somerset Maugham's A Writer's Notebook (1949). Both used different formats, but the purpose was the same — keeping track of the progress of the writer's ideas and experiences.

After I put down my thoughts around an idea or a topic, I begin working on it. In a considerable number of instances, the possibility is that the idea will stop kicking around and fizzle out at this stage itself. There were many such ideas that I could not pursue till their completion.

Those topics that I could work toward completion, though a few, took a lot of time — usually 1 to 2 years or more in some cases. It will involve months and years of intense work — reading, collecting data, writing, and finalisation. Though the effort was intense and full of twists and turns, I enjoyed the process immensely and never regretted.

Thus, in the case of writings that I could successfully pursue till their completion, what I generally do is a quick reading about the topic, or if it is a current issue, ask my colleagues or students to share their thoughts about the topic. It was at this stage that I selected some of them as my co-investigators. Most of them enthusiastically jumped on board at my request.

Having done this preliminary sounding, I then begin in earnest to work on the topic. At this point, for crystallisation of my thoughts, of interrelationships of concepts within the topic, I frequently used conceptual diagrams. Previously, I used to take elaborate notes in a notebook and arrange the ideas in some order before beginning a more logical exploration of the ideas.

The conceptual diagram method, however, proved to be a beneficial tool in developing objectives or research questions, in ascertaining relevant variables for study and their relationships, and in identifying areas of literature to be looked at. The diagrams were also helpful in preparing tables or data displays from the data and in logically setting out my arguments for interpreting results and drawing conclusions. The simple diagrams I worked on would become more detailed and refined as the investigation progressed. Thus, the diagram (s) held throughout the research process - giving me direction and focus.

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I need to mention another dimension of my experience here. It is about how I experience the journey throughout the investigation.

Once I start working on the topic, I start thinking about it day in and day out. It will be simmering in the back of my mind, and I keep on meditating over its meaning, relationship with other concepts, its larger context, and the other concepts that I may need to read to understand the topic better. I would be feverish, and it would be like a possession that had come over me. While eating, sleeping, walking, or talking, I would be in that mood. That was the reason why, while I worked on one idea, I was incapable of working simultaneously on another creative writing project, however small it may be. It is only after I come out that I would be able to pay attention to the next one.

To be politically right is one crucial challenge all writers face during their careers. Oftentimes, writers would end up saying something to avoid controversy, or not to incur the displeasure of their colleagues, or to keep up a progressive and respectable appearance within their circles. However, by not stating what is correct according to your conscience, you are not only compromising yourself but also doing harm to the cause of truth. The latter is far more dangerous and impedes the rigorous pursuit of truth. I avoided trying to be politically right, and I always stood by the statement that is close to my conscience.

At the end of the day, after completing an investigation and finding a source to publish the article, it was a pleasure seeing our (if there are co-authors) work in print. After its publication, I usually go through it once or twice, and that was it. For a short while, my mind would be blank. A feeling of emptiness would engulf me. I would wander, have a binge of watching TV or run pending errands. It would take at least a week or two or even a few months before I settle for something new.

Why I write?

Fame and money? I need not mention money as a reason, as there was none for me in this form of sociological writing. And writing for recognition was never my motive. I have not had the chance of being recognised as a social science writer of a stature. Fortunately, there was also no need for me to pressure myself to publish to ascend in my academic career. It so happened that whatever I wrote was timely and came in handy to be submitted as part of my career requirement. So, I am a very modest person in this genre, that is, a writer.

Having set aside these mundane matters, let me explore the question 'why I write' a little deeper.

To my mind, if writers sincerely consider stopping writing that does not add to the understanding of this world in any manner, it will contribute to the greater good, or at least leave the world less confused. The world was already flooded with millions of books in which writers have said something about everything under the sky. Then, why add one more book or an essay that does not lead anyone anywhere?

So, whenever I was tempted to write, I asked myself the question: Will it help someone to understand better anything of importance? I proceeded further only when the answer was in the affirmative. Of course, I am aware that every writer would think what he/she write is worthwhile, hence would see no reason not to write. That is a different subject of discussion, which I do not want to indulge here. In fact, it was also my belief that, even if the answer was yes, it would be perfectly all alright not to write.

Next, I consider writing as an exploration of truth, in the context of the subject areas of one's interest. Description of reality is the first step to its understanding. Most writing in the social sciences is an attempt to objectively document an idea or a phenomenon as far as possible. It may be about dowry as a marriage custom, families as social systems, content analysis as a method of research, elder abuse, the impact of the pandemic on families or the charm held by a magazine like *Chandamama* across generations.

I always strove to understand and document the phenomenon with as much objectivity as possible. All writings, be it literary or social sciences, pass through certain peer checks. They may be the reviewers, your colleague, or a critic. My work was not an exception. Additionally, I always took the help of my coauthors, students, and colleagues as my sounding board. I am grateful to them as they never failed to give me in giving their honest feedback. Therefore, the element of objectivity was taken care of to a great extent.

Conclusion

Writing is a form of expression of life. If you are living and have that profound excitement throbbing within you, you will be the vessel manifesting that expression. As the great Telugu poet Bammera Potana (1450–1510) said,

"That which is spoken is the Bhagavatam, and the one who made me speak this is Lord Rama. The result of chanting this (Bhagavatam) is the ultimate Liberation of the soul. So, let me sing it, since there is no other story better than this (Bhagavatam)."

In essence, he said, "I am an instrument in the hands of God in authoring this work."

I believe that a writer or an artist of any format should be able to constantly indulge in this self-introspective stance with all its humbling insights. Any activity, let alone writing, shall flow from such awareness. Then only can it be an illuminating, enthralling and self-annihilating experience to the writer. Such writing is a blessing.

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Multimedia Tools and Storyboarding Techniques for E-content Development

S Prabu Shankar*

The rapid expansion of digital learning environments has amplified the need for high-quality e-content that effectively integrates multimedia elements and instructional design techniques. Multimedia tools spanning graphics, audio, video, animations and interactive authoring platforms play a critical role in enhancing the learner's cognitive engagement and overall educational experience. Equally important is the use of storyboarding as a planning framework to ensure that multimedia elements, pedagogical aspects and sequencing align with intended learning outcomes.

This paper examines the theoretical foundations of multimedia learning, discusses widely used multimedia development tools, explores the process and principles of storyboarding and highlights best practices for integrating multimedia and storyboarding in the present-day e-content development process. This paper is presented with practical examples showing shared implementation in academic settings as well as in e-content creation settings. Although multimedia-integrated e-content offers enhanced interactivity and engagement, challenges such as accessibility constraints, high development time and required technical expertise persist. This study supports the fact that well-designed multimedia content combined with structured storyboarding significantly increases the pedagogical effectiveness, clarity and accessibility of digital learning materials.

Pedagogically Optimised e-learning Content

Advances in digital technology, mobile computing and internet accessibility have transformed how educational content is created, distributed and consumed. E-content development has shifted from simple text-based materials to rich multimedia environments incorporating graphics, audio, video, animations, simulations and interactive components (Clark & Mayer, 2016). These shifts reflect broader changes in global education where digital learning systems, learning management platforms and online courses have become integral to academic, professional and e-content development, instructional design, and corporate training ecosystems.

The role of multimedia in learning has been the area of extensive research across cognitive psychology, instructional design and human versus computer interaction. Pioneering works such as Mayer's (2001, 2009) Cognitive Theory of Multimedia Learning (CTML) have shown that learners understand, recall, recognise and retain information more effectively when content is presented through multiple modes, i.e., merging visual and verbal information. Multimedia elements increase learner motivation, improve conceptual representation and support different learning styles (Paivio, 1986; Mayer & Moreno, 2003).

Despite its advantages, effective multimedia-based e-content requires careful instructional design, appropriate sequencing and logical structuring. This is where storyboarding becomes essential. Storyboarding serves as a conceptual blueprint, enabling e-content developers to map and present subject content in a logical manner with scope for instructional flow, multimedia usage, narration, interactions, assessments and transitions prior to production. Storyboards help in avoiding cognitive overload, maintain pedagogical coherence and coordinate teamwork across designers, subject experts, media producers and technical teams (Zhang, et al., 2006 and Stewart, 2019).

Given the growing need, reliance on digital modes of learning, multimedia tools and storyboarding techniques have emerged as foundational competencies in e-content development. This paper explores their theoretical bases, practical applications, challenges and future directions.

Theoretical Bases of Multimedia Learning

Cognitive Theory of Multimedia Learning (CTML) remains the most influential theoretical model in multimedia learning and research. According to CTML, learners process information through two separate channels, namely visual and auditory, each with limited capacity (Mayer, 2001). Effective multimedia design leverages both channels to distribute cognitive load and scaffold deeper

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understanding. Mayer (2005) identifies several principles such as coherence, signalling, redundancy, spatial contiguity and temporal contiguity, to guide multimedia design. These principles help avoid cognitive overload—a major barrier to effective learning. For example, the coherence principle asserts that unnecessary multimedia elements (e.g., background music, decorative images) impair learning by consuming valuable working memory (Mayer & Moreno, 2003).

Dual Coding Theory (Paivio, 1986) suggests that humans process verbal and non-verbal information through separate cognitive subsystems that enhance memory through associative links. This explains why learners better understand complex concepts when text is paired with visuals like diagrams, animations, or videos.

Cognitive Load Theory (CLT) (Sweller, et al., 2011) maintains that instructional design must manage intrinsic, extraneous and relevant, applicable cognitive load connected to a subject in important ways. Poorly designed multimedia can increase extraneous load, hindering learning; conversely, well-structured multimedia can optimise meaningful and effective cognitive load that facilitates the schema for learning that organises and groups knowledge, influencing how new information is processed, understood and remembered. Multimedia learning, therefore, is not simply a matter of adding more media elements randomly but strategically selecting and integrating them based on cognitive principles.

Multimedia Tools for E-content Development

Multimedia tools vary widely by purpose, complexity, target audience and media type (Zang & Li, 2018). Visual and Graphic Design Tools, play a crucial role in the creation of high-quality e-content because they allow instructional designers to present information in visually appealing and cognitively efficient ways. Visuals such as infographics, diagrams, illustrations and photographs enrich the learning process by breaking down complex concepts into more comprehensible formats, thereby improving both comprehension and retention (Tversky et al., 2002). These visuals act as cognitive scaffolds that help learners connect new information with existing mental models, especially in subjects involving abstract ideas or multi-step processes. Among the most widely used tools is Adobe Photoshop, which is known for its robust capabilities in advanced image editing, retouching and compositing. It enables designers to create high-resolution visuals that enhance the overall aesthetic and instructional quality of e-learning materials.

Adobe Illustrator, Adobe Captivate, Articulate presenter, Articulate engage, Adobe connect, Techsmith Camtasia, Harbinger Raptivity, Story boarder, Adobe illustrator, Affinity designer, Inkscape and CorelDRAW are vector-based design tools that uses to manipulate computer images for design purposes and allows the creation of scalable graphics such as icons, logos, flowcharts and interface elements all of which maintain quality across different screen sizes.

Another widely accessible tool is Canva, which has become popular because of its user-friendly interface and extensive library of templates. It allows educators and designers with limited graphic design experience to quickly develop professional-quality visuals, making it especially useful in fast-paced or resource-constrained e-learning environments. GNU Image Manipulation (GIMP), an open-source image editing program, provides many of the same advanced features found in commercial tools while remaining freely available. Together, these tools support the development of visual metaphors, user interface components, explainer diagrams and branding assets that contribute to a consistent and engaging learning experience. In essence, graphic design tools form the foundation for creating visually rich e-content that accommodates diverse learning preferences and promotes clarity, engagement and long-term knowledge retention.

Video Production and Editing Tools

Video production and editing tools have become indispensable in modern e-learning due to the growing preference among learners for video-based content. Research shows that video is one of the most widely consumed digital learning formats, often outperforming text-only content in terms of engagement, motivation and perceived usefulness (Guo, et al., 2014). High-quality instructional videos can demonstrate real-life processes, provide step-by-step guidance and replicate aspects of instructor presence in virtual environments. Among the leading tools, Adobe Premiere Pro is a professional-grade video editing software known for its extensive capabilities, including multi-track editing, colour correction, special effects, transitions and integration with other Adobe Creative Cloud applications. It is widely used for creating polished educational

documentaries, tutorial videos and promotional learning materials.

Final Cut Pro, is particularly popular among Mac users and offers advanced features such as magnetic timeline editing, high-performance rendering and professional motion graphics support. For educators and trainers seeking more user-friendly options, Camtasia is an ideal choice because it combines screen recording with easy-to-use editing tools, making it especially suitable for creating video lectures, demos and software tutorials. It also integrates interactive elements such as quizzes and annotations. OBS Studio, a free and open-source tool, has gained popularity for its powerful screen-capturing features and live-streaming capabilities, making it suitable for recording lectures, webinars and live online sessions. Collectively, these video production tools support essential e-learning functions such as motion graphics creation, transitions, captioning, audio-video synchronisation and overall video enhancement. They help instructional designers produce dynamic content that appeals to visual and auditory learners while maintaining high levels of clarity and instructional value.

Audio Recording and Editing Tools

Audio quality has a significant impact on the effectiveness of e-learning materials because clear narration helps learners focus, reduces cognitive load and fosters comprehension. Poor audio—whether due to background noise, distortion, or uneven volume—can distract learners and diminish the learning experience. To ensure clarity and consistency, educators often rely on dedicated audio recording and editing tools. Audacity is one such tool that is widely used due to its free and open-source nature, combined with a robust set of editing features. It allows users to record narration, remove noise, adjust pitch and tempo and apply a variety of audio effects. Adobe Audition, a more advanced professional tool, offers a comprehensive suite of audio editing capabilities, including multi-track editing, spectral waveform analysis and advanced noise-reduction algorithms. It is often used in large-scale e-learning production environments where high-quality sound design is required.

For Mac handlers, GarageBand provides a user-friendly interface for recording and editing audio, making it ideal for educators who want to create professional-sounding voiceovers without the learning curve associated with more complex audio software. These tools help produce crisp and engaging narration, sound effects, ambient audio and musical elements that complement visual content. High-quality audio enhances learner engagement by ensuring intelligibility, maintaining interest and creating a more immersive multimedia experience. As a key component of multimedia e-learning, audio editing tools support the development of polished and pedagogically effective learning materials.

Animation and Simulation Tools

Animations and simulations have become essential in e-content development because they allow instructional designers to illustrate dynamic, temporal and complex processes that static images or text alone cannot adequately convey. Research indicates that animations significantly enhance understanding when used appropriately, particularly in subject areas involving movement, transformation, or multi-step procedures (Tversky, et al., 2002). Tools such as Adobe Animate enable designers to create 2D animations that are ideal for illustrating concepts, demonstrating processes, or creating engaging learning characters. Blender, a powerful open-source 3D modeling and animation software, supports the creation of detailed three-dimensional simulations, making it invaluable for fields like architecture, engineering and medicine.

Toon Boom Harmony is widely used in professional animation studios and supports high-quality frame-by-frame animation, offering advanced control for creating educational cartoons and explainer videos. Vyond, a cloud-based animation platform, allows educators to create animated videos quickly using prebuilt templates and characters, making the design process more accessible for non-specialists. Beyond animations, simulation tools enable learners to experiment with scenarios in a risk-free environment. These tools are particularly important in science, medical training, engineering and vocational education, where learners must understand complex systems, procedural steps and decision-making pathways. By allowing learners to manipulate variables and observe outcomes, simulations promote experiential learning, problem-solving and the development of practical skills. Thus, animation and simulation tools significantly enhance the depth and interactivity of e-learning materials.

Interactive Authoring Tools

Interactive authoring tools are central to the creation of modern e-learning experiences

because they enable the development of content that requires learner participation, decision-making and exploration. Such interactivity has been shown to improve engagement, deepen understanding and foster self-paced learning (Moreno & Mayer, 2007). Tools like Articulate Storyline provide a powerful, intuitive environment for creating branching scenarios, interactive quizzes, drag-and-drop activities and multimedia presentations. It is widely used in corporate and academic settings because of its flexibility and compatibility with standard e-learning formats such as SCORM and xAPI. Adobe Captivate is another sophisticated authoring tool known for its strong simulation-building capabilities, making it particularly useful for software training and highly interactive courses.

Lectora Inspire offers advanced scripting options and is suitable for designing complex, highly customised e-learning modules. Its responsive design capabilities make it well-suited for mobile learning. iSpring Suite integrates directly with PowerPoint, making it a popular choice for educators who want to convert traditional presentations into interactive e-learning content without having to learn new software. Together, these authoring tools support the creation of interactive timelines, assessments, multimedia blocks, gamified elements and adaptive learning pathways. By incorporating rich interaction, they transform e-learning from passive consumption to active engagement, thereby improving learning outcomes.

Learning Management Systems

Learning Management Systems (LMS) serve as centralised platforms that support the delivery, tracking and management of multimedia e-content. Systems such as Moodle, Blackboard, Canvas and Google Classroom offer robust environments where learners can access instructional materials, participate in discussions, submit assignments and receive feedback. LMS platforms integrate seamlessly with multimedia content developed using authoring tools, allowing educators to organise learning modules, embed videos, incorporate quizzes and track learner performance through analytics.

An LMS also facilitates communication between instructors and learners through announcements, messaging, discussion forums and collaborative tools. From an administrative perspective, LMS platforms provide powerful data tracking features that help instructors evaluate learner engagement, identify performance gaps and personalise learning pathways. Many LMSs support SCORM and xAPI standards, making it easy to import multimedia modules created in tools like Storyline or Captivate. Additionally, cloud-based LMS platforms enable anytime, anywhere access, which is essential in online and blended learning environments. Thus, LMS systems form the backbone of digital learning ecosystems by combining content management, learner support, assessment tools and analytics into a unified instructional framework.

Storyboarding Techniques: Purpose and Benefits

Storyboarding is a structured planning method for visualising the entire learning experience before production begins. It ensures coherence, avoids redundant multimedia and aligns content with learning objectives. Storyboarding serves as one of the most essential steps in the e-content development process because it provides a clear and structured visualisation of how instructional content will unfold. By mapping out the sequence of screens, interactions and multimedia elements, storyboarding defines the overall instructional flow, ensuring that concepts are introduced in a logical and pedagogically sound order (Stewart, 2019). This organised framework helps instructional designers conceptualise the learner's journey before production begins, reducing the risk of fragmented or inconsistent content. Without a storyboard, multimedia elements may be added in an ad hoc manner, leading to disorganised learning experiences that confuse learners rather than guiding them.

Another major benefit of storyboarding is its ability to save time and reduce costly revisions. When instructional designers, subject matter experts, multimedia developers and other stakeholders agree on a storyboard early in the process, potential misunderstandings or missing content can be identified before any media production takes place. This avoids rework, accelerates development timelines and ensures efficient allocation of resources. Storyboarding also enhances communication among team members. It acts as a shared reference document that clearly communicates expectations, design decisions, narrative flow and multimedia requirements. This shared understanding is particularly important in large-scale projects where interdisciplinary teams must collaborate seamlessly.

Storyboarding helps ensure that all learning activities, assessments and multimedia components

are aligned with the intended educational objectives. By planning ahead, designers can verify that each element contributes meaningfully to the learning outcomes rather than functioning as unnecessary decoration. Additionally, storyboarding helps manage cognitive load by carefully determining where multimedia elements should appear, how they should be sequenced and what information should be paired for maximum comprehension (Mayer, 2001). Thoughtful placement of visuals, narration and interactivity prevents cognitive overload and enhances the learner's ability to process content effectively. Altogether, storyboarding establishes a solid foundation for designing coherent, engaging and instructionally sound e-learning experiences.

Components of a Storyboard

A well-constructed storyboard comprises several essential components that collectively guide the development of multimedia e-content. One fundamental element is the screen layout or visual sketch, which provides a rough illustration of what each screen will look like. These visual sketches help designers position text, images, buttons and other interface elements in a clear and user-friendly manner. Another critical component is the textual content and narration, which outlines the instructional text, on-screen prompts, voiceover scripts and dialogue that will accompany each screen. Including detailed narration ensures that the audio-visual balance supports rather than overwhelms the learner.

Storyboards also specify multimedia elements such as images, videos, animations and graphics. Listing these elements in advance helps ensure that they are purposeful and aligned with instructional goals. Equally important are the user interactions and navigation pathways. This section of the storyboard defines clickable buttons, branching decision points, interactive hotspots, feedback mechanisms and any other elements that require learner input. By outlining these interactions early, designers can create a more engaging and intuitive user experience.

Storyboards frequently include assessment questions, and map out where quizzes, knowledge checks, or performance tasks will appear in the module. Planning assessments in advance ensures they are contextually relevant and aligned with learning objectives. Technical specifications—such as screen dimensions, file formats, LMS compatibility and accessibility requirements—ensure that content meets institutional or industry standards. Finally, the storyboard often contains notes for developers, designers, narrators and editors, providing clarity on timing, animation cues, media sourcing, or design considerations. Together, these components ensure that the storyboard serves as both a creative guide and a technical blueprint for the entire development team.

Types of Storyboards

- ***Linear Storyboards***

Linear Storyboards follow a straightforward, fixed sequence of screens, making them ideal for instructional modules that present content in a predetermined order. These storyboards are particularly suitable for tutorials, introductory lessons, compliance training, or any learning material where the progression must remain consistent for all learners. The simplicity of linear storyboards helps ensure clarity, especially in content that does not require decision-making or adaptive pathways. They also reduce complexity for designers and developers by providing a clear, uninterrupted flow from one screen to the next.

- ***Branching Storyboards***

Branching storyboards, in contrast, support more complex and interactive learning experiences. These storyboard formats map out multiple pathways learners can follow based on their choices, responses, or actions (Stewart, 2019). Branching is commonly used in scenario-based learning, simulations, problem-solving modules and decision-making exercises where different choices lead to different outcomes. These storyboards resemble flowcharts with interconnected nodes, illustrating conditional logic and alternate learning routes. By offering learners varied pathways, branching storyboards enhance engagement, promote active learning and support personalised experiences.

- ***Interactive Storyboards***

Interactive Storyboards focus specifically on detailing the interactive elements within an e-learning module. These storyboards specify not only navigation and branching but also drag-and-drop functions, hotspots, tooltips, rollover effects, embedded quizzes and adaptive learning pathways. This type of storyboard is essential when designing highly interactive modules where

learner engagement plays a central role. Interactive storyboards help ensure that the interactive features are purposeful and pedagogically grounded rather than added solely for visual appeal. They also help developers anticipate technical challenges and ensure seamless integration of interactive components during production.

Specific digital tools support the creation of effective storyboards, each offering unique advantages depending on the complexity of the project and the designer's expertise. Microsoft PowerPoint is one of the most commonly used tools because of its familiarity, ease of use and flexibility in creating screen layouts and organising sequences. It allows designers to combine text, placeholder visuals and annotations easily.

- 'Storyboard That' is a web-based platform specifically created for designing storyboards; it offers ready-made templates, characters and scenes that simplify the visualisation of instructional flow.
- Google Slides provides a cloud-based alternative that supports real-time collaboration among team members, making it ideal for distributed development teams.

For more complex and interface-intensive learning modules, tools such as Adobe XD and Figma are widely used. These tools are typically employed in UI/UX design but are increasingly adapted for storyboarding because they provide high-resolution mock-ups, interactive prototypes and shared workspaces that streamline team collaboration.

E-learning authoring tools like Articulate Storyline include built-in storyboard templates and review modes. These allow designers to create storyboards directly within the development environment, ensuring seamless transition between planning and production. Each tool contributes differently to the storyboarding process, giving designers flexibility based on their instructional needs, skill levels and workflow structure.

Best Practices in Storyboarding

Effective storyboarding requires adherence to best practices that ensure clarity, consistency and instructional coherence. Firstly, designers establish clear learning outcomes, as these serve as the foundation for all content and multimedia decisions (Clark & Mayer, 2016). Each screen, interaction and assessment should directly support these outcomes to maintain instructional focus. Maintaining consistent visual design and colour schemes is another important practice, as inconsistency can distract learners and reduce the professional quality of the module. A uniform design ensures aesthetic coherence across screens and reinforces branding or thematic unity.

Logical sequencing is also essential, and designers should rely on principles derived from cognitive load theory to structure content in manageable chunks. This ensures that learners are not overwhelmed with too much information at once. Another best practice involves minimising extraneous information. Every visual, animation, or sound effect included in the storyboard should support learning; unnecessary elements risk adding cognitive burden and reducing comprehension. Accessibility considerations must be integrated from the beginning. This includes planning for captions, alternative text, transcripts, readable fonts and proper contrast ratios to ensure the content is inclusive for all learners.

Frequent review and collaboration with stakeholders, including subject matter experts, media developers and project managers, helps refine the storyboard and ensure accuracy. Regular feedback cycles reduce misunderstandings and prevent costly redesigns later in development. By following these best practices, instructional designers can create storyboards that serve as effective blueprints for high-quality, pedagogically sound e-learning content.

Integration of Multimedia and Storyboarding in E-content Development

Aligning Objectives, Media, and Assessment is a key stage in effective e-content development that requires a deliberate alignment between learning objectives, multimedia components and assessment strategies. Within the ADDIE model: Analysis, Design, Development, Implementation and Evaluation, storyboarding sits at the heart of the Design phase, serving as the blueprint through which instructional strategies are translated into multimedia elements. During this phase, the selection of media must be pedagogically justified rather than driven by aesthetic appeal or technological novelty. This is critical because each multimedia element should support specific learning outcomes. For instance, animations are most beneficial when illustrating

dynamic processes, such as chemical reactions, biological systems, or mechanical operations that cannot be adequately represented using static visuals (Tversky et al., 2002). Similarly, video demonstrations may be used to model skills, whereas infographics may be used to summarise complex conceptual relationships.

Storyboarding ensures that such decisions are intentional. It visually maps where media will appear, how it aligns with instructional goals and how learners will be evaluated on the corresponding content. Assessments, in turn, must align with the type of media used and the cognitive processes targeted. If multimedia elements are designed to support higher-order thinking skills, such as analysis, synthesis or application, the assessments should mirror these expectations. By integrating objectives, media and assessments within the storyboard, designers create coherent learning experiences that promote understanding and reliable measurement of learning outcomes.

Enhancing Engagement through Interactivity

Interactivity plays a central role in sustaining learner engagement in digital environments, and its effectiveness depends heavily on thoughtful planning during the storyboarding phase. Rather than adding interactive features arbitrarily, designers should strategically incorporate elements that support cognitive processing and meaningful learning. This ensures that interactivity enhances, rather than distracts from, the instructional experience. Storyboarding helps determine where interactive activities should be placed and how they will connect to learning objectives. According to Moreno and Mayer (2007), deliberate planning of interactive components can optimise cognitive load by providing opportunities for active processing, self-paced exploration and reinforcement.

Common interactive elements used in e-learning include quizzes, drag-and-drop activities and clickable hotspots, scenario-based decision-making and branching pathways. These allow learners to engage more deeply with the content, test their understanding and receive immediate feedback. For example, a branching scenario can immerse learners in realistic decision-making contexts, encouraging them to think critically and observe the consequences of their choices. Drag-and-drop tasks, meanwhile, support hands-on manipulation of concepts, aiding memory retention and comprehension. By outlining these interactive features in the storyboard, instructional designers ensure that interactivity remains learner-centred and purposeful, ultimately improving engagement and learning outcomes.

Ensuring Accessibility

Accessibility is an essential consideration in storyboarding because it ensures that e-learning materials can be accessed and used by learners with diverse needs and abilities. Designing for accessibility from the outset is far more effective and more compliant with international standards than trying to retrofit features after development. Effective storyboards incorporate accessibility guidelines that guide media production and interface design. One key guideline is the inclusion of captions and transcripts for all audio and video elements. These support learners who are deaf or hard of hearing and also benefit those in sound-sensitive environments.

High colour contrast should be indicated in the storyboard to accommodate learners with low vision or colour blindness. Storyboards may also specify keyboard navigation mapping to ensure that learners who cannot use a mouse can navigate content effectively. Another essential component is the inclusion of alt text descriptions for all images, diagrams and graphics, enabling screen readers to describe visual content to learners with visual impairments. Finally, storyboards should flag elements that may cause harm or discomfort, such as flashing animations, which can trigger adverse reactions in individuals with photosensitive epilepsy. By integrating accessibility considerations into the storyboard early on, designers promote inclusivity and ensure that the final e-learning product meets universal design standards.

Workflow Integration

Storyboarding is deeply embedded in the broader e-learning production workflow, functioning as a bridge between conceptual planning and multimedia development. A typical development workflow begins with an initial concept meeting, during which instructional designers, Subject Matter Experts (SMEs) and project stakeholders discuss goals, content scope, learner needs and technological requirements. Following this meeting, designers create a draft storyboard that lays out the overall structure of the course, including content sequencing, proposed multimedia elements, interactions and assessments.

Once the storyboard is approved, a media production plan is developed. This plan outlines what graphics, animations, video recordings, voiceovers, or simulations need to be produced and assigns responsibilities to team members such as graphic designers, animators, narrators and videographers. The next phase involves the development of screens and interactions, where the storyboard is transformed into actual e-learning content using authoring tools or LMS platforms. After development, the module undergoes pilot testing with a sample of learners or stakeholders to identify usability issues, content gaps, or technical errors. Based on this feedback, designers make necessary revisions, refine interactions, correct inaccuracies and finalise the multimedia components.

The storyboard serves as a shared reference point that ensures all team members have a unified understanding of the instructional vision. It reduces miscommunication between instructional designers, Small and Medium Enterprises (SMEs), video producers, media developers and programmers, thereby increasing efficiency and improving the overall quality of the learning product. By functioning as both a planning tool and a communication document, storyboarding strengthens coordination across the entire development cycle and supports the creation of cohesive, high-quality e-learning experiences.

Challenges in Multimedia E-content Development

Multimedia e-content development presents several challenges, particularly the need for advanced technical skills, as educators often struggle with complex authoring tools (Chen, et al., 2018). Producing high-quality videos and animations is resource-intensive, while ensuring accessibility compliance increases design complexity. Additionally, excessive multimedia can cause cognitive overload if not guided by sound principles (Mayer & Moreno, 2003). Rapid technological changes also require continuous upskilling, making sustainable development increasingly demanding.

- High technical skill requirements for advanced authoring tools
- Time- and resource-intensive multimedia production
- Complex accessibility compliance (e.g., Web Content Accessibility Guidelines (WCAG))
- Risk of cognitive overload from poorly planned multimedia
- Rapidly evolving technologies requiring constant skill updates

Future Trends in E-Content Development

Future e-content development is rapidly evolving with emerging technologies that enhance personalisation, immersion and efficiency. AI-driven adaptive learning tailors content to individual needs, while VR and AR create highly interactive environments for experiential learning. Automated multimedia generation streamlines production, and high-fidelity simulations enable realistic skill practice. Additionally, natural language-based authoring tools are simplifying content creation, allowing educators to design modules through intuitive commands rather than complex software.

- AI-powered personalised learning pathways,
- VR/AR-based immersive instructional environments,
- Automated tools for rapid multimedia creation,
- Realistic, high-fidelity training simulations, and
- Natural language-driven authoring and design platforms.

Multimedia tools and storyboarding techniques are indispensable in modern e-content development. Multimedia enhances engagement, improves comprehension and accommodates diverse learning styles, while storyboarding ensures pedagogical coherence, effective sequencing and efficient production workflows. The integration of these elements contributes to well-designed, accessible and instructionally sound e-learning experiences. While challenges remain, especially involving technical expertise and accessibility, the benefits clearly outweigh the limitations. As technology evolves, multimedia design and storyboarding practices will continue to shape the future of digital education, enabling more immersive, interactive and personalised learning experiences.

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Embracing the Future: Skills for Success

T G Sitharam, Chairman, All India Council for Technical Education, New Delhi delivered the Convocation Address at the 44th Convocation Ceremony at Anna University, Chennai, Tamil Nadu on July 02, 2024. He said, *"Success is not just measured by the positions you hold or the accolades you receive, but by the positive impact you have on others. Strive to be leaders who inspire, innovators who create solutions, and individuals who make a difference in the lives of others."* Excerpts

I am truly very glad to be here at Anna University, Asia's oldest Technical Institution and the oldest one established outside Europe. It is indeed a privilege for me to attend the 44th convocation ceremony of Anna University as the Chief Guest.

Thank you to the VC and the entire administration of the University for the warm welcome. I am excited to share my thoughts and give blessings to all the graduates on their remarkable achievement of successfully accomplishing their degrees from Anna University.

Friends, you have spent quality time at this University, making friends, learning skills, engaging in practicals and so on. The days we spent in our classrooms always remain in our memory due to the many moments that we share with each other. I want you all to always cherish your college memories in life and continue your friendship beyond the classrooms. The knowledge, learning, skill and experience you have attained in Anna University will help you in different stages of your life.

To be a part of Anna University adds a new dimension to your portfolios. Do you know why?

Because Anna University has a rich legacy of academic excellence and innovation. Since its inception, it has been a beacon of knowledge and a cradle for nurturing talented engineers, architects, managers, and social scientists who have gone on to make significant contributions to society. The university's commitment to fostering a culture of research, innovation, and holistic education is truly commendable.

I am deeply impressed by the vibrant academic environment and the state-of- the-art facilities of this University, which support cutting-edge research and learning. The dedication of the faculty members and the enthusiasm of the students are palpable, reflecting the university's ethos of striving for excellence. It is clear that Anna. University not only imparts knowledge but also instills a sense of responsibility and purpose in its students.

Friends, today marks a significant milestone in your academic journey, and I extend my heartfelt congratulations to each one of you on your remarkable achievements. As you stand on the threshold of a new chapter in your lives, it is essential to reflect on the journey that has brought you here and to look ahead at the exciting opportunities and challenges that lie before you.

To the parents and families of our graduates, today is also a celebration of your unwavering support and encouragement. Your belief in your children has been the bedrock of their success. Your sacrifices, patience, and love have played an indispensable role in guiding them to this achievement. On behalf of the entire academic community, I extend our deepest gratitude to you.

Friends, we are in the Amrit Kaal, a pivotal time to make significant strides in your career. Embrace critical thinking, continually upskill and reskill with the latest technologies and ideas, and carve out a unique place for yourself in this rapidly evolving world.

The future belongs to those who are willing to learn, unlearn, and relearn. In this era of disruption, your ability to think critically, to innovate, and to adapt will be your greatest assets.

Friends, AI and other emerging technologies are indeed transforming various aspects of our lives. While these advancements offer incredible potential, they also raise concerns about their impact on jobs, decision-making, and society. As machines and AI systems become more sophisticated, there's uncertainty about job security in certain sectors. However, rather than fearing these changes, we

should embrace them and adapt to new methods of sustainability and growth.

With the advent of disruptive innovations, it's crucial to stay updated and proficient with advanced technologies. Hence, always keep your spirit of learning alive.

AI is reshaping the workforce and the nature of jobs. As graduates, you must be ready to adapt to these changes. Embrace AI as a tool for innovation and problem-solving, but also be aware of the ethical implications and the need for responsible use. Continuous learning and staying updated with the latest advancements in AI will be crucial.

Remember, AI is a tool—a powerful one. How we use it will determine its impact on our world. As the future leaders, innovators, and decision-makers, you have the chance to shape that impact positively. Embrace AI, but do so with a mindset geared towards creativity, responsibility, and inclusivity.

In this dynamic environment, the importance of skilling and upskilling cannot be overstated. The knowledge you have gained here is just the beginning. Engage in lifelong learning, seek out new skills, and be proactive in upskilling to stay relevant in your field. The AICTE is committed to supporting your continuous learning journey through various initiatives and programs, ensuring that our students are well-equipped to meet the demands of a rapidly evolving world. I am pleased to share some of our key initiatives that are designed to support and empower you as you embark on your professional journeys.

AICTE Initiatives

AURA Scheme

This initiative promotes research and innovation among students and faculty, providing grants and resources to support groundbreaking projects that can make a real impact on society.

MoU with C-CAMP

Through this collaboration with the Centre for Cellular and Molecular Platforms, we aim to foster innovation and entrepreneurship in biotechnology and life sciences, offering exciting opportunities for interdisciplinary projects.

PG Scholarship and Post-Doctoral Fellowship

These programs are designed to support students financially and academically, enabling them to pursue advanced studies and contribute to cutting-edge research.

Career Portal

Offering guidance and resources for career planning and development, this portal helps students navigate the job market, build professional networks, and make informed career decisions.

Scholarships for UG and PG Students

AICTE offers various scholarships to support your educational journey financially, ensuring that financial constraints do not hinder your pursuit of knowledge and excellence.

Saraswati Scheme for BBA/ BCA Girls

This scheme provides financial assistance and encourages women to excel in their chosen fields, promoting gender equality in education and professional domains.

I am excited to introduce you to the AICTE *Anuvadini* tool as well, a ground breaking initiative developed by the All India Council for Technical Education. *Anuvadini* is a translation tool designed to break down language barriers in technical education. It enables the translation of technical documents, academic content, and more into multiple Indian languages, ensuring that young graduates who may not be proficient in English can access educational materials in their native tongues. This tool not only supports inclusive education by making learning more accessible but also enhances understanding of complex concepts, thereby improving academic performance. For educators, *Anuvadini* facilitates the creation of multilingual content and the translation of research papers, fostering a more inclusive and diverse learning environment. By enhancing language skills and technical comprehension, *Anuvadini* also boosts employability and career prospects for graduates.

Friends, AICTE promises to revolutionise the approach of internships and career placements in technical education across India through its Internship and Placement Portal.

This portal, developed by the All India Council for Technical Education, stands as a beacon of opportunity for our young graduates. It serves as a centralised platform where students can explore a myriad of internship opportunities tailored to

their academic disciplines and career aspirations. Whether you're studying engineering, management, pharmacy, or any other technical field, this portal provides access to diverse internship programs that help bridge the gap between classroom learning and real-world application.

But the benefits don't stop there. The AICTE Internship and Placement Portal goes beyond just internships. It also connects students with prospective employers, offering a streamlined process for securing job placements post-graduation. This initiative is not just about finding jobs; it's about empowering our students to thrive in the competitive global workforce by providing them with the necessary tools and opportunities to kickstart their careers.

Imagine the impact—a seamless transition from academic excellence to practical experience, all facilitated through a user- friendly online platform. For educators and institutions, this portal serves as a valuable resource to support students in their professional journeys, ensuring they are well-prepared and equipped with the skills demanded by industry leaders.

So, whether you're a student eager to gain hands-on experience through internships or a graduate ready to embark on your career path, the AICTE Internship and Placement Portal is your gateway to success. Embrace this opportunity, explore the possibilities, and pave the way for a future filled with promise and achievement.

Remember, success is not just measured by the positions you hold or the accolades you receive, but by the positive impact you have on others. Strive to be leaders who inspire, innovators who create solutions, and individuals who make a difference in the lives of others.

So once again congratulations my dear graduates! To the parents and families, today is a celebration of your support, sacrifices, and unwavering belief in the potential of your children. Your guidance and encouragement have played a pivotal role in their success.

The future is bright, and it is yours for the taking. Dream big, work hard, and never stop learning. The world is waiting for you to make your mark. I wish you all the very best for your future endeavors. May you achieve great success and bring honor to yourselves, your families, and your alma mater.

Thank you!

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To Our Readers

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Dr Sistla Rama Devi Pani, Editor

Academic Event on Intellectual Property Rights in Mathematics

The one-day Academic Event on 'Intellectual Property Rights in Mathematics: Issues, Opportunities, and Awareness' was organised by the Department of Mathematics, Pt. LMS Campus, Sri Dev Suman Uttarakhand University, Rishikesh on November 26, 2025. This event was conducted to enhance awareness, understanding, and academic responsibility among students and faculty regarding the role and importance of Intellectual Property Rights (IPR) in the field of Mathematics. The programme witnessed enthusiastic participation from faculty members, research scholars, undergraduate students, and several academic stakeholders of the campus.

The programme was inaugurated by Prof. M S Rawat, Director, Pt. LMS Campus, Rishikesh, emphasised the importance of integrating intellectual property awareness into academic culture. He highlighted the growing participation of the Mathematics Department in national and international academic activities and appreciated the department's consistent efforts toward academic excellence.

The Keynote Session was led by Mr. Yassir Abbas, NIPAM Officer under the National Intellectual Property Awareness Mission (NIPAM), Government of India. His presence added significant value to the event, as NIPAM is one of India's most prominent initiatives promoting IP education among students, faculty, innovators, and research communities. Mr. Abbas delivered the lecture covering the dimensions on i) understanding IPR in the context of mathematical research, ii) distinction between ideas, expressions, and protectable innovations, iii) protection mechanisms such as patents, copyrights, trademarks, and design rights, iv) ethical dimensions of knowledge creation, plagiarism avoidance, and research integrity, v) opportunities for safeguarding mathematical models, algorithms, and computational methods, and vi) Case examples of mathematics-based intellectual contributions that transformed into technologies.

He clarified common misconceptions such as 'Mathematical theorems cannot be patented' vs. 'Mathematical algorithms within technological processes can be protected'.

The session helped participants understand how the discipline of mathematics increasingly intersects with applied sciences, engineering solutions, artificial intelligence, and industry innovations. The interactive session witnessed active participation from research scholars who engaged with the speaker on issues such as whether pure mathematical results can be protected, how to document mathematical innovations, the role of universities in encouraging IP filings, and challenges in algorithm-based patent applications. Their questions enriched the academic discourse and highlighted the growing interest in IPR among young mathematicians.

Prof. Anita Tomar, Head, Department of Mathematics and the Convenor of the event, in her welcome address, underlined the evolving landscape of mathematics in the 21st century. She emphasised the growing intersection of mathematics with computational sciences, data-driven technologies, and artificial intelligence, noting that this convergence has expanded the scope for innovation as well as the need for responsible knowledge creation. She explained that safeguarding intellectual contributions is becoming increasingly important, especially when mathematical models, algorithms, and analytical frameworks often translate into patents, software tools, and high-impact research outcomes. Prof. Tomar highlighted the pivotal responsibility of academic institutions in cultivating an ethical research culture, nurturing originality, and supporting young scholars in understanding their rights and duties as creators. Reflecting on the creative essence of the discipline, she remarked, "Mathematics is not just the language of logic—it is the foundation of creativity, discovery, and technological transformation." She encouraged the participants to embrace a mindset that blends critical thinking with innovation, ensuring that their contributions are both meaningful and ethically grounded.

Prof. N K Joshi, Vice Chancellor, Sri Dev Suman Uttarakhand University, conveyed his warm wishes and appreciated the Mathematics Department for organising such a relevant academic initiative.

The session concluded with a formal Vote of Thanks by Dr. Gaurav Varshney, who acknowledged the contribution of the resource person, faculty members, student volunteers, and the entire organising team. The event was coordinated by Dr. Pawan Joshi, Ms. Monica Sati, and Prof. Deepa Sharma. The session successfully achieved its objective of sensitising the academic community about the importance of Intellectual Property Rights in Mathematics. The event contributed significantly to promoting responsible academic conduct, innovation, and intellectual awareness among participants. The event ended on a positive note and proved to be intellectually enriching for all participants.

International Conference on Reimagining *Bhartiya* Languages, Knowledge, and Interdisciplinarity

A three-day International Conference on 'Reimagining *Bhartiya* Languages, Knowledge, and Interdisciplinarity: Philosophical Reflections and Educational Transformations Under NEP-2020' is being organised by the Faculty of Arts, Banaras Hindu University, Varanasi, Uttar Pradesh in collaboration with the Central Institute of Indian Languages, Ministry of Education, Mysuru, and Bharatiya Bhasha Samiti, Ministry of Education, New Delhi from February 12–14, 2026. The university/college faculty and researchers in Humanities and Social Sciences, students, early-career researchers, artists, social workers, performers, independent scholars, policy makers, curators, and civic organisations may participate in the event.

More than a policy document, the National Education Policy-2020 articulates a philosophical vision to redefine the purpose, process, ethics, and objectives of Indian education. Rooted in Indian civilisational ethos yet oriented toward the global knowledge economy, it calls for integrating Indian Knowledge Systems (IKS) with contemporary education. The event explores how language, knowledge, skills, values, and interdisciplinarity can foster creativity, critical inquiry, and holistic human development—harmonising tradition and modernity, science and spirituality, and local knowledge with global engagement. The Thematic Areas of the event are:

- Philosophy of Education in the 21st Century: Humanistic, Ethical, and Spiritual Dimensions of Learning.
- Indian Knowledge Systems (IKS) and Global Thought: Dialogues between Indigenous Epistemologies and Contemporary Sciences.
- Interdisciplinarity and the Future University: From Holistic Learning to Transdisciplinary Innovation.
- Decolonising Theory and Praxis Knowledge: Comparative Educational Paradigms Across Countries and Cultures.
- Globalisation, Sustainability, and Educational Policy: Balancing Local Knowledge with Global Imperatives.
- Reimagining the University: Institutional Autonomy, Creativity, and the Pursuit of Wisdom in the Post-NEP Era.
- Language and Epistemic Justice: Rethinking Linguistic Hierarchies and Reclaiming Indian Languages as Sites of Knowledge Production.
- Translation, Transcreation, and Knowledge Transmission: Bridging Ancient Wisdom and Modern Academic Discourse.
- Technology, Language, and Learning: The Digital Mediation of Multilingual and Inclusive Education.
- Ethics, Aesthetics, and Value-based Pedagogy: Integrating Moral and Creative Education Within Institutional Frameworks.

For further details, contact Organising Secretary, Faculty of Arts, Banaras Hindu University, Varanasi–221005, Uttar Pradesh, E-mail: *rlkconfbhu26@gmail.com.* For updates, log on to: *www.bhu.ac.in/events/*

International Conference on Advanced Trends in Engineering and Emerging Technologies

A two-day International Conference on 'Advanced Trends in Engineering and Emerging Technologies' is being jointly organised by the Indian Institute of Technology Patna, Bihar

National Institute of Technology Raipur, Bihar and New Government Polytechnic Patna, Bihar from January 17-18, 2026 through Hybrid Mode. The event aims to create a dynamic and inclusive platform that bridges the gap between theoretical research, applied technology, and grassroots innovation. It is conceived as a melting pot of AI and ML ideas, additive manufacturing, Cybersecurity, IoT, Green energy, Robotics and Smart cities, fostering dialogue between academia, researchers and industry professionals. The Tracks of the event are:

- Artificial Intelligence (AI) and Machine Learning (ML).
- Internet of Things (IoT) & Industry 4.0.
- Advanced Materials & Nanotechnology.
- Robotics & Mechatronics.
- Green Energy & Sustainability.
- Cybersecurity and Data Protection.
- Digital Construction & Smart Cities.
- Additive Manufacturing (3D Printing).

For further details, contact, Organising Secretary, Indian Institute of Technology Patna, Bihar-801106, Mobile No: 09852016356, 8011242454, 8247220263, 801055831, E-mail : *icateet2026.ngp@gmail.com.* For updates, log on to: *https://conference.ngpp.ac.in/* For updates, log on to*: https://conference.ngpp.ac.in/*

National Conference on Global Sustainability

The one-day National Level Conference on 'Global Sustainability: Business Innovation and Policy Initiatives towards *Viksit Bharat'* is being organised by the Department of Business Administration, St. Joseph's College of Commerce, Bengaluru, Karnataka on February 27, 2026.

Today, the world faces pressing issues like climate change, biodiversity loss and resource scarcity, refugee crisis, and social inequality that demand urgent actions for resolution. Several leaders have stressed the importance of unity, cooperation, and a collective vision in addressing these global challenges, thereby making it clear that sustainability and progress must go hand-in-hand to shape a just, resilient, and equitable future for all. The vision of *Viksit Bharat*— a developed, self-reliant, and globally connected nation— focuses on adopting growth models that balance economic progress with ecological balance and social well-being. The event is designed to provide a platform for critical dialogues, constructive knowledge transfer, and collaborative actions among thought leaders, policymakers, entrepreneurs, corporate innovators, and academic experts. The themes and Subthemes of the event are:

Innovation and Entrepreneurship

- Green Start-Ups.
- Sustainable Business Models.
- Social Entrepreneurship.
- Circular Economy.
- Waste-to-Wealth Innovations.
- Financing Sustainable Ventures.
- Policy Frameworks.
- Innovation in Rural and Grassroots Enterprises.

Banking and Finance

- Green Finance.
- ESG Investments.
- Financial Inclusion.
- Digital Banking.
- Fintech.
- Risk Management.
- Microfinance.
- Cooperative Models for Rural Prosperity Regulatory Frameworks for Sustainable Financial Systems.

Human Resource and Organisational Behaviour

- Sustainable Workplace Practices.
- Green HRM.
- Employee Well-being.
- Mental Health.
- Diversity, Equity, and Inclusion.
- Ethical Leadership.
- Future of Work: AI, Automation, and Human Adaptability.

Marketing and Communication

- Green Marketing.
- Sustainable Branding Strategies.

- Consumer Behaviour.
- Role of Digital Platforms.
- Social Media Advocacy.
- Ethical Advertising.
- Responsible Communication.
- Global Practices in Sustainability-driven Marketing.

International Business and Logistics

- Sustainable Supply Chain Management and Logistics.
- Global Trade Policies.
- Cross-Border Collaborations.
- Reducing Carbon Footprints in Logistics.
- Export Competitiveness.
- Resilient Global Value Chains Post-Pandemic.

Governance and Ethics

- Corporate Governance.
- Ethical Dilemmas.
- Public-Private Partnerships.
- Transparency, Accountability, and Anti-Corruption Measures.
- Policy Initiatives.
- Governance Frameworks for Inclusive and Equitable Growth.

Technology and Digital Transformation

- AI and Big Data for Sustainability Solutions.
- Digital Inclusion.
- Smart Cities.
- Blockchain for Transparent Business Practices.
- Renewable Energy Technologies.
- Digital Integration.
- Cyber security.

For further details, contact Convener**,** Dr. D Raja Jebasingh, St. Joseph's College of Commerce, 163, Brigade Road, Bengaluru-560025, Karnataka, Mobile No: 09886987978, E-mail: *bbanationalconference@sjcc.edu.in/ rajajebasingh@sjcc.edu.in.* For updates, log on to: *www.sjcc.edu.in* ❑

ATTENTION READERS

The government is commemorating the 150th birth anniversary of Sardar Vallabhbhai Patel with a two-year-long nationwide programme from 2024 to 2026 to honour his monumental contribution to the country. University News also invites articles on the 'Contributions of Sardar Vallabhbhai Patel to the Nation' . Authors can submit manuscripts throughout the year till September 30, 2026 to Dr Sistla Rama Devi Pani, Editor, University News, via Email: ramapani.universitynews@gmail.com, and also send a copy to: universitynews@aiu.ac.in.

Guidelines for Contributors are available on the AIU Website. For any queries, Contact Dr Yogita Kanwer on mobile no 9968469765 or Office Landline number 011-23230059, Ext 209.

Editor

THESES OF THE MONTH

SOCIAL SCIENCES
A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of Oct-Nov, 2025)

Commerce

1. Arora, Kriti Tandon. **Impact of selected behavioral biases on investment decisions of textile retailers**. (Prof. T N Mathur), Department of Financial Studies, IIS (Deemed to be University), Jaipur.

2. Dasaradhan, Suganya. **A study on repercussions of work-life balance on job satisfaction: With special reference to women employees of the IT sector in Chennai**. (Dr. K Selvasundaram), Department of Commerce, SRM Institute of Science and Technology, Kattankulathur, Chennai.

3. Kukkala, Rajani. **Banking finance for rural entrepreneurship in India: A study of select banks**. (Prof. P Rajender), Department of Commerce & Business Management, Chaitanya (Deemed To Be University), Himayatnagar, Hyderabad.

4. Lakshmi, Y. **A study on analysis of digital financial literacy among students of higher education in Hyderabad City of Telangana State**. (Prof. S Pratap), Department of Commerce & Business Management, Chaitanya (Deemed To Be University), Himayatnagar, Hyderabad.

5. Nivedha, R. **A study on extended producer responsibility: A special reference on end of life electrical and electronic equipments**. (Dr. A Irin Sutha), Department of Commerce, SRM Institute of Science and Technology, Kattankulathur,Chennai.

6. Sharma, Anurag. **A study on recent trends of corporate social responsibility and practices in business process outsourcing organisations in India**. (Dr. Neha Yajurvedi), NICE School of Business studies, Shobhit Institute of Engineering & Technology Deemed to be University, Meerut.

7. Solanki, Priyankaben Mukeshbhai. **To evaluate promotional activity of car markets and its impact on buyers during festival periods in Gujarat**. (Dr. R B Bhatasna), Department of Commerce, Saurashtra University, Rajkot.

8. Trivedi, Aditi Bhalchandra. **A study of impact of demerger on shareholders wealth maximization of selected companies in India**. (Prof. Ketan R Upadhyay), Department of Accounting and Financial Management, The Maharaja Sayajirao University of Baroda,Vadodara.

9. Yadav, Shweta. **Opportunities and challenges of green and sustainable finance in the aviation industry**. (Prof. Sanjay Kumar Hooda), Department of Commerce, Indira Gandhi University, Meerpur.

Economics

1. Alam, Mohd Shahab. **A study on the adoption of green energy technologies towards sustainable electricity consumption: A study of Delhi NCR**. (Dr. Faraz Ahmad and Prof. Ranjana Kothari), Amity Business School, Amity University, Gurugram.

2. Alka. **Public works programmes in India: A case study of Mahatma Gandhi Rural Employment Guarantee Scheme in Haryana**. (Prof. Vikas Batra), Department of Economics, Indira Gandhi University, Meerpur.

3. Dangi, Pooja. **Migrant workers and development dynamism in Haryana State**. (Prof. Sonu Madan), Department of Economics, Indira Gandhi University, Meerpur.

4. Kapoor, Tanvi. **A study on the antecedents and consequences of workplace spirituality in health care companies in Delhi NCR**. (Dr. Rishi Manrai and Dr. Monica Kapuria), Amity Business School, Amity University, Gurugram.

5. Priyanka. **Agriculture and women empowerment with special reference to Haryana**. (Prof. Satish Kumar), Department of Economics, Indira Gandhi University, Meerpur.

6. Solanki, Nimisha Prabhatsinh. **A study of the economics of the unconventional energy: With reference to the wind energy in Jamnagar District**. (Dr. Lalit L Chauhan), Department of Economics, Saurashtra University, Rajkot.

7. Tek Ram. **Agriculture productivity growth in Haryana before and after liberalisation**. (Dr. Neera Verma), Department of Economics, Kurukshetra University, Kurukshetra.

8. Vaghela, Surjanbhai Harshadbhai. **An economic analysis of use of solar panel in the residential area of Anand District**. (Dr. S G Purohit), Department of Economics, Saurashtra University, Rajkot.

9. Yadav, Manisha. **Wage inequalities across broad occupational groups in Haryana: An analysis**. (Prof. Sonu Madan), Department of Economics, Indira Gandhi University, Meerpur.

Education

1. Agarwal, Nidhi. **Prathmik Parishdiye Vidhaliyoan mein karyarat shikhshakoan kee abhiprerna tatha srijnatmakta ke sandarbh mein shikshan dakhshta ka adhyayan**. (Dr. Deepa Rana), School of Education, Shobhit Institute of Engineering & Technology Deemed to be University, Meerut.

2. Damor, Pravinsinh Mukulbhai. **Grammatical knowledge, vocabulary and writing achievement of 12th standard students**. (Dr. Nitinkumar Dhadhodara), Department of Education, Gujarat Vidyapith, Ahmedabad.

3. Insha Rasool. **Happiness, persuasion and academic procrastination among students pursuing professional courses in Kashmir**. (Dr. Mohammad Yousuf Ganai and Dr. Mohammad Amin Dar), Department of Education, University of Kashmir, Srinagar.

4. Jajal, Ila Natavarlal. **Construction and effectiveness of CAI program for teaching selected unit of English grammar at higher secondary level**. (Dr. Shraddha B Barot), Department of Education, Saurashtra University, Rajkot.

5. Lalhruaitluanga, H. **Centrally sponsored scheme of teacher education and total quality management of teacher education institutions in Mizoram: An analytical study**. (Prof. Lynda Zohmingliani), Department of Education, Mizoram University, Aizawl.

6. Lalsangpuii, C. **Mathematics anxiety and academic achievement in mathematics among secondary school students of Mizoram and Meghalaya**. (Prof. Lynda Zohmingliani), Department of Education, Mizoram University, Aizawl.

7. Limbola, Pratigna Hirabhai. **Construction and effectiveness of English language skills development program for the students of standard eighth**. (Dr. Shraddha B Barot), Department of Education, Saurashtra University, Rajkot.

8. Shazia Jan. **Academic burnout among undergraduate students: The role of psychological capital and self-regulated learning**. (Prof. Amina Parveen), Department of Education, University of Kashmir, Srinagar.

9. Shukla, Swati. **Assessment literacy and its practices in teaching-learning process at school level**. (Dr. Elizabeth Kuruvilla), School of Education, Indira Gandhi National Open University, New Delhi.

Home Science

1. Shah, Mitali Atul. **A study for revival of Indian Chintz design for its sustainability**. (Prof. Madhu Sharan), Department of Clothing and Textiles, The Maharaja Sayajirao University of Baroda, Vadodara.

Journalism and Mass Communication

1. Agrawal, Chitralekha. **Emerging business models of newspapers and their impact of editorial content: A study of select national newspapers of India**. (Dr. Sayan Dey), Department of Mass Communication, Mizoram University, Aizawl.

2. Ruatpuii, V L. **An ethnographic study of media in the autonomous district councils of Mizoram**. (Prof. Irene Lalruatkimi), Department of Mass Communication, Mizoram University, Aizawl.

3. Salai Tamilarasan, S. **Empirical study of the artistic elements of statues erected during the British period in the Chennai City (1800 to 1935): With reference to their ideological perception**. (Dr. Rajesh R), Department of Journalism and Mass Communication, SRM Institute of Science and Technology, Kattankulathur, Chennai.

Law

1. Abhyankar, Kalyani. **E-Commerce and consumer protection laws in India and European Union: A comparative perspective**. (Dr. Monica Raje), Department of Law, National Law Institute University, Bhopal.

2. Agrawal, Arnim. **Law, environment and media: A socio-legal analysis**. (Prof. Sudha Garg), School of Law and Constitutional Studies, Shobhit Institute of Engineering & Technology Deemed to be University, Meerut.

3. Bajpai, Kavindra Kumar. **A socio-legal study of sexual harassment and rape laws in India: With special reference to marital rape**. (Dr. Praveen Kumar Mall), Faculty of Juridical Sciences, Rama University, Kanpur.

4. Bali, Vasudha. **Sports law in India: Towards gender equality**. (Prof. S Sivakumar), Department of Law, The Indian Law Institute, New Delhi.

5. Bhagat, Kanaiyalal Parindu. **One Nation - One Election: A critical legal study**. (Dr. Purvi Pokhariyal), Faculty of Law, Nirma University, Ahmedabad.

6. Bharti, Neha. **A study of artificial intelligence in Indian criminal justice system: A future roadmap**. (Dr. Mohd Imran and Dr. Nitesh Kumar Upadhyay), School of Law and Constitutional Studies, Shobhit Institute of Engineering & Technology Deemed to be University, Meerut.

7. Bohria, Payal. **Prisoners rights under International Law: A critical evaluation**. (Dr. Indra Kumar Singh and Dr. Abhishek Kumar Singh), Amity Law School, Amity University, Gurugram.

8. Dubey, Deepa. **Legal aspects of citizenship: A critical legal study**. (Dr. Purvi Pokhariyal), Faculty of Law, Nirma University, Ahmedabad.

9. Jain, Ruchi. **Commercializing space mining and planetary protection: Legal issues and challenges**. (Dr. Sushma Sharma), Department of Law, National Law Institute University, Bhopal.

10. Jaiswal, Ayush. **Best practice in legal education and research: A comparative analysis**. (Dr. Ghayur Alam), Department of Law, National Law Institute University, Bhopal.

11. Kanodia, Sakshi. **Gender neutrality under the Indian Criminal Laws, 2023: A critical study**. (Prof. Ajay Kumar Bhatt Dr. Phool Chandra Saroj), Amity Law School, Amity University, Gurugram.

12. Kshetri, Navshesh Bikram. **Role of National Green Tribunal in delivering environmental justice: A study with special reference to Central Zone Bench, Bhopal**. (Dr. Rajiv Khare), Department of Law, National Law Institute University, Bhopal.

13. Mali, Jayeshkumar Shivrambhai. **Changing contours of banking frauds in India and Its legal control: A study**. (Dr. Chhotelal Yadav), Faculty of Law, Nirma University, Ahmedabad.

14. Maruti, Kotwal Aum. **Article 370 and Indian federalism: An analytical study**. (Dr. Purvi Pokhariyal), Faculty of Law, Nirma University, Ahmedabad.

15. Mishra, Samata. **Role of women police in combating violence against women: A study on the Police Commissionerate of Bhubaneswar and Cuttack, India**. (Dr. Sthita Prajna Mohanty), KIIT School of Law, Kalinga Institute of Industrial Technology, Bhubaneswar.

16. Mohanty, Rajmani. **Freedom of press in India: In the light of the World Press Freedom Index Ranking**. (Dr. Shyamantak Misra), KIIT School of Law, Kalinga Institute of Industrial Technology, Bhubaneswar.

17. Mradul Singh. **Law of sedition: Issues and challenges in the contemporary era**. (Dr. Sanjay Yadav), Department of Law, National Law Institute University, Bhopal.

18. Nigam, Amulya. **Climate justice and rights of farmers In India: A socio legal study**. (Dr. Madhuri Parikh), Faculty of Law, Nirma University, Ahmedabad.

19. Nimbaa, Hira Lal. **Industrial pollution from hazardous substances: An assessment of legal regime**. (Dr. Arya A Kumar), Department of Law, The Indian Law Institute, New Delhi.

20. Pandey, Tanya. **Implementation of transgender rights in the State of Jharkhand: A socio-legal study**. (Dr. Sthita Prajna Mohanty), KIIT School of Law, Kalinga Institute of Industrial Technology, Bhubaneswar.

21. Sharma, Vaasawa. **Digital challenges in law of copyright infringement: A critical study with Indian perspective**. (Dr. Shiv Raman and Prof. K B Asthana), Amity Law School, Amity University, Gurugram.

22. Taddesse, Soloman Girma. **Protection of refugees in armed conflicts: Promise and performance of Ethiopia**. (Dr. S Surya Prakash), Department of Law, National Law Institute University, Bhopal.

23. Yadav, Tejender Pal. **Impact of digitalisation on right to privacy in India: A critical study**. (Prof. Somdutt Bhardwaj and Dr. Archna Sehrawat), Amity Law School, Amity University, Gurugram.

Library and Information Science

1. Bano, Shohar. **Assessing emotional instability and coping strategies of library and information science professionals in Jammu and Kashmir**. (Prof. Sumeer Gul and Dr. Mohd Muzamil Kumar), Department of Library and Information Science, University of Kashmir, Srinagar.

Management

1. Bharathi, S Suganya. **Understanding the role of safety stressors, GRIT and handover practices in enhancing nurses safety behavior**. (Dr. Celina A), Department of Management Studies, SRM Institute of Science and Technology, Kattankulathur, Chennai.

2. Bisht, Krittika. **Students perspective on employability of management graduates in Rajasthan**. (Dr. Poonam Madan), Department of Management Studies, IIS (Deemed to be University), Jaipur.

3. Dendru, Asif Maqbool. **Determinants of financing and financial risk of hydro-power projects in J & K: An empirical analysis**. (Prof. Bashir Ahmad Joo), Department of Management Studies, University of Kashmir, Srinagar.

4. Garg, Sonakshi. **A study of conversational marketing tools and its impact on customer engagement**. (Dr. Mukesh Sharma), School of Management Studies, Sangam University, Bhilwara.

5. Koul, Shikha. **An analytical study of policy framework in promoting women entrepreneurship in India: A study of Delhi-NCR**. (Dr. Anuj Goel), NICE School of Business studies, Shobhit Institute of Engineering & Technology Deemed to be University, Meerut.

6. Madapana, Karteek. **An empirical study on empowering rural women through Self-Help Groups and microfinance with reference to Rayagada District, Odisha**. (Dr. N V Jagannadha Rao), School of Management Studies, GIET University, Gunupur.

7. Malarvizhi, S Jenifer Ruth. **Facets of work family conflict and life satisfaction: The mediating role of employee engagement concerning the IT sector of India**. (Dr. Vijaya Rani S), Department of Management Studies, SRM Institute of Science and Technology, Kattankulathur, Chennai.

8. Marirajan, M. **Emotional intelligence, inter-partner compatibility, digital transformation and innovation and its impact on export performance of entrepreneurs in MSME engineering service sectors**. (Dr. Prabadevi M N), Department of Management Studies, SRM Institute of Science and Technology, Kattankulathur, Chennai.

9. Namita Priya. **Comparative study of Workplace Wellness Programs (WWP) in private and government healthcare sectors in Odisha**. (Dr. Ipseeta Satpathy), KIIT School of Management, Kalinga Institute of Industrial Technology, Bhubaneswar.

10. Safura Altaf. **Relationship between financial development and economic growth in developing nations: Evidence from India**. (Prof. Bashir Ahmad Joo), Department of Management Studies, University of Kashmir, Srinagar.

11. Saleh, Sally. **A study on employee engagement and retention in Syrian health care sector**. (Dr. Gajendran A), Department of Management Studies, SRM Institute of Science and Technology, Kattankulathur, Chennai.

12. Sing, Nang Biak. **An empirical analysis of the adaptive market hypothesis, market environment and investors sentiment in natural calamities**. (Prof. Rajkumar Giridhari Singh and Dr. Lalropuii), Department of Management, Mizoram University, Aizawl.

13. Tripathy, Prativa. **A study on living wage and its impact on workers in unorganised sector in Odisha**. (Dr. Prasanta Kumar Parida), KIIT School of Rural Management, Kalinga Institute of Industrial Technology, Bhubaneswar.

14. Yadav, Archana. **An empirical study on consumer buying behaviour of women with special reference to gold jewelry in National Capital Region**. (Dr. Preeti Garg), NICE School of Business studies, Shobhit Institute of Engineering & Technology Deemed to be University, Meerut.

Physical Education and Sports

1. Jadav, Kamleshbhai Harshadbhai. **Study of the effects of yoga and recreational sports on physiological aspects and psychological aspects**. (Dr. Geetabahen Patel), Department of Physical Education, Gujarat Vidyapith, Ahmedabad.

2. Motivaras, Dharmesh Jayantilal. **Comparative study of physical ability, mental health and adjustment of athletes selected in sports school of Saurashtra Area**. (Dr. Jaydeepsinh B Chauhan), Department of Physical Education, Saurashtra University, Rajkot.

3. Parmar, Dharmesh Dineshbhai. **A study of the effect on resistance running and plyometric training on cardiovascular endurance, respiratory capacity, explosive strength, speed and aspects of body composition**. (Dr. Jaydeepsinh B Chauhan), Department of Physical Education, Saurashtra University, Rajkot.

4. Solanki, Dipesh Prakashbhai. **Effects of combined training on physical fitness and physiological aspects**. (Dr. Kamleshkumar Patel), Department of Physical Education, Gujarat Vidyapith, Ahmedabad.

Political Science

1. Badana, Tahir Mohi Ud Din. **Tribal politics in Jammu and Kashmir: A case study of the Gujjar-Bakerwal Community**. (Dr. Aijaz Ashraf Wani), Department of Political Science, University of Kashmir, Srinagar.

2. Lalruatfela, Samuel. **Local self-governments in rural areas: A comparative study of Mizoram and Arunachal Pradesh**. (Prof. K V Reddy), Department of Political Science, Mizoram University, Aizawl.

Psychology

1. Chopra, Juhi. **Study of relationship between parenting styles and psychological wellbeing in adolescents in government and private schools in Meerut**. (Prof. Poonam Devdutt), Centre for Psychology and Human Behaviour, Shobhit Institute of Engineering & Technology Deemed to be University, Meerut.

2. Priyanka. **A study of stress, depression and coping strategies among mothers of children with Cerebral Palsy (CP)**. (Dr. Habibullah Ansari), Division of Social Psychology, Aryabhatta Knowledge University, Patna.

Public Administration

1. Arya, Bhupendra. **Performance of Higher Education in Rajasthan: Comparative and administrative study of Mohanlal Sukhadia University, Udaipur and Government Meera Girls College, Udaipur**. (Dr. S K Kataria), Department of Public Administration, Mohanlal Sukhadia University, Udaipur.

Social Work

1. Khan, Aimon. **Dynamics of the marriage institution: A study on single mother in Kashmir**. (Dr. Aadil Bashir and Prof. Showkat Ahmad Shah), Department of Social Work, University of Kashmir, Srinagar.

2. Lalremruata, R T C. **Employment guarantee and rural development: Implementation and impact of MNREGS in Mizoram**. (Dr. C Lalengzama), Department of Social Work, Mizoram University, Aizawl.

Sociology

1. Beaula, A Margret. **Prevalence and risk factors of tooth morbidity among the elderly Irula Tribal population of Tamil Nadu**. (Dr. Alex Jose), Department of Public Health, SRM Institute of Science and Technology, Kattankulathur, Chennai.

2. Krishna Kumari. **Gender Socialization teaching and learning processes: A study of selected primary schools in Delhi**. (Dr. G Uma), School of Gender and Development Studies, Indira Gandhi National Open University, New Delhi.

3. Ralte, Lawmsangpuia. **Inclusive development of women with disabilities in Mizoram**. (Prof. R K Mohanty), Department of Sociology, Mizoram University, Aizawl.

4. Wani, Nadeem Ahmad. **A sociological study of family planning among Gujjar Tribal Muslims in Kashmir**. (Prof. Aneesa Shafi), Department of Sociology, University of Kashmir, Srinagar.

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AGNEL INSTITUTE OF TECHNOLOGY & DESIGN

AGNEL TECHNICAL EDUCATIONAL COMPLEX, ASSAGAO, BARDEZ, GOA – 403507

Tel: 9975797916 • E-mail: prinaitd@aitdgoa.edu.in • Website: www.aitdgoa.edu.in

AITD invites applications for the following positions:

Sr. No.	Department	Designation	Nature of Appointment
01	Mechanical & Automation Engineering	Associate Professor – 01 Post	Regular
02	Library	College Librarian – 01 Post	Regular

ESSENTIAL REQUIREMENTS:

- For Sr. No: 1, Qualifications are strictly as per AICTE norms. For further details kindly visit: www.aicte.gov.in
- For Sr. No: 2, Qualifications are strictly as per UGC norms. For further details kindly visit: www.ugc.gov.in
- For Regular positions: 15 years Residence/Domicile Certificate in Goa issued by the competent authority (Office of Mamlatdar).

The application form may be downloaded from our website: www.aitdgoa.edu.in. Interested candidates are requested to send hard copies of their applications along with self-attested copies of all relevant certificates and a recent photograph to "THE PRINCIPAL" within 15 days from the release of this advertisement to the above-mentioned address.

Sd/
Fr. Agnelo Gomes
Director, ATEC

JAIHIND GRAMONNATI SANSTHA, SALGAON
PRAMOD RAVINDRA DHURI ADHYAPAK MAHAVIDYALAYA

Salgaon,Tal. - Kudal, Dist. – Sindhudurg

APPLICATIONS ARE INVITED FOR THE FOLLOWING POSTS FROM THE ACADEMIC YEAR 2025-26:

UNAIDED

Sr. No.	Cadre	Subject	Total No. of Posts	Post Reserved for				
				SC / ST	DT (A)	OBC	EWS/SEBC	OPEN
1	**Principal**	-	01	-	-	-	-	01
2	**Assistant Professor**	Education (Method - Marathi, English, Hindi, Sanskrit, Science, Mathematics, History, Geography, Economics and Commerce.)	06	01 – SC/ST	01	01	01 – SEBC/EWS	02
3	**Librarian**	-	01	-	-	-	-	01

The posts reserved for the Backward Class candidates will be filled in by backward category candidates. (Domicile of State of Maharashtra) belonging to that particular category only. Reservation for women will be as per University Circular No. BCC /16/74/1998 dated 10th March, 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 05th July, 2019.

Candidates having knowledge of Marathi will be preferred.

"Qualification, Pay Scales and other requirement are as prescribed by the UGC Notification dated 18th July, 2018, Government of Maharashtra Resolution No. Misc-2018/C.R.56/18/UNI-1, dated 08 March, 2019 and University circular under No. TAAS/(CT)/ ICD/2018-19/1241, dated 26th March, 2019 and revised from time to time."

The Government Resolution & Circular are available on the website: mu.ac.in.

Applicants who are already employed must send their application through proper channel.

Applicants are required to account for breaks, if any in their academic career.

Application with full details should reach the Secretary, Jaihind Gramonnati Sanstha, Salgaon, C/O Lokmanya Education Office, Rameshwar Plaza, Beside Jagannath Pednekar Jewellers, Sawantwadi, Taluka - Sawantwadi, Dist. – Sindhudurg 416510, within 15 days from the date of publication of this advertisement. **This is University approved advertisement.**

Sd/-
Secretary

SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

Sankalchand Patel University is a state private university established vide Gujarat Private Universities Act 09/2016 and recognized by the UGC under section 2(f) of the UGC Act. Spread over 84 acres with best-in-class infrastructure, the University comprises 14 Faculties (Disciplines) and 14 constituent colleges, offering programs in Technical, Management, Science & Commerce, Medical, Dental, Homoeopathy, Ayurveda, Nursing, Physiotherapy, and Allied Health Sciences, along with an 800+ bed multi-speciality hospital on campus.

Applications are invited for the following academic positions;

Sl. No.	Position	Department / College	No. of Posts
1.	**Principal**	Nootan College of Physiotherapy	01
2.	**Principal**	Nootan College of Pharmacy	01
3.	**Principal**	Sankalchand Patel College of Engineering	01
4.	**Director**	Technical Programs	01

Last Date to Apply: 21/12/2025

For eligibility criteria and application procedure, please visit the University website at **https://spu.ac.in/career/**

Dayanand Education Societys,

DAYANAND INSTITUTE OF PHARMACY, LATUR

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WANTED

YEAR: 2025-26

Applications are invited for the following posts to be filled in DES's Dayanand Institute of Pharmacy, Latur (Permanent Non-Grant). Eligible candidates should submit their application with all necessary documents **within 15 days** from the date of publication of this advertisement by registered post only.

Sr. No.	Post	Subject	Total Posts	Post Reservation
1	**Professor**	Pharmaceutics	04	Open-01, SC-01, VJ(A)-01, OBC-01
		Pharmaceutical Chemistry including Analysis		
		Pharmacology		
		Pharmacognosy		
2	**Associate Professor**	Pharmaceutics	04	Open-01, SC-01, VJ(A)-01, OBC-01
		Pharmaceutical Chemistry including Analysis		
		Pharmacology		
3	**Assistant Professor**	Pharmaceutics	07	Open-02, SC-01, ST-01, VJ(A)-01, OBC-01, SEBC-01
		Pharmaceutical Chemistry including Analysis		
		Pharmacology		
		Pharmacy Practice		
		Pharmacognosy		
(Note: MS Government Resolution Dated 25.01.2024, Reservation Should be implemented Parallel for women as Professor post- 01,Associate Professor post 01, Assistant Professor Post -02)				

Qualification & Pay Scale as per the UGC, PCI, New Delhi & S.R.T.M.University, Nanded, (M.S) rules from time to time. **A**) Prescribed application form, required qualification and experience is available on the website www.srtmun.ac.in, for more details visit www.dayanandiop.org **B**) No T.A. /D.A. will be paid to attend the interview. **C**)All reserved category candidate send one copy of Application Form with documents to special cell SRTM University, Nanded. (M.S)

Address for correspondence:
The Principal,
Dayanand Institute of Pharmacy, Barshi Road, Latur-413531, MS.

Sd
President/Secretary
Dayanand Education Society Latur

Ratnagiri Education Society's

SHRIMAN BHAGOJISHETH KEER LAW COLLEGE

Near Late Sou. Indirabai Vishnupant Kulkarni (G.J.College) Boy's Hostel Complex,
Adv. N. V. Joshi Marg, Ratnagiri – 415 612

APPLICATIONS ARE INVITED FOR THE FOLLOWING POSTS
FROM THE ACADEMIC YEAR 2025-26.

UN-AIDED

Sr. No.	Cadre	Subject	Total No. of Posts	Post for Reserved for
1.	Principal	--	01	01 - OPEN
2.	Assistant Professor	Law	16	SC – 02, ST – 01, DT(A) – 01, NT (B) – 01 OBC -03, SEBC – 02, EWS – 02, OPEN - 04
3.	Librarian	--	01	01 - OPEN

For Assistant Professor (Horizontal Reservation)
Persons with Disability Total Posts – 01 (A Group – B./LV. – 01 Post),
Sportsmen – 01 Post

The posts for the reserved category candidates will be filled by the same category candidates. (Domicile of State of Maharashtra) belonging to that particular category only.

Reservation for women will be as per **University Circular No. BCC/16/74/1998 dated 10th March, 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 05th July, 2019.**

Candidates having knowledge of Marathi will be preferred.

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Applicants who are already employed must send their application through proper channel. Applicants are required to account for breaks, if any in their academic career.

Applications with full details should reach the **SECRETARY, Ratnagiri Education Society, Adv. N. V. Joshi Marg, Ratnagiri – 415612, within 15 days** from the date of publication of this advertisement. **This is University approved advertisement.**

Sd/-
SECRETARY

ENCYCLOPAEDIA OF SCHEDULED CASTES IN INDIA

Nandu Ram

Volume: 5 Vols. ISBN: 978-81-2120-588-7 (Set)
Price: 23400/ (5 Vols. HB Set) Size: (8.50x11")

Indeed, the "Encyclopaedia of Scheduled Castes in India" sounds like an incredibly comprehensive and valuable resource. Its thorough examination of over a thousand individual Scheduled Castes across different regions of India, along with its focus on social change and mobility, provides a rich understanding of the complex dynamics within these communities. By delving into various aspects such as origins, demographics, cultural practices, and socio-economic factors, the encyclopedia offers insights into the historical and contemporary experiences of Scheduled Castes in India.

Moreover, the emphasis on analyzing changes in traditional caste hierarchies and the evolving status of Scheduled Caste members in education and employment underscores the importance of understanding the societal shifts and challenges faced by these communities over time. This scholarly work not only contributes to academic research but also serves as a valuable resource for policymakers, activists, and individuals interested in promoting social justice and equality in India.

Overall, the "Encyclopaedia of Scheduled Castes in India" stands as a significant contribution to the study of caste dynamics and social change in India, providing a comprehensive and nuanced portrayal of the experiences of Scheduled Castes across different regions of the country.

South Zone (Volume 1) 382, West Zone (Volume 2)-168, Central Zone (Volume 3) 158, North Zone (Volume 4) 247, East and North East Zone (Volume 5) 286, Total of 1109 individual Scheduled Castes.

Nandu Ram, currently the Dr. Ambedkar Chair Professor of Sociology at Jawaharlal Nehru University, New Delhi, previously served as Director General of Dr. Babasaheb Ambedkar National Institute of Social Sciences. With 30 years of teaching and research experience at I.I.T. Kanpur and J.N.U., he specializes in sociology of marginal groups, minorities, social stratification, and rural-urban dynamics. Renowned for his alternative perspective "views from below," he has authored influential works like "Mobile Scheduled Castes" and "Beyond Ambedkar," and edited the "Encyclopaedia of Scheduled Castes in India." Currently, he has forthcoming volumes on Dalits in Contemporary India and oversees a proposed series in Dalit Studies.

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Announcement for Special Issues of 'University News'

Special Numbers of the University News on two different themes are being brought out on the occasion of AIU Zonal Vice Chancellors' Meets—2025-26. The Special Numbers will cover the articles invited from eminent educationists and practitioners of higher education. 'University News' invites you, the Readers, also to contribute to the Special Numbers by submitting papers/articles. You can find details below:

THEME 1: PROMOTING ENTREPRENEURSHIP AND STARTUPS IN HIGHER EDUCATION INSTITUTIONS (HEIS)

Special Issue on this theme will be brought out on **January 19, 2026** on the occasion of South Zone Vice Chancellors' Meet—2025-26 to be held at M S Ramaiah University of Applied Sciences, Bengaluru on **January 20-21, 2026**. Subthemes for this Special Issue are:

- ***Education for Increasing Entrepreneurship Mindset in Students.***
- ***Establishing Incubation and Innovation Centres to Promote Techno-Nationalism.***
- ***University–Industry Collaboration for Startup Development.***

The last date for submission of articles for this Special Issue is January 03, 2026.

THEME 2: CREATING AI AND QUANTUM-ENABLED HEIS

Special Issue on this theme will be brought out on February 16, 2026 on the occasion of Central Zone Vice Chancellors' Meet—2025-26 to be held at Osmania University, Hyderabad on **February 19-20, 2026**. Subthemes for this Special Issue are:

- ***Integrating AI and Quantum Technologies into Higher Education Curriculum, Pedagogy and Governance.***
- ***AI-Driven Indigenous Research and Product Development.***
- ***Global Regulatory Framework for AI and Ethics in AI.***

The last date for submission of articles for this Special Issue is February 06, 2026.

Manuscripts may be sent to Dr Sistla Rama Devi Pani, Editor, University News, Association of Indian Universities, AIU House, 16 Comrade Indrajit Gupta Marg (Kotla Marg), New Delhi- 110 002, through E-mail: *ramapani.universitynews@gmail.com* with a copy to: *universitynews@aiu.ac.in.* Guidelines for contributors are placed on the AIU Website, *www.aiu.ac.in*. Papers will be published in the Issue, subject to the approval of the Editorial Committee of the University News. In case of space or time constraints, the articles submitted for these Issues can also be considered for publication in the general Issues.

Interested Universities/Institutions, Government Agencies, Publishers or recognised and reputed Organisations dealing with Education may give their Advertisement for publication in the Special Issues. The Issues will have Special visibility. Advertisement Tariff is available on the AIU Website: *www.aiu.ac.in*

For any queries, Contact Dr Yogita Kanwer on her mobile number 09968469765 or office landline number 011-23230059, Ext. 209.

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