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Themes/Subthemes for the Special Issues of University News-2023-24

S. No.	Zonal Vice Chancellors' Meets-2023-24	Theme/ Subthemes for Special Issues	Last Date to Contribute*	Date of Publication
1.	**East Zone**	**Integrating Bhartiya Knowledge System (BKS) with Higher Education** *Subthemes* • Using Bhartiya Knowledge System-based Approach for Teaching-learning for Holistic Development. • Bhartiya Knowledge System in Sustainable Development. • Embedding Bhartiya Knowledge System for Futuristic Education. • Ancient Bharatiya Wisdom in Modern Context: Everlasting Relevance of Indian Knowledge System Heritage for Human Development. • Return of the Vishwa Guru Status: Strategies to Maintain and Propagate Ancient Indian Wisdom for Global Welfare. • Embedding Indian Traditional Knowledge into Advanced Scientific Research and Futuristic Technology to Optimise the Advantages. • Traditional Tribal Knowledge Treasure in India: How to Make Best Use of. • Challenges in Communication and Dissemination of Traditional Knowledge.	November 12, 2023	November 20-26, 2023
2.	**West Zone**	**Future of Work and Skill Development** *Subthemes* • Sustainable Careers: Navigating a Dynamic Workplace • Human-centered Skills in a Tech-driven World: Soft Skills and Emotional Intelligence • Resilience & Adaptability: Impact of Gig Economy on Higher Education	December 04, 2023	December 18-24, 2023
3.	**Central Zone**	**Nurturing Research and Innovation Ecosystem** *Subthemes* • Collaborative Research Networks: Fostering Inter-disciplinary Research • Entrepreneurship and Innovation: From Idea to Impact • Innovative Funding Models for Research	January 01, 2024	January 15-21, 2024
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*The Articles may be submitted to The Editor, University News, Association of Indian Universities, New Delhi through E-mail: *ramapani.universitynews@gmail.com* and *universitynews@aiu.ac.in* on or before the last date mentioned above.

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In This Issue

Salute to the Freedom Fighters: AKAM Celebration Everyday

Digambar Shirke,* Avanish Patil ** and Dattatraya Machale***

In the grand tapestry of India's history, there are those heroes whose names may not be as widely recognized as Mahatma Gandhi, Jawaharlal Nehru, or Subhash Chandra Bose, yet their contributions to the nation's freedom struggle are no less significant. These unsung heroes, who toiled in the shadows, dedicated their lives to the cause of independence, and their stories have often remained hidden, waiting for the light of recognition to shine upon them. The 'Salute to the freedom fighters' (*Abhivadan Swatantra Sainikanna*) programme organized by Shivaji University, Kolhapur, Maharashtra, embarked on a mission to unveil and honor these local heroes, ensuring that their legacies are celebrated every day. Starting from August 15, 2022, through August 15, 2023, Shivaji University released one video podcast every day, relaying the contributions of 366 freedom fighters from the South Maharashtra region, consisting of the Kolhapur, Satara, and Sangli districts. These podcasts were broadcast on ShivVani, the YouTube channel of Shivaji University every morning at 9:00 a.m., without a single day's pause.

The Genesis of 'Salute to the Freedom Fighters'

The year 2022 marked the 75th anniversary of India's independence, a landmark occasion in the nation's history. It was not merely a commemoration of a singular event but an opportunity to reflect on the countless sacrifices made by freedom fighters who dedicated their lives to securing India's liberty. We wanted to do something unique, a fitting tribute to the people who participated in the freedom struggle. The 'Salute to the Freedom Fighters' programme was born out of this spirit of remembrance, celebration, and gratitude.

As part of the *Azadi ka Amrut Mohatsav* (AKAM) celebrations, the Vice Chancellor and other officials of the university visited an exhibition of posters and short biographies of important national freedom fighters in an affiliated college. They were deeply moved by the stories of the courage and determination of the freedom fighters. This visit sparked a remarkable idea—to create a programme that could offer a similar sense of inspiration, courage, and determination to both students and the wider community, presented in an accessible format. Recognizing the potential for even greater relevance, it was decided that the program would focus on freedom fighters from within

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the jurisdiction of the university. On August 8, 2022, a special meeting was convened at the Department of History to brainstorm and create a blueprint for the program. In the meeting, the Vice-Chancellor insisted on collaborative and participatory approaches among all the stakeholders of the university while organizing this activity.

Honoring Forgotten Heroes

The vision of the programme was to shed light on the forgotten heroes who had played instrumental roles in the freedom struggle but had not received the recognition they deserved. The focus was on the districts of Kolhapur, Sangli, and Satara, rich in historical significance and home to numerous unsung heroes. The 'Salute to the freedom fighters' program was set in motion, with specific objectives that would bring these local heroes out of the shadows and into the national consciousness.

Collecting the Stories of Unsung Heroes

One of the primary objectives of the Programme was to collect and disseminate information about freedom fighters, both known and unknown, who had contributed to the local, regional, and national freedom struggle. This responsibility was entrusted to the faculty of the Department of History. The challenge was to compile details about these freedom fighters, verify the authenticity of their contributions, and prepare them for dissemination to a wider audience. The department's efforts focused on the districts of Sangli, Satara, and Kolhapur, each with its own unique history of freedom struggle.

The task of dissemination of the information was given to the Public Relations Officer of the University, who used the YouTube channel of the University, ShivVani, to host the podcasts. Our decision to share the stories of freedom fighters through modern technology had significant consequences for the success of the programme, as it allowed the podcasts to reach a much wider audience than traditional methods of dissemination such as print or broadcast media. The video podcast about each freedom fighter lasted between 3 and 10 minutes, and was in the regional language of Marathi, making it easy to listen to and share. It often featured a photograph of the freedom fighter, whenever available. This format also made the podcasts accessible to people with disabilities and to people who may not have time to read long articles or watch lengthy videos. The use of ShivVani to host the podcasts was also a significant factor in the success of the initiative. This meant that the podcasts were able to reach a large and engaged audience. It allowed the stories of freedom fighters to be shared with a wide audience in a modern and accessible format.

We insisted on producing the 'Salute to the Freedom Fighters' podcasts with in-house talent and resources, including the digital studio and technical expertise of our staff. The engaging voice of a female Research Scholar of the Marathi Department gave warmth and a special touch to the narrative. Moreover, this kept the production cost for the project at a minimum.

A Collaborative Effort: Involving Educational Institutions

Recognizing the magnitude of the task on hand, we adopted a collaborative approach by involving educational institutions, particularly the colleges affiliated with Shivaji University. The hope was to engage not only students but also faculty members and the broader academic community in this tribute to unsung heroes.

A significant decision was made by the Board of Studies in History, one that would play a pivotal role in the 'Salute to the Freedom Fighters' program. The decision was clear and purposeful: students of B. A. Part- III (History) from various colleges affiliated with Shivaji University were assigned a unique academic assignment: to collect and compile information about local freedom fighters. This assignment carried a weightage of 10 marks, making it not just a routine task but a substantial academic endeavor. Over 1000 students enthusiastically participated in this endeavor, making it a widespread academic undertaking. It was a remarkable fusion of academia and history, an opportunity for students to bridge the gap between textbooks and the living legacies of their own communities. This decision empowered students to become torchbearers of these stories, ensuring that the sacrifices and valor of local freedom fighters would be preserved for future generations. It was the beginning of a concerted effort, on our part, to involve the academic community in the research and documentation of these unsung heroes.

Local Colleges as Beacons of Recognition

Affiliated Colleges played a pivotal role in bringing the stories of local heroes to the forefront. A

group of colleges appointed a coordinator responsible for overseeing the research project titled 'Salute to the Freedom Fighters'. About 29 college coordinators and more than 80 faculty members were involved in the activity. Students embarked on a mission to uncover the hidden histories of their regions, often involving interviews with elderly residents, archival research, and visits to local historical sites. The involvement of colleges meant that entire academic communities, including students, faculty members, and administrative staff, became stakeholders in the program. These institutions became beacons of recognition for the local heroes, fostering a sense of pride in their communities.

District Coordinators: The Bridge to Communities

To ensure the success of the program, three teachers, one each from the three districts were given the responsibility of district coordinators. They played a crucial role in bridging the gap between the university and colleges. These coordinators, mostly history professors, served as the linchpin for the collection of information about freedom fighters. They facilitated the handover of research from college coordinators to the faculty of the history department. Their deep-rooted connections to their communities and their passion for history made them instrumental in highlighting the contribution of local heroes.

Preserving the Legacy

Collaboration was the heartbeat of the program. Recognizing the collective responsibility of preserving these legacies, the program brought together students, educational institutions, local communities, and experts. It was an array of stories interwoven by the hands of many, each contributing their unique perspective. The information collected from various sources was intended to be combined with video podcasts. This merger of media created a rich and engaging narrative, making history come alive. But the challenge was to ensure that the video podcast was broadcast daily, creating a steady stream of stories. We overcame this challenge by rotating the collection of information. Local professors under the jurisdiction of district coordinators played a pivotal role in collecting and sending information on a rotating basis.

A Platform for Recognition: Public Awareness Campaigns

We understood the importance of public awareness campaigns in recognizing and honoring local heroes. These campaigns included media coverage, workshops, and quiz competitions that showcased the contributions of unsung heroes. Local newspapers featured news related to the program, and the university authorities used to make mention of this activity in most of the student-centric functions of the university and invited the participation of the students at least as a viewer. This extensive media coverage ensured that the broader public, both within and beyond the region, became aware of the program and through it of the significant contributions of these unsung figures. This made a significant impact in generating a big pool of freedom fighters in the jurisdiction of the University.

Educational Initiatives: Inspiring Future Generations

The involvement of colleges in the region ensured that not only students but also faculty and staff members became aware of local heroes. The collection of information related to the freedom fighters by the students and faculty fostered a deeper understanding of the history of the nation. The stories of local heroes became valuable teaching tools in classrooms and online learning environments. Students were not merely passive recipients of history but active participants in uncovering and preserving it. This hands-on approach to history education inspired a sense of responsibility and active citizenship among the youth.

Preserving Legacies for Posterity

The documentation of local heroes' stories was more than just a present recognition; it was a promise to preserve their legacies for posterity. Archival work played a pivotal role in ensuring that these narratives would stand the test of time. The information collected and video podcasts produced became part of the Oral Archives of the University, a repository of invaluable historical accounts. We wanted this archive to serve as a lasting tribute to the unsung heroes, ensuring that their stories would not be lost to time.

The 'Salute to the Freedom Fighters' program highlighted the contributions of 366 unsung local

heroes, including Vishnu Barpate, Tukaram Bharmal, Gopal Farakte, and Parashuram Gharge. Vishnu Barpate, a brave freedom fighter from Kameri in Walwa taluka of Sangli district, actively participated in the historic march on the Islampur Tehsildar Office on September 10, 1942, displaying unwavering resolve and determination. Tragically, he was martyred when he fell victim to police gunfire during this courageous march.

Similarly, the story of Tukaram Ramchandra Bharmal, a young freedom fighter from Murgud in Kagal Taluka of Kolhapur District, is a testament to youthful valor. At the tender age of 17, he joined the Quit India Movement of 1942, exemplifying the spirit that characterized his generation. Tragically, his unwavering dedication to the cause of freedom led to a fateful encounter with the police, resulting in his untimely martyrdom. Tukaram Bharmal paid the ultimate price for his commitment to the struggle for independence, becoming a symbol of the sacrifices made by countless heroes during India's fight for freedom.

Kasba Walve, located in Radhanagari taluka of Kolhapur, witnessed the heroic sacrifice of Gopal Balwant Farakte, a resolute freedom fighter who faced brutal beatings while incarcerated in 1945. His unwavering spirit in the face of adversity symbolizes the resilience and unwavering commitment that defined the freedom struggle.

On September 9, 1942, under the leadership of Martyr Parashuram Shripati Gharge of Vadgaon in Khatav Taluka of Satara District, a courageous march was organized towards Vaduj Kacheri. Tragically, this march met with police gunfire, resulting in the martyrdom of Parashuram Gharge. His leadership and sacrifice in the pursuit of freedom serve as a powerful reminder of the countless unsung heroes who dedicated their lives to India's independence movement.

From our perspective, India's struggle for independence was a collective endeavor, and women played an indispensable yet frequently overlooked role in this monumental journey. The program has brought to light the inspiring stories of many such unsung heroines. Take, for instance, the remarkable Jayabai Haveri of Kolhapur. Jayabai's education extended only up to the seventh standard, yet her determination knew no bounds. Alongside her compatriot Bhagirathibai Tambat, Jayabai boldly defaced Wilson's statue in Kolhapur with tar on August 10, 1942, a daring act of protest. Bhagirathibai Tambat, too, was arrested alongside Jayabai. Both women were sentenced to rigorous imprisonment for 15 months, and Bhagirathibai Tambat endured this hardship even while pregnant, embodying the indomitable spirit of India's freedom fighters.

Another exceptional freedom fighter, Krantiveerangana Leelatai Uttamrao Patil contributed significantly to the freedom movement in Satara district. She played a crucial role in leading women soldiers during this critical period, exemplifying the resolve and leadership of female freedom fighters.

Additionally, Kamalabai Bapurao Shedge of Sangli district demonstrated remarkable courage and selflessness by providing shelter, food, and crucial information to underground freedom fighters. Her brave actions in aiding these fighters and her resilience during imprisonment, even while seven months pregnant, underscore the sacrifices made by women who contributed immensely to India's fight for freedom. These extraordinary women's stories, like many others, deserve to be celebrated and remembered as an integral part of India's rich history of independence.

Recognition from Society

As per our intention, the 'Salute to the Freedom Fighters' program did not remain confined to the university alone. It resonated with people from all walks of life, prompting them to share stories and information about their local freedom fighters. This groundswell of support was instrumental in ensuring the success of the initiative. For instance, a person whose father Shri. Shamrao Lahuji Patil defaced Wilson's statue in Kolhapur, and a grandson of freedom fighter Baburao Pirgonda Hasure, came forward to share their family's contributions to the freedom struggle. They appreciated the university's efforts and recognized that this program was not just an academic exercise but a means to commemorate the work of countless freedom fighters. Letters of thanks and expressions of thanks poured in from relatives of the freedom fighters.

The Role of Senior Faculty: Authenticating Historical Facts

Retired senior faculty members of the Department of History brought a wealth of historical knowledge, research skills, and critical thinking to the program. Their contributions were instrumental in ensuring the authenticity, accuracy, and scholarly rigor of the historical facts presented in the program. They lent their expertise to the authentication of historical information. Through rigorous review and validation done by senior faculty members, we ensured that the research conducted by students and junior researchers met the highest scholarly standards. They assessed the quality of sources, the authenticity of oral histories, and the validity of historical claims.

The Grand Finale

The grand finale of the "Salute to the Freedom Fighters" programme marked a momentous occasion in the history of Shivaji University. On the hallowed day of August 15, 2023, when India celebrated its 76th Independence Day, a fitting conclusion was reached in the Rajarshi Shahu Auditorium of the University. The event evoked a deep sense of patriotism and pride in the hearts of those who attended. The 366-day journey through the lives and contributions of the brave freedom fighters culminated in the recording of the program's final episode.

The 366th entry was about Madhavrao Bhujangrao Mane, who belongs to Yelavi village in Sangli District. Madhavrao Bhujangrao Mane was invited to broadcast the final episode of the program which was based on his life. He was one of the key participants from the region in the 'Quit India movement' of 1942 and had also endured imprisonment in the pursuit of freedom. The climax of the function was when, at the age of 99, he addressed the gathering with the same fervor and spirit he had during his involvement in the freedom movement. It was an awe-inspiring and heartwarming moment, especially as we listened to him during the celebration of Independence Day. His presence at the closing ceremony wasn't just symbolic; it served as a living testament to the indomitable spirit of those who dedicated their lives to the cause of independence. This closing ceremony of a historic initiative itself became an event of historical significance, a moment filled with reverence, reflection, and gratitude—a heartfelt salute to the countless heroes who had sacrificed everything for India's freedom.

Salute to the Freedom Fighters: A Tribute to Unsung Heroes

In conclusion, the program undertaken by Shivaji University stands as a testament to the power of collective action, historical scholarship, and community engagement. It is a tribute to the unsung heroes who dedicated their lives to India's freedom struggle. These heroes, once hidden in the shadows of history, have now emerged as luminous figures, their contributions celebrated every day.

As we expected, the program's collaborative approach, involving educational institutions, local communities, and experts, has unearthed stories that were waiting to be told. These stories have enriched the nation's understanding of its own history, showcasing the diverse fabric of the freedom struggle.

Through the dedication of students, the guidance of senior faculty, and the tireless efforts of all involved, the ''Salute to the Freedom Fighters' programme has become a platform for recognition, celebration, and preservation. It is a celebration of India's journey toward independence, a journey illuminated by the heroes whose names may not be in every textbook but whose legacies are now etched in the hearts of a grateful nation.

The 'Salute to the Freedom Fighters' program at Shivaji University is a shining example of how educational institutions can play a vital role in bringing to light the contributions of local heroes. By celebrating their stories and sacrifices, universities can educate and inspire future generations, while also preserving the legacy of these important figures. This program is a model that other colleges and universities across the country can emulate, and the impact of such a collective effort could be profound. Thousands of local heroes across India have made significant contributions to the freedom struggle, but their stories are often untold. Colleges and Universities can play a crucial role in rectifying this by undertaking research, organizing events, and creating educational resources that highlight the lives and achievements of these individuals. This would help to foster a greater sense of community and appreciation for the rich history and culture of India.

As the 'Salute to the Freedom Fighters' program shows the celebration of these heroes is not confined to a single event or year. It is a celebration every day—a

reminder of the sacrifices, dedication, and unwavering commitment of those who paved the way for India's freedom. Their stories will continue to inspire and educate future generations, ensuring that their legacy lives on for generations to come. One way to ensure that the legacy of these heroes is preserved and passed onto future generations is to document their stories in the form of a book or other publication. This would make the information available to researchers and the general public alike. By taking these steps, Shivaji University can continue to play a vital role in preserving the legacy of the freedom fighters.

The 'Salute to the Freedom Fighters' program, surpassing even our wildest expectations, was a resounding success that yielded a multitude of additional benefits, leaving an indelible mark on all involved. More than 1000 students engaged in experiential and collaborative learning, report writing, and literature surveys. This not only broadened their horizons but also instilled in them a profound sense of historical significance. Teachers, too, seized the opportunity to impart invaluable lessons, teaching their students the art of sourcing authentic information and the meticulous documentation of materials gathered from diverse sources. They also conveyed the imperative need and enduring significance of the freedom movement, and shed light on the immense sacrifices made by these unsung heroes.

Moreover, the administrative staff of the University actively participated in this endeavor, gaining a wholly distinct learning experience that enriched their perspectives. Through this collaborative effort, the values of consistency and sustenance were instilled among all collaborators, underscoring the enduring importance of preserving and celebrating the legacy of our freedom fighters. This multifaceted impact not only salutes the heroes of yesteryears but also paves the way for a brighter and more enlightened future, where the lessons learned from history continue to guide and inspire us.

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Evolution of Science and Technology Education in India: An Overview in the Light of National Education Policy –2020

Asit Kumar Das,* Sudhakar C. Agarkar and Taiyeba Tabassum*****

'Unity in Diversity' is a unique feature of India. People of India are from several linguistic origins, different religious beliefs, and different cultural backgrounds and wear different types of dresses. In spite of such several differences, there is 'Unity in Diversity' in India. Here we can recall and recite a few lines from the poem of a Bengali Poet

–Atulprasad Sen

".....Nana Bhasa, Nana Math, Nana Paridhan..,

Bibidher Majhe Dekha Milana Mahan....."

[In spite of different Languages, different Beliefs, and different Dresses, there is a oneness that we are Indian].

According to Worldometers[1] elaboration of the latest United Nations Data, the current population of India is 1,383,604,455 (as of Wednesday, October 7, 2020). Indian population is estimated in 2020 at 1,380,004,385 people at midyear according to UN data, which is equivalent to 17.7% of the total world population, and it ranks number 2 in the list of countries (and dependencies) by population. The population density in India is 464 per Km2 (1,202 people per mi2). The total land area is 2,973,190 Km2 (1,147,955 sq. miles), and it is found that about 35.0% of the Indian population is urban (483,098,640 people in 2020); the rest are living in rural and hilly areas. Interestingly, the median age in India is around 28.4 years. From the several studies[2] it has been revealed the India is the second most populated country in the world, and it is about one fifth of the world's population.

According to 'All India Religion Census Data 2011' [3] there are six major groups of religions, which are given in Table 1; while there are several other sub-religion groups in India.

Table No. 1: All India Religion Census Date 2011[4]

All India Religion Census Data 2011		
Religion	**Percent**	**Estimated**
All Religion	100.00 %	121 Crores
Hindu	79.80 %	96.62 Crores
Muslim	14.23 %	17.22 Crores
Christian	2.30 %	2.78 Crores
Sikh	1.72 %	2.08 Crores
Buddhist	0.70 %	84.43 Lakhs
Jain	0.37 %	44.52 Lakhs
Other Religion	0.66 %	79.38 Lakhs
Not Stated	0.24 %	28.67 Lakhs

Source- https://www.census2011.co.in/religion.php

Current Socio-Economic Advancement in India

According to the 'India Social Economy Report'[5] the Indian social economy is one of the most advanced in Asia. It is mentioned in the said Report that: "India is now one of the fastest growing economies in the world. The country's economic growth has been driven by the services sector, which has been consistently growing and accounted for 49% of GDP in 2017. After substantive reforms to improve its business environment, India is now ranked in the top 100 countries on the World Bank's Ease of Doing Business Index. Despite impressive economic growth, India continues to face significant development challenges. Poverty alleviation and equitable access to basic social services including education and health care remain at the forefront of national socio-economic discussions. India's sustainable development will be dependent on the country's ability to maintain economic growth while addressing the root causes of staggering poverty."

But recently Indian Economy is lagging behind due to several reasons; GDP is falling rapidly. A Great impact of Coronavirus Pandemic has been affecting the India's Socio-Economic conditions, like other countries.

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Culture and Heritage of India

As far as Culture and Heritage of India is concern, it is to mention that our India has a rich and oldest Cultural Heritage[6] since ancient times. Our "India is one of the oldest civilizations in the world with a kaleidoscopic variety and rich cultural heritage. It has achieved all-round socio-economic progress since Independence. As the 7th largest country in the world, India stands apart from the rest of Asia, marked off as it is by mountains and the sea, which give the country a distinct geographical entity. Bounded by the Great Himalayas in the north, it stretches southwards and at the Tropic of Cancer, tapers off into the Indian Ocean between the Bay of Bengal on the east and the Arabian Sea on the west."

Ancient Education System in India

Like Cultural Heritage of India, Indians are being inherited their education, even Science, Technology and medical educations from their ancient ancestors. Education in India begins since ancient times as the 'informal education' and it gradually transformed in to 'Formal Education'. Children of a family generally followed the occupations of his/her family, and learn from his father/ mother, uncles/ants and/or grand-fathers/ grand-mothers. The family profession may be either religious or professional, and the children acquired knowledge through informal education and developed their technical skills. Interestingly, learning and training of the youths were made through oral conversations and hands-on-activities in that particular field of family professions, before scripts are invented.

Gradually, two systems of education, namely *'Vedic' (Brahmanya)* and the *'Buddhist'* were developed in India. In *'Vedic' (Brahmanya)* system of Education *Vedas, Vedangas, Upanishads*, along with some other allied subjects were also taught, and *Sanskrit* was the medium of instruction. On the other hand, *'Buddhist'* system of Education taught all the major school of Buddhism, and *Pali* was the medium of instruction. It is to be mentioned here that both *'Vedic'* and *'Buddhist'* systems offered *vocational education* apart from *religious education* of their respective faiths. There was also a purely vocational system of education wherein master craftsmen and artisans taught their skills to students who worked as apprentice under them.

Do you want to know about the Centre of learning in India since ancient times? There are inscriptions on stones and copper plates, palm leaf records have been excavated. These scriptures are the evidences of the historic origins of learning in India. Recent education system throughout the globe an almost similar patterns; where learning takes place through syllabus, curricula, textbooks, evaluation and assessment practices. A notable Book of NCERT entitled 'Ancient Education System of India'[7] will give you glimpses of our ancient education system

There were several world famous ancient Higher Educational Institutions in India; some of the ancient notable HEIs in India are- *Takshasila, Nalanda, Vallabhi, Vikramasila, Ujjain, Ennayiram, Salotgi, Benaras.* [Ithihas (2013)[8]. It is to be mentioned here that both *'Vedic'* and *'Buddhist'* systems offered *vocational education* apart from *religious education* of their respective faiths. There was also a purely vocational system of education wherein master craftsmen and artisans taught their skills to students who worked as apprentice under them.

Education in India after Independence

India was under the British Rule up to 1947. After Independence (15th August 1947) newly formed Government of India felt the urgent need for universal structure of Education System throughout the country. The Ministry of Education, Govt. of India, had formed the first Education Commission, the 'University Education Commission (1948-49)'[9], under the Chairmanship of Dr. Sarvepalli Radhakrishnan in 1948 *[Popularly called as Radhakrishnan Commission]*.

Commissions, Committees and National Educational Policies in India

Three National Policies have been launched by the Government of India in 1968, 1986 and 2020. Apart from these Education Policies, several Committees and Commissions have been formed for restructuring the Education System in India to foster the Science, Technology and Medical Education, and general education in particular, which are given in Table 2.

Table 2 : Education Policies, Commissions and Committees in India after Independence

Sl. No	Year	Policies, Commissions and Committees
1	1948 - 1949	**University Education Commission** [Radhakrishnan Commission] Objective- Uniform Education System in India,
2	1952- 1953	**The Secondary Education Commission** [Mudaliar Commission] [10] (October 1952 – June 1953
3	1964 – 1966	**National Education Commission [**Kothari Commission][11] [Chaired by Dr. Daulat Singh Kothari, the then Chairman of UGC. Formed on 14.07.64 and Report submitted on 29.6.66. It is called as Kothari Education Commission]
4	1968	**NPE- 68: National Policy on Education 1968**[12] [the 1st Education Policy of India. It was formed mainly, on the basis of recommendations of the Kothari Commission]
5	1973	**NCTE - National Council of Teacher Education**[13] (A Statutory Body of the Government of India)
6	1986	**NPE -86: National Policy on Education 1986**[1] [2nd National Education Policy in India]
7	1992	**NPE -1986 - POA- 1992: National Policy on Education 1986 - Program on Action 1992**[15]
8	1993	**National Commission for Teachers – NCTE Act 1993, in 1995**[16]**.**
9	2005	**NCF: National Curriculum Framework 2005**[17]
10	2006 - 2009	**National Knowledge Commission**[18]
11	2009	**Yash Pal Committee Repost 2009**[19] [Chair – Prof. Yash Pal, Former Chairman, UGC]
12	2009	**NCFTE: National Curriculum Framework for Teacher Education 2009**[20]]
13	2012	**Justice Verma Committee Report 2012**[21]]
14	2016	**Some Inputs on Draft National Education Policy 2016**[22]
15	2019	**Draft National Education Policy 2019**[23]
16	2020	**National Education Policy 2020**[2]

Salient Features of National Education Policy (NEP) 2020

The National Education Policy 2020 (NEP 2020) has been brought out by the Ministry of Education[25], Government of India, on 29th July, 2020. The Vision of this Policy, as stated in the NEP 2020, that: *"This National Education Policy envisions an education system rooted in Indian ethos that contributes directly to transforming India, that is Bharat, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower. The Policy envisages that the curriculum and pedagogy of our institutions must develop among the students a deep sense of respect towards the Fundamental Duties and Constitutional values, bonding with one's country, and a conscious awareness of one's roles and responsibilities in a changing world. The vision of the Policy is to instill among the learners a deep-rooted pride in being Indian, not only in thought, but also in spirit, intellect, and deeds, as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen."* The NEP 2020 contains four chapters, having 26 sections, which are depicted in Table 3.

Reforms in Structure of Education at School and Higher Educational Institutions as recommended by NEP--- 2020 and Scope of Research

The Government of India has launched the National Education Policy 2020; where several reforms in Education System, both in School and Higher Education, as well as in Research have been suggested in this NEP---2020.

Table No. 3: Chapter wise main Contents of the NEP 2020

No	**Contents** (main)	Page No
	Introduction	3
Chapter-I : School Education [5+3+3+4]		**6-30**
1	Early Childhood Care and Education: The Foundation of Learning	5
2	Foundational Literacy and Numeracy: An Urgent & Necessary Pre-requisite to Learning	7
3	Curtailing Dropout Rates and Ensuring Universal Access to Education at All Levels	9
4	Curriculum and Pedagogy in Schools: Learning Should be Holistic, Integrated, Inclusive, Enjoyable, and Engaging 4.3- NACSE = National Assessment Centre for School Education	10
5	Teachers: 5.20 NPST= National Professional Standards for Teachers	18
6	Equitable and Inclusive Education: Learning for All	23
7	Efficient Resourcing and Effective Governance through School Complexes/ Clusters	26
8	Regulation and Accreditation of School Education 8.6. SQAAF = School Quality and Assessment Framework	27
Chapter – II : Higher Education		**30-49**
9	Quality Universities and Colleges: A New and Forward-looking Vision for India's Higher Education System	30
10	Institutional Re-structuring and Consolidation 10.3 – RU, TU, AC [Autonomous Degree-Granting Colleges]	31
11	Towards a More Holistic Education 11.8 - ABC = Academic Bank of Credit; 11.10 - MERU = Multidisciplinary Education & Research University	33
12	Optimal Learning Environments and Support for Students	35
13	Motivated, Energized, and Capable Faculty 13.5 Faculty who do not deliver on basic norms will be held to account.	38
14	Equity and Inclusion in Higher Education	39
15	Teacher Education	40
16	Re-imagining Vocational Education	41
17	Professional Education	43
18	Promoting high quality research: National Research Foundation	44
19	Effective Governance and Leadership for Higher Education Institutions 19.3. NHERA = National Higher Education Regulatory Authority	46
20	Transforming the Regulatory System of Higher Education	47
Chapter- III : Other Key Areas Focus		49-56
21	Adult Education	49
22	Promotion of Indian Languages, Arts, and Culture	51
23	Technology Use and Integration	54
Chapter – IV : Making it Happen		56-60
24	Establishing an Apex Advisory Body for Indian Education	56
25	Financing: Affordable and Quality Education for All	58
26	Implementation	59

Reforms Suggested at School Education Level

It has suggested a slew of reforms for school education, with a focus on flexibility of subjects and eliminating silos between streams of learning. Another goal of the NEP is to achieve 100 percent Gross Enrolment Ratio in preschool to secondary level by 2030. It has changed the existing 10+2 structure of school education to a 5+3+3+4, covering children between the ages of 3-18. These are as follows-

- First Step (5) : Out of 5 years, 3 of Anganwadi or Preschool + 2 years in Primary School in Grades 1-2 covering ages 3 to 8 years;
- Second Step (+3) : The 'Preparatory Stage' covering ages 8 to 11 years or grades 3-5;
- Third Step (+3) : 'Middle Stage' covering ages 11 to 14 years or grades 6-8;
- Fourth Step (+4) : 'Secondary Stage' covering ages 14 to 18 years in two phases – grades 9-10 in the first and grades 11-12 in the second.

It has recommended reducing the curriculum content to its core essentials, focusing on key concepts and ideas in order that children are able to practice more critical thinking and among other things, more analysis-based learning. There will be no hard separation among 'curricular', 'extra-curricular', or 'co-curricular' areas, among 'arts', 'humanities', and 'sciences', or between 'vocational' or 'academic' streams. Children will also be given increased flexibility in the choices of subjects they wish to study, especially in the secondary stage.

Reforms in Structure of Higher Educational Institutions as recommended by NEP 2020 and Scope of Research:

Quality Universities and Colleges

New and forward-looking vision for Higher Education System, including innovative Research in India has been suggested to improve the quality of Universities and Colleges. It has been indicated that India is moving towards becoming a knowledge society and economy. And so, it is needed that the higher education system must be re-adjusted, re-vamped, and re-energized at the earliest to meet these requirements; keeping in view the requirements of the fourth industrial revolution, and characterized by increasing proportion of employment opportunities for creative, multidisciplinary and highly skilled workforces.

NEP has suggested about the Restructuring and Consolidation of Higher Educational Institutions, and thrust has been given in higher education to end the fragmentation of higher education by transforming HEIs into large Multidisciplinary Universities, Colleges, and HEI clusters, each of which will aim to have 3,000 or more students. This would help in building vibrant communities of scholars and peers, breaking down harmful silos, enable students to become well-rounded across disciplines (including artistic, creative, and analytic subjects as well as sports), and in developing active research communities across disciplines (including cross-disciplinary research), and increasing resource efficiency, both material and human, across higher education.

It has also been reminded that the ancient Indian Universities *Takshashila* and *Nalanda,* which had thousands of students from India and the world studying in vibrant multidisciplinary environments, and modern universities such as the Ivy League Universities/ Stanford/MIT in the United States today.

All HEIs will move towards becoming large multidisciplinary institutions, it is envisioned that over a period of time all existing HEIs and new HEIs will evolve into *Research-intensive Universities* (RUs), *Teaching Universities* (TUs), and *Autonomous degree-granting Colleges* (ACs). All IITs, IIMs in India will be developed in to *Multidisciplinary Education and Research University* (MERU) for imparting holistic education, including quality research.

International Collaboration in Educational Research in India

There are several opportunities for International Collaboration in Educational Research in India. However, a brief about following two notable Institutions is discussed below.

Indian Council for Cultural Relations

The Indian Council for Cultural Relations (ICCR[26] was founded in 1950 by Maulana Abul Kalam Azad, independent India's first Education Minister. Its objectives are to actively participate in the formulation and implementation of policies and programmes pertaining to India's external cultural relations; to foster and strengthen cultural relations and mutual understanding between India and other countries; to promote cultural exchanges with other countries and people, and to develop relations with nations.

Department of Science and Technology, Government of India[27]

Following information has been revealed from the Annual Report 2019-2020[28] of the Department of Science and Technology (DST), Government of India.

i. International Bi-lateral Cooperation

Cooperation in Science & Technology were initiated with Brazil, Mexico, Philippines, Slovenia, Sri Lanka, Sweden, Switzerland and Uzbekistan. About 340 new joint projects and over 100 Joint Workshop/ Seminars were supported during the years. The 25th DST-CII Technology Summit with Netherlands as partner country was held in New Delhi during 15-16 October 2019.

i) The highlights of International Multilateral and Regional S&T Cooperation include the BRICS Science, Technology and Innovation (BRICS STI) Cooperation; India-EU Science and Technology Cooperation; India-ASEAN STI Cooperation; STI Engagements with the Group of Twenty (G20) countries. India hosted 12th India-EU Joint Steering Committee Meeting on 1st March 2019.

ii) Activities under Mega Facility for Basic Research include its support for Antiproton and Ion Research (FAIR), Darmstadt, Germany, Experiments at the Large Hadron Collider (LHC) at CERN, Geneva, India-based Neutrino Observatory (INO), Madurai, Thirty Metre Telescope (TMT) Project, Laser Interferometer Gravitational-Wave Observatory (LIGO) Project, Accelerator-based Research Facilities, etc. 20 Actuators made in India by four Indian companies were shipped to the TMT Project Office, USA and these actuators successfully completed performance and life-cycle tests, paving the way for their production in India.

iii) Under Climate Change Programme, two national missions on climate change under National Action Plan on Climate (NAPCC), viz., National Mission on Strategic Knowledge for Climate Change (NMSKCC) and National Mission for Sustaining the Himalayan Ecosystem (NMSHE) are being implemented. Several new initiatives were launched during the year 2019-20. These include; 03 Centre of Excellence, 08 Major R&D Programmes, 02 state network programmes and one vulnerability profiling programme

Policies and Practices in Science and Technology Education of India:

ICT Initiatives of Ministry of Education, Government of India: The Ministry of Education, Govt. of India has taken several initiatives for propagation of Education throughout the Country with the effective implementation of Information and Communication Technologies. A synopsis of these ICT Initiatives of the Ministry of Education, Govt. of India[29] is given in Table 4.

Curriculums Reforms and Digital Resources

Curriculum Reforms

Government of India had felt the needs for massive reforms in Curriculum Framework, and the responsibilities were entrusted on the National Council of Educational Research and Training (NCERT) [30]. The NCERT had formed an expert committee, under the Chairmanship of Prof. Yash Pal, to review the Curriculum Frameworks and submit a Report towards massive Reforms in Curriculum Framework. The said expert committee had submitted their reports in 2005; which is called as the 'National Curriculum Framework 2005' (NCF 2005)[31] .

In the 'Forward' note of the NCF 2005, it is mentioned that: "The revised National Curriculum Framework (NCF) opens with a quotation from Rabindranath Tagore's essay, *'Civilization and Progress'*, in which the poet reminds us that a 'creative spirit' and 'generous joy' are key in childhood, both of which can be distorted by an unthinking adult world. The opening chapter discusses curricular reform efforts made since Independence. The National Policy on Education (NPE, 1986) proposed the National Curriculum Framework as a means of evolving a national system of education, recommending a core component derived from the vision of national development enshrined in the Constitution. The Programme of Action (POA, 1992) elaborated this focus by emphasising relevance, flexibility and quality.

The fact that learning has become a source of burden and stress on children and their parents is evidence of a deep distortion in educational aims and quality. To correct this distortion, the present NCF proposes five guiding principles for curriculum development: (i) connecting knowledge to life outside the school; (ii) ensuring that learning shifts away from rote methods; (iii) enriching the curriculum so that it

Table-4 : ICT Initiatives of Ministry of Education, Govt. of India

S.No.	Resource	For students/ Researchers	For Institutions
Audio-Video e-content			
1	SWAYAM: Massive Open Online Courses	Earn credit through online courses	- Encourage your extraordinary faculty to develop online courses - Accept credits awarded under SWAYAM - Form SWAYAM local chapters
2	SWAYAMPRABHA: View digital courses on TV	Watch high quality educational programs 24*7	Provide facility for viewing SWAYAMPRABHA content
Continue Learning with SWAYAM			
Digital content: access journals and e-books			
1	National Digital Library: e-content	Access e-content on multiple disciplines	- Get your E-content listed - Form NDL Club
2	e-PG Pathshala: Gateway for e-books up to PG	Get free books and curriculum-based e-content	Host e-books
3	Shodhganga: A reservoir of Indian Theses	Access Research Theses of scholars of Indian Institutes	Get research theses of your scholars to get listed on Shodhganga
4	e-ShodhSindhu: e-journals	Get access to full text e-resources	Get access to full-text e-resources
Accelerated Hands on Learning			
1	e-Yantra: Engineering for better tomorrow	Get hands on experience on embedded systems	Create e-Yantra labs for training in embedded systems in collaboration with IIT Bombay
2	FOSSEE: Free/Libre and Open Source Software for Education	- Access and volunteer for the use of open source software - Become FOSSEE fellow	Run labs in open source
3	Spoken Tutorial: Tutorial in IT application	Self-training in IT fields	Encourage eminent faculty to provide training content for self-learning
4	Virtual Labs: Web-enabled experiments designed for remote – operation	Try curriculum based virtual experiments	Develop virtual experiments for Virtual labs suited to course curriculum in gap areas
E - Governance			
1	University Enterprise Resource Planning (SAMARTH)	Student development Life Cycle	E-Governance for Institutions/Universities
Track your Progress			
1	VIDWAN: Expert Database and National Research Network IRINS: Indian Research Information Network System	Register on VIDWAN	Get your faculty registered on VIDWAN - Monitor research outcomes at different levels
2	Shodh Shudhhi (PDS): Plagiarism Detection Software	Unique ideas, concepts and information without duplication.	- Encourage original information by preventing plagiarism. - Better research outcomes. - Reputation of the institution/university.

goes beyond textbooks; (iv) making examinations more flexible and integrating them with classroom life; and (v) nurturing an overriding identity informed by caring concerns within the democratic polity of the country.

The teaching of science should be recast so that it enables children to examine and analyze everyday experiences. Concerns and issues pertaining to the environment should be emphasized in every subject and through a wide range of activities involving outdoor project work. Some of the information and understanding flowing from such projects could contribute to the elaboration of a publicly accessible, transparent database on India's environment, which would in turn become a most valuable educational resource. If well planned, many of these student projects could lead to knowledge generation. A social movement along the lines of Children's Science Congress should be visualized in order to promote discovery learning across the nation, and eventually throughout South Asia."

About Science Education, it is mentioned in Section 3.3 of the NCF 2005 that: "One important human response to the wonder and awe of nature from the earliest times has been to observe the physical and biological environment carefully, look for any meaningful patterns and relations, make and use new tools to interact with nature, and build conceptual models to understand the world. This human endeavour has led to modern science. Broadly speaking, the scientific method involves several interconnected steps: observation, looking for regularities and patterns, making hypotheses, devising qualitative or mathematical models, deducing their consequences, verification or falsification of theories through observations and controlled experiments, and thus arriving at the principles, theories and laws governing the natural world. The laws of science are never viewed as fixed eternal truths. Even the most established and universal laws of science are always regarded as provisional, subject to modification in the light of new observations, experiments and analyses…."

Digital Resources

Technology Enabled Learning in India: National Mission in Education through ICT (NMEICT)

The National Mission on Education through Information and Communication Technology ***(NMEICT)***[32] is a Centrally Sponsored Scheme to leverage the potential of ICT, in teaching-learning process towards the benefit of all the students in Higher Education Institutions throughout the country. It was expected this will a major intervention in enhancing the Gross Enrolment Ratio *(GER)* in Higher Education at least by 5 percentage points during the XI Five Year Plan period. The three cardinal principles of Education Policy viz., access, equity and quality could be served well by providing connectivity to all colleges and universities, by providing low cost and affordable access-cum-computing devices to all students and teachers of the country, as well as providing them high quality of e-contents free of cost.

NMEICT has initiated to bridge the digital divide, i.e., the gap in the skills to use computing devices for teaching-learning purpose among urban and rural teachers-students in Higher Education and to empower them. It plans is focused on appropriate pedagogy for e-learning, providing facility of performing experiments through virtual laboratories, on-line testing and certification, on-line availability of teachers to guide and mentor learners, utilization of available Education Satellite *(EduSAT)*[33] and direct to Home platforms, training and empowerment of teachers to effectively use the new method of teaching learning etc.

Different Platform for e-Learning for Higher Education

SWAYAM: SWAYAM[34] is a programme has also initiated by Government of India, and it has been designed to achieve the three cardinal principles of Education Policy; i.e.- access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy.

SWAYAM PRABHA: The SWAYAMPRABHA[35] is a group of 34 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG, Gandhinagar. The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The INFLIBNET Centre maintains the web portal.

The DTH Channels shall cover the following-

- Higher Education: Curriculum-based course contents at post-graduate and under-graduate level covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, agriculture, etc. All courses would be certification-ready in their detailed offering through SWAYAM, the platform being developed for offering MOOCs courses.
- School education (9-12 levels): modules for teacher's training as well as teaching and learning aids for children of India to help them understand the subjects better and also help them in preparing for competitive examinations for admissions to professional degree programmes.
- Curriculum-based courses that can meet the needs of life-long learners of Indian citizens in India and abroad.
- Assist students (class 11th & 12th) prepare for competitive exams.

e-PGPathshala : e-PG Pathshala[36] is an initiative of the MHRD under its National Mission on Education through ICT (NME-ICT) being executed by the UGC.

e-Adhyayan (e-Books) : e-Adhyayan is a platform to provide 700+ e-Books for the Post-Graduate Courses. All the e-Books are derived from e-PG Pathshala courses. It also facilitates play-list of video content.

UGC MOOCs (Online Courses) : UGC-MOOCs is one of vertical to produce course on Post Graduate subjects in SWAYAM (Online Courses, An MHRD initiatives). UGC is one of the national coordinators of SWAYAM & INFLIBNET is technical partner for UGC-MOOCs.

e-Pathya (Offline Access) : e-Pathya is one the verticals of e-PG Pathshala which is software driven course / content package that facilitates students pursuing higher education (PG level) in distance learning as well as campus learning mode. it also facilitates offline access.

National Digital Library of India: The National Mission on Education through Information and Communication Technology ***(NMEICT)*** has sponsored the National Digital Library of India ***(NDLI)*** [37] project and arranged funding through Ministry of Education for making available learning resources through a single-window, to the learners.

Shodhganga, INFLIBNET Centre: Shodhganga[38] is an e-reservoir of Theses of all Universities and Research Institutes in India. The Shodhganga@INFLIBNET is set-up using open-source digital repository software called DSpace developed by MIT (Massachusetts Institute of Technology) in partnership between Hewlett-Packard (HP). The DSpace uses internationally recognized protocols and interoperability standards. Shodhganga provides a platform for research scholars to deposit their Ph.D. theses and make it available to the entire scholarly community in open access. The repository has the ability to capture, index, store, disseminate and preserve ETDs (Electronic Theses and Dissertations) submitted by the researchers.

E-ShodhSindhu: Consortium for Higher Education Electronics[39]: e-ShodhSindhu is based on the recommendation of an Expert Committee, the Ministry of Education, Govt.of India. e-ShodhSindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium. The e-ShodhSindhu will continue to provide current as well as archival access to more than 10,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions including centrally-funded technical institutions, universities and colleges that are covered under 12(B) and 2(f) Sections of the UGC Act.

e-Yantra : The **e-Yantra**[40] is also another digital platform sponsored by Ministry of Education, Govt. of India, under the National Mission on Education through ICT[41] program; mainly for Robotic Competitions and Innovative Challenges.

Virtual Labs: The Virtual Labs[42] is an Initiative of the Ministry of Human Resource Development Under the National Mission on Education through ICT. Objectives of this Virtual Labs are:

i) To provide remote-access to Labs in various disciplines of Science and Engineering. These Virtual Labs would cater to students at the undergraduate level, post graduate level as well as to research scholars.

ii) To enthuse students to conduct experiments by arousing their curiosity. This would help them

in learning basic and advanced concepts through remote experimentation.

iii) To provide a complete Learning Management System around the Virtual Labs where the students can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self-evaluation.

iv) To share costly equipment and resources, which are otherwise available to limited number of users due to constraints on time and geographical distances.

Broad Areas of Virtual Labs are as follows-

- Electronics & Communications,
- Computer Science & Engineering,
- Electrical Engineering,
- Mechanical Engineering,
- Chemical Engineering,
- Biotechnology and Biomedical Engineering,
- Civil Engineering,
- Physical Sciences,
- Chemical Sciences.

Participating Institutes are given in (table-5).

FOSSEE: There is another Project, called **FOSSEE** *(Free/ Libre and Open Source Software for Education)*[43] a part of the National Mission on Education through Information and Communication Technology (ICT), Ministry of Human Resource Development (MHRD), Government of India. It promotes the use of FLOSS tools in academia and research, by encouraging students and faculty members to use them in education and research through various activities listed in this portal.

Project Samarth: Smarter Automation Engine for Universities:[44] **Samarth** is also one of the initiatives the National Mission on Education through ICT, it is "An Open Source, Open Standard enabled Robust, Secure, Scalable and Evolutionary Process Automation Engine for Universities and Higher Education Institutions."

Enterprise resource planning (ERP) systems have been one of the most popular business management systems, providing benefits of real-time capabilities and seamless communication for business processes in large organizations. The most valuable assets of a university are Faculty, Students, and Staff; who have distinctive interests and specific job distribution within the same organization. For faculty, a university is a place to teach, conduct research, and write. For students, it is a place to learn, live, and grow. For staff, it may share many features with corporate work, including management structure, hours, and HR practices.

VIDWAN : VIDWAN[45] is the premier database of profiles of scientists / researchers and other faculty members working at leading academic institutions and other R & D organizations, involve in teaching and research in India. It provides important information about expert's background, contact address, experience, scholarly publications, skills and accomplishments, researcher identity, etc. The database developed and maintained by Information and Library Network Centre ***(INFLIBNET)***[46] with financial support from the National Mission on Education through ICT (NME-ICT). The database would be instrumental in selection of panels of experts for various committees, taskforce, established by the Ministries / Govt. establishments for monitoring and evaluation purposes.

IRINS: The IRINS[47] is an web-based Research Information Management (RIM) services. It has been developed by the INFLIBNET Centre, in collaboration with the Central University of Punjab. The portal facilitates the academic, R&D organizations and faculty members, scientists to collect, curate and showcase the scholarly communication activities and provide an opportunity to create the scholarly network. It is available as free software-as-service to the academic and R&D organizations in India; and it would support to integrate the existing research management system such as HR system, course management, grant management system, institutional repository, open and commercial citation databases, scholarly publishers, etc. It has integrated with academic identity such as ORCID ID, Scopus ID, Research ID, Microsoft

Table No. 5: Institutions Maintaining the Virtual Labs:

1) IIT BOMBAY	5) IIT MADRAS	9) IIT KHARAGPUR
2) IIT KANPUR	6) 6) Dayalbagh Educational Institute	10) IIT ROORKEE
3) IIIT HYDERABAD	7) 7) NIT KARNATAKA	11) IIT GUWAHATI
4) Amrita Vishwa Vidyapeetham	8) COE PUNE	12) IIT DELHI

Academic ID, Google Scholar ID for ingesting the scholarly publication from various sources.

ShodhShuddhi : Enhancing Research Quality : ShodhShuddhi[48] is based on the recommendation of Sub-Committee, National Steering Committee (NSC) of e-ShodhSindhu, The Ministry of Education, Govt. of India has initiated a programme "ShodhShuddhi" which provides access to Plagiarism Detection Software (PDS) to all universities/ Institutions in India since Sept 1, 2019.

Statistics about Schools: The Statistics about the Schools in India is available from the Dashboard[49], maintained by the Department of School Education and Literacy, Ministry of Education, Government of India. This Dashboard contains several information, related Schools, Students, Teachers, etc.

e-Pathshala : e-Pathshala[50] is a platform, where the Portal and Mobile apps are storehouse of- audios, videos, epubs, flipbooks etc. The app is very small in size (less than 7Mb) and require less memory. There are about 504 e-Text Books, 3886 other e-Resources; which are easily accessed through laptop, desktop, tablets and smart phones etc. These e- Resources are available in multiple languages; i.e. in Hindi, English, Urdu

Students Assessment and Achievement

The National Curriculum Framework 2005[51] has clearly spelt out the criterion and steps regarding Assessment and their Achievement of the Students of different levels. In the 'Forward' note of the NCF 2005, it is mentioned that –

"Examination reforms constitute the most important systemic measure to be taken for curricular renewal and to find a remedy for the growing problem of psychological pressure that children and their parents feel, especially in Classes X and XII. Specific measures include changing the typology of the question paper so that reasoning and creative abilities replace memorisation as the basis of evaluation, and integration of examinations with classroom life by encouraging transparency and internal assessment. The stress on pre-board examinations must be reversed, and strategies enabling children to opt for different levels of attainment should be encouraged to overcome the present system of generalized classification into 'pass' and 'fail' categories."

Reforms in Assessment and Achievement System as recommended by National Education Policy (NEP) 2020[52]

Massive changes have been recommended in the NEP 2020; which has already been mentioned above (in 2.2.2 of this Article/ Chapter) synopsis of the NEP 2020. About Assessment and Achievement System suggested in NEP 2020, please see the Sections- 3 and 4, under Chapter-I about School Education.

Scope of Disruptive Technological Integration in Education and Introduction of Digital and e-Learning

The Section 23 is dedicated for 'Technology Use and Integration', under chapter IV of NEP-2020. This dedicated section is for the purpose of orchestrating the building of digital infrastructure, digital content, digital depository, etc. Capacity building will be created in the MHRD for looking after the e-education at both school and higher education. A comprehensive setup has been recommended for promoting online education consequent upon the recent coronavirus pandemics situation, in order to ensure preparedness with alternative modes for imparting quality education, whenever and wherever it would be needed. Sub-Section wise some highlights about the 'Technology Use and Integration' under Section 23 of NEP-2020 are given below-

23.1 *"….. the relationship between technology and education (at all levels) is bi-directional……"*

23.2 *"….. explosive pace of technological development allied with the sheer creativity of tech-savvy teachers and entrepreneurs…… New technologies involving artificial intelligence, machine learning, block chains, smart boards, handheld computing devices, adaptive computer testing for student development, and other forms of educational software and hardware will not just change what students learn in the classroom but how they learn, and thus these areas and beyond will require extensive research both on the technological as well as educational fronts."*

23.3 *"… National Educational Alliance for Technology (NEAT), will be created …"*

23.5 *"… Teaching-learning e-content will continue to be developed …… and will be uploaded onto the National Teacher's Portal. ……"*

23.6 *"…. technological interventions ….. teaching-learning and evaluation processes, supporting teacher preparation and professional development, .."*

23.7 *".. . emerging disruptive technologies that will necessarily transform the education system ..."*

23.8 "..... unquestionably disruptive technology, Artificial Intelligence (AI) has emerged. ... NRF may consider the three-pronged approach: (a) advancing core AI research, (b) developing and deploying application-based research, and (c) establishing international research efforts to address global challenges in areas such as healthcare, agriculture, and climate change using AI.

23.10. All universities will offer PhD and Masters programmes in Core Areas –; SWAYAM like Platforms be used. i) Machine Learning; ii) Multidisciplinary fields ("AI + X"); iii) Professional areas (healthcare, agriculture and law).

23. 11. (i) Use of Disruptive Technology in Schools. (ii) Appropriate instructional and discussion materials will also be prepared for continuing education.

Latest Technology Trends towards Future Development of Science and Technology Education in India

India is considered as one of the hubs for Science and Technology Education in the world perspectives. In recent era, developments in Information Technology have shown some notable tech trends with the introduction of *AI, Machine Learning, IoT*, and *Blockchain*, Smart Boards, etc. India has adopted some of the significant-tech trends being observed worldwide. It has already been mentioned about the introduction of disruptive Technologies in the above paragraph (3.5) that the Section 23 is dedicated for 'Technology Use and Integration', under chapter IV of NEP-2020**.** It is mentioned in Sub-Section 23.2 that-

"Given the explosive pace of technological development allied with the sheer creativity of tech-savvy teachers and entrepreneurs (including student entrepreneurs), it is certain that technology will impact education in multiple ways, only some of which can be foreseen at the present time. New technologies involving artificial intelligence, machine learning, block chains, smart boards, handheld computing devices, adaptive computer testing for student development, and other forms of educational software and hardware will not just change what students learn in the classroom but how they learn, and thus these areas and beyond will require extensive research both on the technological as well as educational fronts.

Various trends in application of latest technologies in propagation of Science and Technology Education in India are seen; e.g.- Information Technology (IT), Artificial Inelegancy (AI), Blockchain Technology, Food Technology, Web Technology, and the upcoming 5G Technology.

Information Technology (IT) Trends

IT is the usage of computers to store, retrieve, transmit, and manipulate data/ information, often considered to be a part of the information and communications technology. Several products & services are processed and manufactured for supporting Education System in India.

i) Mobile Apps: Several Mobile Apps are being developed, which are being introduced for the first time back in 2007. The topmost latest trends being followed in the Mobile apps group are- Progressive Web Apps, Android Instant Apps, etc.

ii) Virtual Reality (VR) & Augmented Reality (AR)[53] : Virtual Reality and Augmented Reality are already turning heads with its innovative and interactive technology. Many apps have collaborated with Artificial Intelligence (AI) & integrated trending tech in their interface, developers have been able to stack up applications enabling a realistic augmented reality to use apps recognize & visualize things through the phone's camera.

iii) Blockchain Technology : Blockchain tech has taken over the world like wildfire. Institutes & organizations, ranging from banking to cyber-security, plan to adopt blockchain because of its distributed ledger tech that guarantees enhanced security, improved traceability, greater transparency, increased efficiency, and reduced costs.

Web Technology

According to a survey conducted in 2018, over 71% of professional developers use JavaScript as their programming language. Latest trending in JavaScript developments are seen; e.g.- ReactJS, AngularJS, and GraphQL. Education Systems in India are being providing such new technology education, and these have given rise to new job opportunities in the technological fields and many job seekers have been

yearning to grab these opportunities. Many professional developers have advised such seekers to focus on preparing for their dream job by utmost hard work & research to crack interviews by practicing & preparing for jQuery interview questions[54] C++ interview questions, Python interview questions & many more. The top advice often given to new programmers is to never stop learning.

Discussion and Conclusion

The Indian society is going through massive changes and also reinventing itself to ensure sustainable growth, which ensuring that new education system in India, particularly in science and technology education for bringing Indian intelligentsia into knowledge production. The Indian education system is trying to find out and invent ways to enhance the number and quality of future academic and industrial researchers of the country to educate large masses and trying to provide preferences to relatively underprivileged people.

Indian civilization is one of those rare ancient civilizations, which had formal education since time immemorial. The Indian education was founded with strong emphasis on logic and mathematics. In early 19th century, before independence, the British had introduced colonial education and brought the Greco-Roman system of knowledge to India, which had reinforced the foundation for modern science education in India. When India acquired independence, the literacy rate in India was about 12%; very low; and it was badly needed to educate masses for building the nation and for developing the infrastructure towards sustainable development of the Indian economy. And obviously, emphasis had been given on education, and several Commissions and Committees had been formed to shape the Education System in India; which have been discussed in this article.

Now a days, India is one of the largest economies in the world. However, India has shifted its policy move from service-economy to knowledge economy for ensuring its sustainable growth; and it has been possible due to massive reforms in Education, particularly, Science and Technology Education in India. Though a small number of trained manpower was available to steer the country's education initiatives during independence in 1947, but now a large number of accomplished scientists and technocrats are available to pursue a number of options to meet the aspirations of the people.

In this context, it may be mentioned that no single model of science & technology education and research initiatives could satisfy the needs and aspirations of the diversified nation, like India, and so, several Committees and Commissions had been formed and three National Education Policies (in 1968, 1986 and 2020) have been emerged on the need to integrate high quality research with undergraduate teaching to improve science and technology education in India and to enhance the number and quality of future academic as well as industrial researchers in the country. A brief about Science and Technology Education in India has also been discussed.

Emphasis has also been given for developing quality and effectiveness of teaching-learning pedagogies, research, as well as to enhance the efficiencies of the faculties. Several initiatives have already been taken to develop human resources for making India a knowledge-society. Notable initiatives are Establishment of – Education centers like-Central Universities, IISERs, NISER, IITs, NIPERs; Specialized centers of research and education in space technology, defense technology, translational research, biotechnology and stem cell biology; Expansion of existing institutes such as IITs, IISc and TIFR, and like others.

Success of any creative endeavor is depending on the contributions of large number innovative, imaginary and active people working together in a holistic manner, which creates a threshold level of academic excellence and provides necessary platform for emerging new constructive ideas, internal collaborations and unbiased internal criticism. A critical level of academic excellence is badly needed to pursue bigger questions in science and technology education, most of which would require interdisciplinary efforts. Success of such initiatives are depending on carefully selection of faculties, their research accomplishments, promise, teaching proficiency and mentoring abilities. It is also equally important to ensure that faculties should uphold highest standards of integrity and ethics in their professional and personal life too. Moreover, Faculty members should have the abilities in inculcating new and emerging concepts of scientific, technology and mathematical inquiries in their teaching-learning process and research activities, and also in promoting critical thinking and reasoning amongst their students.

However, on the other hand, it is essential and equally important that free and fair organizational system, academic freedom, democratic and consultative

administrative set up, unbiased periodic review of performance and strict accountability for maintaining and enhancing highest standards of academic excellence are maintained.

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Technology Enhanced Assessment towards Enhanced Productivity of Educational Systems Resources

Ashok G. Matani*

Online teaching and learning is not a new phenomenon. For the last many years, it has been mainly used as a part of face-to-face teaching. Assessment is an essential part of teaching and learning as it establishes the achievement of course learning outcomes by the students. Computer-based assessment has been in place for a long time now, however, online assessments in India have been less practiced. This is because of the issues of validity, reliability, and dishonesty. During the COVID-19 pandemic, the educational environment has taken a paradigm shift in all educational systems, both nationally and internationally. This situation demands a method of assessment that is safe, valid, reliable, acceptable, feasible, and fair. This paper describes the different tools and apps of online assessment and their application in formative and summative assessments during and after the COVID-19 pandemic.

E-assessment

E-assessment is the use of information technology in innumerable ways to assess performance and measure student learning. The notion of e-assessment was presented to overcome all the inadequacies of traditional pen-and-paper assessment modes. Electronic assessment arises from the use of Web-specific tools for assessment. It can be used to assess theoretical knowledge (using e-testing software) as well as practical skills (using e-portfolios or simulation software). It is also called the online assessment/computer-based assessment in which information technology is used to assess students' academic progress

Assessment is the measurement of the learning of a student. It can be divided into 'assessment of learning' (summative) and 'assessment for learning (formative). Formative assessments occur within an online course or lesson and are used to determine how well a student is learning the material. They're best when they are ongoing, consistent, and provide critical feedback to learners. Summative assessments are sometimes referred to as final examinations and measure what the student has learned after completing a course. They can validate how well students' content supports the course's overall learning goals. Summative assessment is used for pass/fail decisions, whereas formative assessment for providing feedback. Whatever the method used, the assessment of students comprises of measuring knowledge, skill, and attitude. The knowledge is usually assessed through multiple choice questions, short essay questions, and long essay-type questions. Skill is tested through OPSE, OSCE, Practical, Vivas, Short and Long cases. Pre-COVID-19, these domains of learning were assessed face to face (f2f). With the arrival of COVID-19 pandemic, there has been a paradigm shift from traditional face-to-face (f2f) teaching and learning to online technology-enhanced learning. As predicted this transformation in the educational environment will bring long-lasting effects on teaching and learning, assessment procedures and methods also require a change.

There are more than 20 different types of online assessment tests. A few of the most popular tests cover skill assessment, communication assessment, cognitive assessment, behavioral assessment, etc. The tests are conducted over the Internet to measure a candidate's job-related skills and personality. Compared to pen-and-paper methods of assessments, online or e-assessment methods are less labor-intensive and more secure.

Significant Effects of Online Assessment on the Educational Sector

Online assessment is a significant technological advancement that should be involved in the education system. Conducting tests now-a-days should not be stressful as technology has revolutionized the whole education system. Conducting assessments online has become easier today as there is no requirement to use the paper-and-pencil option. Examinations are conducted on a computer which ultimately saves not only time but also the most important product, that is paper. These are the reasons why this online method is accepted by every educational institute that has computers and an internet connection available.

Importance of Quality Assessment

Assessments are the most significant part of the education system as it gives an accurate picture to

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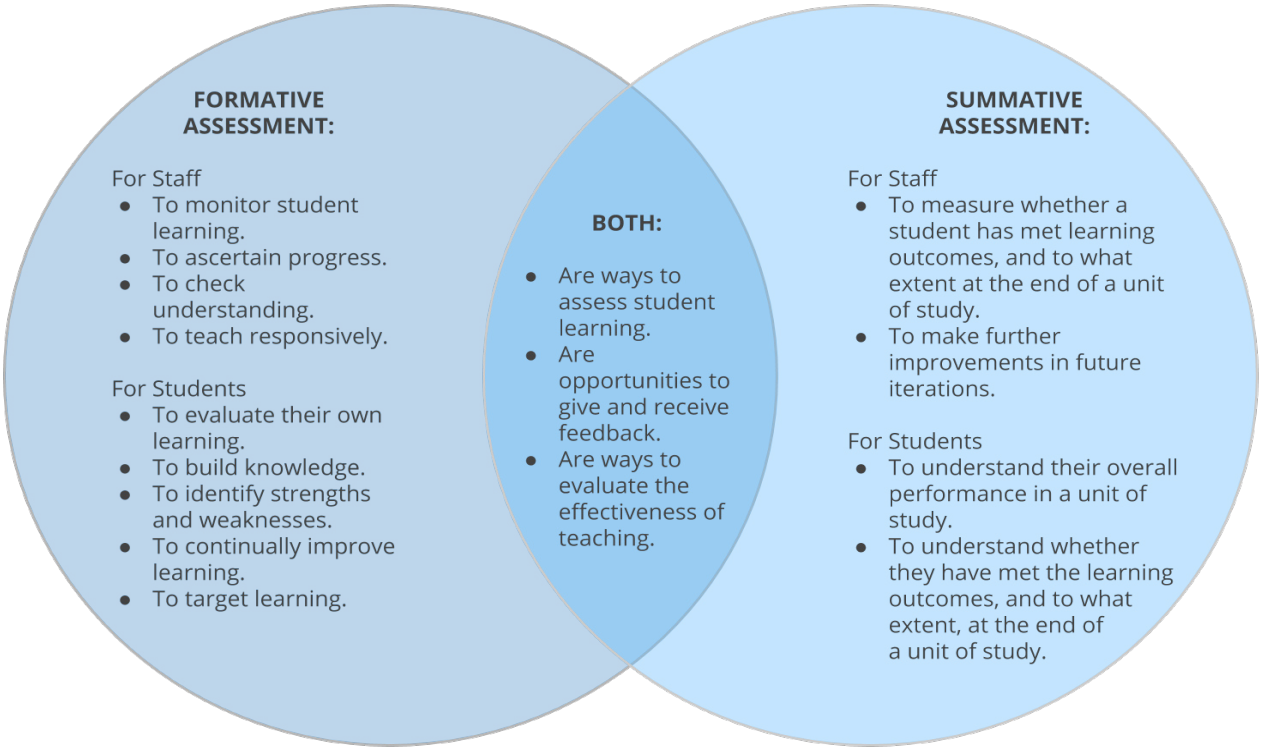
Assessment and Feedback: Choosing Types of Assessment

Formative and Summative Assessment



the students of where they stand. It acts as a catalyst and positive reinforcement to learners by encouraging them to perform better. Therefore, quality assessment is very important as it focuses on a targeted area with complete precision. In order for an assessment to be stated as a quality one, it must present the following characteristics:

- The content should be simple, clear, and easy for candidates to understand. It should always comply with the syllabus and the specific topic taught.
- The test should have a measurable outcome; i.e., there should not be any flaws as regards the content. Moreover, it should be 100% accurate.
- The test should grasp students' interest, and that is mainly the reason why the test should be objective at all times. It should be creative and, of course, not boring for the students.

Why Choose Online Assessment Over Traditional Assessment?

An online assessment gives students the advantage of speed and accuracy when compared with a traditional assessment method. The robust online tools eliminate any chances of malpractice, streamline hiring, and guarantee a positive candidate experience. Many institutions are relying on online assessment for various reasons, as follows:

- Online assessment saves lots of time and money
- No need to hire a specialist
- Ensures consistency in the examination session
- It is accurate and secure
- It can be tailor-made according to the learner

The impact of technology on the education sector is beneficial. Teaching and evaluating students are two actions which should not be limited within the walls of a classroom but they can be both performed anytime, anywhere with the aid of computers and the internet. It's not surprising that the industries are gradually moving from using the traditional assessment methods to using more practical ones which are almost always towards technological solutions. These practical methods not only benefit the institutions but also students as they choose to make full use of this method right from the start when they select courses to the final stage, that of the assessment.

Research has also proven that most students are interested in going through an online assessment rather than a paper-and-pencil one. Moreover, the students are delighted when they get their results and feedback automatically immediately after the test. So, there is still a need to figure out how reliable it would be if we incorporate online methods in teaching and evaluating, according to students' perspectives. Some of the reasons why one should choose online assessments are presented here.

Prompt Result After an Examination Relieves Students' Anxiety

It has been noticed that students experience stress and anxiety after the examination while waiting for the result. However, with the online examination, this is not the case as the results are immediately distributed, which relieves students' stress and anxiety.

Instant Feedback Supports the Formative Assessment Method

Feedback is more effective for a student or for an individual when it is given immediately after their task is complete. This not only helps the student to analyze their performance level but also helps them to take better steps to the optimization of the result. The student can strategize their study plan and put more effort into a particular topic. Also, an individual is able to know beforehand which topic they should be more focused on, as well. And this is the so-called principle of the formative assessment.

Conducting an Examination Anytime Anywhere is Beneficial to the Students

Scheduling an examination is important. Nowadays, no matter where students are, the time and the place are not barriers since conducting or participating in an online exam has eliminated all these restrictions. Students can take an examination either from students' phones or students' tablets.

Fun and Interactive

Students find it attractive when there is multimedia incorporated, such as videos or recordings, in the examination as they highly engage students in both learning and assessment. Visual and auditory learners are more focused on content that supports multimedia than content that is presented in plain text and long sentences.

Taking Exams in A Comfortable Environment is the Key

The classroom is not always designed to facilitate learning in a comfortable way, therefore taking exams in a classroom is not the best option oftentimes. There may be great obstacles to be met during an examination process, such as hard chairs, harsh light, and students being sited too close to one another. The noisy environment of the classroom takes the focus away, distracting students who are never able to concentrate on their task as their creativity and their flow are often interrupted.

Beneficial to Students with Special Needs

People with special needs can also experience the benefit of taking tests and being assessed online. Useful methods have been developed; for example, students can simply touch the screen for the answer instead of writing it. Speech-to-text is also another novel option and a great solution to people facing difficulties in essay writing.

Ways to Assess Student Learning Online

The most common assessment methods to support student learning are:

Online Quizzes

Quizzes are a traditional assessment tool. Plus, when paired with technology, they are an excellent way to engage student learning. Quiz questions can take a number of forms, such as multiple-choice, fill-in-the-blanks, and hotspots. Online quizzes are ideal for measuring learning results across a wide audience. Since each student takes the same test, students can compare and contrast results across different classes, schools, or communities.

Open-ended/essay Questions

Open-ended or essay-type questions are one of the most popular qualitative assessment methods. They prompt learners to explore their thoughts, feelings, and opinions while testing their overall comprehension of a topic. This type of question encourages critical thinking and is best suited for evaluating higher-level learning. Essay questions require a longer time for students to think, organize, and compose their answers.

Drag-and-drop Activities

Drag-and-drops are a type of assessment that shows a learner's ability to link information and apply knowledge to solve a practical problem. Students can incorporate both images and text in a drag-and-drop activity, giving it a real-world feel that is both challenging and engaging. It's essential to use this assessment type when students want learners to be able to apply knowledge in a real-life situation.

Online Interviews

Students can incorporate a video conference within online teaching to give learning a more personal touch. During brief online interviews, students can demonstrate their proficiency in language, music, nursing, and other courses, for example, where mastery of specific skills is an important requirement. Interviews can also include a mentoring component enabling students to get immediate feedback from instructors and help them feel more responsible about their studies.

Dialogue Simulations

A dialogue simulation is a way to train learners for real-life conversations with customers, colleagues, and others. When creating a conversation activity based on a situation that a student may face on the job, let them know what to expect and provide a safe place to practice their reactions and responses

Online Polls

Polls allow students to capture feedback directly from students r audience about their learning experience. They can be used to measure anything from learning satisfaction (Kirkpatrick Level One feedback) to why a student made a particular choice during a lesson. Online surveys are highly engaging for learners because they allow them to share their opinions, make themselves heard, and are quick to complete.

Game-type Activities

Game-type activities turn a series of test questions into a game. For example, a trivia game might ask learners to answer a certain number of questions within a period of time and award points based on the number of correct answers. Game-based assessments are considered fun, and not "tests", so they are generally a good indicator of true skills and knowledge.

Peer Evaluation and Review

Peer evaluation turns the tables to put learners into the instructor's seat and allow students to review and edit each other's work. Such activities give each participant a chance to reflect on their knowledge and then communicate their feedback in a consistent and structured way.

Third-party platforms, such as Turnitin's Feedback Studio, enable students to read, review, and evaluate one or more papers submitted by their classmates using rubrics or prescribed assessment questions. Teachers are able to log in and track individual participation in the activity and monitor comments or peer evaluation feedback.

Forum Posts

A forum is an online discussion board organized around a topic. Asking students to contribute to a forum post is an excellent way to gauge their understanding, pique their interest, and support their learning. In this activity, students are given a critical thinking question based on a lesson or a reading, and are asked to reflect on both. Their answers are posted to a forum and their peers are given the chance to respond.

Online Assessment Tools for Distance Learning

Online assessments are a critical part of e-learning and should be undertaken with the same level of care and rigor that students put into creating students r learning content. The highlighting feature is that students don't have to be a programming genius to build them. There are many online assessment tools that allow students to generate engaging tasks for online evaluation. Choose students' way to assess student learning and related software to align students' needs and the results students want to achieve.

Various Digital Tools and Apps to Support Formative Assessment in the Classroom

Various digital tools and apps teachers can use to support formative assessment in the classroom. Here is an extensive list of digital tools, apps, and platforms that can help students use formative assessment to elicit evidence of learning.

Name of the Digital Tools and Apps	Utility for Teachers and Students
Record Audio and Video	
Animoto	Gives students the ability to make a 30-second video of what they learned in a lesson.
AudioNote	A combination of a voice recorder and notepad, it captures both audio and notes for student collaboration.
Edpuzzle	Helps students use video (students' own, or one from Khan Academy, Students Tube, and more) to track student understanding.
Flipgrid	Assists students in using 15-second to 5-minute videos to respond to prompts. Teachers and peers can provide feedback.
QuickVoice Recorder	Allows students to record classes, discussions, or audio for projects. Sync students' recordings to students' computers easily for use in presentations.
Vocaroo	Creates audio recordings without the need for software. Embed the recording into slideshows, presentations, or websites
WeVideo	Assists students use video creatively to engage students in learning. Teachers and students alike can make videos
Create Quizzes, Polls, and Surveys	
Crowdsignal	Assists students create online polls, quizzes, and questions. Students can use smartphones, tab assists, and computers to provide their answers, and information can be culled for reports.
Edulastic	Allows students to make standards-aligned assessments and get instant feedback.
FreeOnlineSurveys	Helps students create surveys, quizzes, forms, and polls.
Gimkit	Assists students write real-time quizzes. And it was designed by a high school student.
Kahoot!	A game-based classroom response system that assists students create quizzes using internet content
MicroPoll	Helps students create polls, embed them into websites, and analyze responses.
Naiku	Assists students write quizzes students can answer using their mobile devices.
Obsurvey	Designed to make surveys, polls, and questionnaires
Poll Everywhere	Assists students create a feedback poll or ask questions and see results in real time. Allows students to respond in various ways. With open-ended questions, students can capture data and spin up tag clouds to aggregate responses
Poll Maker	Offers unique features, like allowing multiple answers to one question.
ProProfs	Helps students make quizzes, polls, and surveys.
Quia	Assists students create games, quizzes, surveys, and more. Access a database of existing quizzes from other educators.
Quizalize	Helps students create quizzes and homework
Quizizz	Guides students through designing quizzes and Assists students include students in the quiz-writing process.
Quizlet	Assists students make flashcards, tests, quizzes, and study games that are mobile friendly.
Survey Hero	Designed to build questionnaires and surveys.
SurveyMonkey	Helpful for online polls and surveys.
SurveyPlanet	Also helpful for online polls and surveys.
Triventy	Assists students create quizzes students take in real time using individual devices.
Yacapaca	Helps students write and assign quizzes.
Zoho Survey	Allows students to make mobile-friendly surveys and see results in real time.
Brainstorm, mind map, and collaborate	
AnswerGarden	A tool for online brainstorming and collaboration.
Coggle	A mind-mapping tool designed to help students understand student thinking.

Name of the Digital Tools and Apps	Utility for Teachers and Students
Conceptboard	Software that facilitates team collaboration in a visual format, similar to mind mapping but using visual and text inputs.
Dotstorming	A whiteboard app that allows digital sticky notes to be posted and voted on. This tool is best for generating class discussion and brainstorming on different topics and questions.
Educreations Whiteboard	A whiteboard app that Assists students share what they know
iBrainstorm	Assists students collaborate on projects using a stylus or their finger.
Miro	Allows whole-class collaboration in real time.
Padlet	Provides a blank canvas for students to create and design collaborative projects.
ShowMe Interactive Whiteboard	Another whiteboard tool to check understanding.
XMind	Mind-mapping software for use on desktop computers and laptops.
Present, Engage, and Inspire	
BrainPOP	Assists students use prerecorded videos on countless topics to shape students r lesson plan, then use quizzes to see what stuck.
Buncee	Helps students and teachers visualize, communicate, and engage with classroom concepts.
Five Card Flickr	Uses the tag feature from photos in Flickr to foster visual thinking.
PlayPosit	Allows students to add formative assessment features to a video from a library or popular sites, such as Students Tube and Vimeo, to survey what students know about a topic.
RabbleBrowser	Allows a leader to facilitate a collaborative browsing experience.
Random Name/Word Picker	Facilitates random name picking. Students can also add a list of keywords and use the tool to prompt students to guess words by providing definitions.
Socrative	Uses exercises and games to engage students with a topic.
Spark	Assists students add graphics and visuals to exit tickets.
Typeform	Helps students add graphical elements to polls.
Generate Word or Tag Clouds	
EdWordle	Generates word clouds from any entered text to help aggregate responses and facilitate discussion. Word clouds are pictures composed of a cloud of smaller words that form a clue to the topic.
Tagxedo	Allows students to examine student consensus and facilitate dialogues.
Wordables	Helps students elicit evidence of learning or determine background knowledge about a topic.
WordArt	Includes a feature that allows the user to make each word an active link to connect to websites, including Students Tube.
Get Real-time Feedback	
Formative	Assists students assign activities, receive results in real time, and provide immediate feedback.
GoSoapBox	Works with the bring-students r-own-device model and includes an especially intriguing feature: a confusion meter.
IXL	Breaks down options by grade level and content area
Kaizena	Gives students real-time feedback on work they upload. Students can use a highlighter or give verbal feedback. Students can also attach resources.
Mentimeter	Allows students to use mobile phones or tab assists to vote on any question a teacher asks, increasing student engagement.
Pear Deck	Assists students plan and build interactive presentations that students can participate in via their smart device. It also offers unique question types
Plickers	Allows students to collect real-time formative assessment data without the need for student devices

Name of the Digital Tools and Apps	Utility for Teachers and Students
Quick Key	Helps students with accurate marking, instant grading, and immediate feedback
Foster Family Communication	
Remind	Assists students text students and stay in touch with families.
Seesaw	Helps students improve family communication and makes formative assessment easy, while students can use the platform to document their learning.
Voxer	Assists students send recordings so families can hear how their students are doing, students can chat about their work, and students can provide feedback
Strengthen teacher-to-student or student-to-student communication	
Biblionasium	Assists students view books students have read, create reading challenges, and track progress. Students can also review and recommend books to their peers.
Classkick	Helps students post assignments for students, and both students and students r students' peers can provide feedback. Students can also monitor their progress and work.
ForAllRubrics	Assists students import, create, and score rubrics on students tablet or smartphone. Collect data offline, compute scores automatically, and print or save the rubrics as a PDF or spreadsheet.
Lino	A virtual cork board of sticky notes, it Assists students ask questions or make comments on their learning.
Online Stopwatch	Provides dozens of themed digital classroom timers to use during small- and whole-group discussions.
Peergrade	Helps students create assignments and upload rubrics. Students can also anonymously assign peer review work. Students can upload and review work using the corresponding rubric.
Spiral	Gives students access to formative assessment feedback.
Verso	Assists students set up learning using a URL. Space is provided for directions. Students can add their assignment, post comments, and respond to comments. Students can group responses and check engagement levels.
VoiceThread	Allows students to create and share conversations on documents, diagrams, videos, pictures, and more
Keep the Conversation Going with Live Chats	
Backchannel Chat	A teacher-moderated version of Twitter.
Chatzy	Supports live, online chats in a private setting

Conclusions

With tremendous changes in the educational sector, the use of online assessment has become more popular and widely adopted. But in the end, it totally depends on students to decide what kind of assessment students' want to opt for; be it an online or a paper-and-pencil one. The educationally advanced countries had embraced these techniques earlier. So, they faced less difficulty in imparting education online in COVID 19 pandemic as compared to us where lack of resources, infrastructure, training and acceptability had hindered this form of education for a long time. It's the right time to move in the right direction by adapting technology enhanced learning and assessment for our educational system to be at world level.

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A Study on Changes in Study Habits After the Pandemic

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Study habits play a major role in an individual's academic performance. If an individual is not regular in his study habits, he/she could not perform well in their studies. The researcher has gone through various research papers that focused mainly on the impact of study habits on academic achievement and basic study habits. During the pandemic, teaching methods made a new revolution and hence the study habits of students showed drastic changes. This paper attempts to explore the changes in the study habits of B. Ed trainees after the pandemic. Around 146 B. Ed trainees and teachers were taken for study. The findings of the research paper show that there has been no drastic change in their study habits after the pandemic.

A study habit is an action that students routinely and habitually carry out in order to complete the goal of learning, such as reading, taking notes, and holding study sessions. Depending on how successfully they benefit the students, study habits can be categorised as either effective or ineffective. Study habit is one of the most important learning or student variable that significantly affects students' academic success. If teachers, administrators, parents, guardians, school counselors, and the government do not step up, the trend and threat of pupils' performance in both internal and external examinations will become more damaging and alarming. If students have a clear understanding of their talents, appropriate study habits, and the ability to employ effective study skills, academic performance will be higher.

The New Standard Dictionary of Education defines study habits as the practice of students or pupils to engage in academic pursuits when given the chance. It needs more than just memorization to study effectively and effectively. It necessitates having the necessary knowledge of how and where to get crucial information, as well as the skill to apply it wisely.

Rajinder Singh, and Jharna Gohain (2022) in their paper "Study Habits among Higher Secondary Students in relation to their school environment" examine higher secondary students' study behaviours in connection to their academic environment. An 80-student sample from the higher secondary level was chosen for the current inquiry. The School Environment Inventory (SEI), created by Mishra K.S., was used in the current study. It was established by Mukhopadhyay M and Sansanwal D N. According to the results, there is no appreciable difference between the boys' and girls' study habits' mean scores. Additionally, the findings showed that there is no difference between pupils in terms of gender in terms of the mean scores for school climate. The study habits and educational environment of upper secondary school students are found to have no meaningful association.

Ranju T Nair, and Kulkarni U K(2020) in their paper **"**Study Habits and its Impact on academic performance in English of secondary school students in Kalaburgi Region" determine the relationship between study habits and academic achievement among secondary school students in the Kalaburgi region. The purpose of this study was to ascertain whether there was a connection between the students in Kalaburgi's secondary schools' ninth-grade classes' study habits and their success in learning English. The outcome made obvious the Kalaburgi region's preference for studying. Using the purposive technique, 65 students were chosen as the sample. An inventory of study habits and documents was employed as the research tool (students' mid-term marks score). Data analysis methods employed included descriptive statics and Pearson Product Moment Correlation. The study habits and academic achievement in English were found to be positively correlated. It follows that students' learning achievement will increase in direct proportion to how well they manage their study time. To improve students' academic performance, it was suggested that parents and teachers work together to teach them how to build effective study habits.

Lynda Zohmingliani (2019) in her paper "Study habits among school students and its relevance to teacher education" learns more about the study habits of upper secondary students in Aizawl City. It involved 420 secondary students from the city of Aizawl. The data

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was gathered using the Study Habit Inventory created by Mukhopadhyay M. and Sansanwal D.N. in 1983. The data was analysed using the mean, S.D., and t-test. According to the study, most pupils in Aizawl City had a typical study routine. The survey also revealed that, in comparison to male students, female students have better study habits. Objectives of the Study are:

i. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their age.

ii. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their educational qualifications.

iii. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their major subject.

iv. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on the type of institution they studied.

v. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their year of study.

vi. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their mode of study.

vii. To find out if there is any difference in study habits of B. Ed trainees after the pandemic based on the medium of instruction.

viii. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their place of residence.

ix. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation.

x. To find out if there is any difference in study habits of B. Ed trainees after the pandemic based on annual income.

xi. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on whether they belong to first-generation learners or not.

xii. To find out if there is any difference in the study habits of B. Ed trainees after the pandemic based on their marital status.

Hypotheses of the Study are:

- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on their age.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on their educational qualifications.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on their major subject.
- There is no significant difference in study habits of B. Ed trainees after the pandemic based on the type of institution they studied.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on their year of study.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on their mode of study.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on the medium of instruction.
- There is no significant difference in study habits of B. Ed trainees after the pandemic based on their place of residence.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on the annual income.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on whether they belong to first-generation learners or not.
- There is no significant difference in the study habits of B. Ed trainees after the pandemic based on their marital status.

Analysis and Interpretation

Changes in the study habits of B. Ed trainees after the pandemic are collected through questionnaires using Google Forms. The random sampling method is used for a population of around 146 prospective

teachers. A pilot study of 25 samples was done to check the reliability and validity of the scale prepared by the researcher. The scale is reliable with a value of 0.78. SPSS is used for analysis and interpretation of the collected data.

Table 1 t-test for Study Habits of B. Ed Trainees After Pandemic Based on Age

Age	N	Mean	S.D	t value	p value
Below 25	94	43.97	5.675	1.702	0.091
Above 25	52	42.29	5.771		

Interpretation

In Table 1, the calculated p-value 0.091 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed. trainees after the pandemic based on age.

Table 2 t-test for Study Habits of B. Ed Trainees After Pandemic Based on Educational Qualification

Educational Qualification	N	Mean	S.D	t value	p value
UG	83	43.04	5.076	0.804	0.422
PG	63	43.81	6.542		

Interpretation

In Table 2, the calculated p-value 0.422 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on their educational qualifications.

Table 3 t-test for Study Habits of B. Ed Trainees after Pandemic Based on Major Subject

Major subject	N	Mean	S.D	t value	p value
Arts	59	43.56	5.599	0.327	0.744
Science	87	43.24	5.873		

Interpretation

In Table 3, the calculated p-value 0.744 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on the major subject.

Table 4 t-test for Study Habits of B. Ed Trainees after the Pandemic Based on the Type of Institution

Type of institution	N	Mean	S.D	t value	p value
Government aided	83	44.30	5.684	2.280	0.024
Private	63	42.14	5.639		

Interpretation

In Table 9 the calculated p-value of 0.024 is less than the significant value of 0.05, rejecting the null hypothesis. Therefore, there is a significant difference in the study habits of B. Ed trainees after the pandemic based on the type of institution. From the table-9, it is observed that the mean scores of students who studied in government colleges are higher than those of others.

Table 5 t-test for Study Habits of B. Ed Trainees After the Pandemic Based on Year of Study

Year of Study	N	Mean	S.D	t value	p value
I year	91	42.55	5.714	2.250	0.026
II year	55	44.73	5.589		

Interpretation

In Table 5, the calculated p-value of 0.026 is less than the significant value of 0.05, rejecting the null hypothesis. Therefore, there is a significant difference in the study habits of B. Ed trainees after the pandemic based on the year of study. From Table 5, it is observed that the mean scores of B. Ed teachers who study in II years are higher than that of I year.

Table 6 t-test for Study Habits of B. Ed Trainees After Pandemic Based on Mode of Study

Mode of study	N	Mean	S.D	t value	p value
Online	68	44.18	5.950	1.592	0.114
Offline	78	42.67	5.505		

Interpretation

In Table 6, the calculated p-value of 0.114 is greater than the significant value of 0.05, accepting the null hypothesis. Therefore, there is no significant

difference in study habits of B. Ed trainees after the pandemic based on the mode of study.

Table 7 t-test for Study Habits of B. Ed Trainees After Pandemic Based on Medium of Instruction

Medium of instruction	N	Mean	S.D	t value	p value
English	115	43.54	5.705	0.684	0.495
Tamil	31	42.74	5.950		

Interpretation

In Table 7, the calculated p-value of 0.495 is greater than the significant value of 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on the medium of instruction.

Table 8 t-test for Study Habits of B. Ed Trainees After Pandemic Based on Place of Residence

Place of residence	N	Mean	S.D	t value	p value
Rural	62	44.21	5.454	1.524	0.130
Urban	84	42.75	5.909		

Interpretation

In Table 8, the calculated p-value 0.130 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in study habits of B. Ed trainees after the pandemic based on place of residence.

Interpretation

In Table 9, the calculated p-value of 0.010 is less than the significant value of 0.05, rejecting the null hypothesis. Therefore, there is a significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation. Post Hoc test is conducted in order to find which group causes the difference in the mean score.

Post Hoc Test

Interpretation

Daily Wage and Self-employed: In the table-10, the calculated p-value 0.086 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation.

Self-employed and Government: In Table 9, the calculated p-value 0.007 is less than the significant value 0.05, rejecting the null hypothesis. Therefore, there is a significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation. From the table, it is observed that the mean scores of study habits of B. Ed trainees whose father is self-employed are higher than those of government employed.

Table 9 F-test for Study Habits of B.Ed. Trainees After Pandemic Based on Father's Occupation

Father's Occupation	N	Mean	S.D	Source of variation	df	SS	MSS	F value	Sig
Daily wage	39	42.74	6.256	Among	3	367.920	122.640	3.940	.010
Self employed	34	45.97	5.102	Within	142	4420.108	31.128		
Government	34	41.47	5.604	Total	145	4788.027			
Private	39	43.38	5.225						

Table 10 Post Hoc Test for Study Habits of B.Ed. Trainees After Pandemic Based on Father's Occupation

Mode of teaching	N	Mean	Mode of teaching	N	Mean	Sig
Daily wage	39	42.74	Self-employed	34	45.97	0.086
Self-employed	34	45.97	Government	34	41.47	0.007
Government	34	41.47	Private	39	43.38	0.607
Private	39	43.38	Daily wage	39	42.74	0.996
Daily wage	39	42.74	Government	34	41.47	0.909
Self employed	34	45.97	Private	39	43.38	0.263

Government and Private: In Table, the calculated p-value 0.607 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation.

Private and Daily Wage: In Table-9, the calculated p-value 0.996 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation.

Daily Wage and Government: In Table--9, the calculated p-value 0.909 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation.

Self-employed and Private: In the table-9, the calculated p-value 0.263 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on their father's occupation.

Interpretation

In Table 9, the calculated p-value 0.167 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on annual income.

Interpretation

In Table 9, the calculated p-value of 0.518 is greater than the significant value of 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on first-generation learners.

Table 12 t-test for the Attitude of B. Ed Trainees and Teachers Towards Internship Based on First Generation Learner

First generation learner	N	Mean	S.D	t value	p value
Yes	60	43.00	5.877	0.648	0.518
No	86	43.63	5.674		

Table 13 t-test for Attitude of B. Ed Trainees and Teachers Towards Internship Based on Marital Status

Marital Status	N	Mean	S.D	t value	p value
Single	107	43.66	5.754	1.023	0.308
Married	39	42.56	5.721		

Interpretation

In Table 9, the calculated p-value 0.308 is greater than the significant value 0.05, accepting the null hypothesis. Therefore, there is no significant difference in the study habits of B. Ed trainees after the pandemic based on marital status.

Educational Implications

- As the study aims to find the study habits of B. Ed trainees after the pandemic, the result of analysis and interpretation of the data collected shows a positive approach.
- The variables age, educational qualification, major subject, mode of study, medium of instruction, place of residence, annual income, marital status, and first-generation learner showed no significant difference in the study habits of B. Ed trainees after the pandemic.
- However, the type of institution they studied at, year of study, and father's occupation showed

Table 11 F-test for Study Habits of B.Ed. Trainees After Pandemic Based on Annual Income

Annual Income	N	Mean	S.D	Source of variation	df	SS	MSS	F value	Sig
Below 1 lakh	71	43.92	5.339	Among	2	118.236	59.118	1.810	.167
1 lakh to 3 lakh	49	43.59	6.308	Within	143	4669.791	32.656		
Above 3 lakhs	26	41.46	5.530	Total	145	4788.027			

significant differences in the attitude of B. Ed trainees and teachers towards internship.

- The study is only limited to B. Ed trainees of a particular college.

Conclusion

Changes in study habits do not have a major impact after the pandemic. Only a few demographic variables like the type of institution showed change in study habits. This may be because the teaching methodology in those institutions had made an impact on learning.

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Higher Education is a Powerful Tool to Build a Knowledge Society

Satya Pal Malik, Hon'ble Governor of Meghalaya and Visitor, University of Science and Technology Meghalaya delivered the Convocation Address at the 8th Convocation Ceremony of the University of Science and Technology Meghalaya on September 20, 2022. He said, "Higher education is the most powerful tool to build a knowledge-based society. But today higher education is faced with many challenges. A major challenge is, maintaining the quality of education and research. There should be an improvement in the sphere of quality of faculty, students, course content, and infrastructure. Higher education needs to be viewed as a long-term social investment for the promotion of economic growth." Excerpts

I am very happy to be with you and to share your joy on this memorable day in your life. It is indeed a matter of pride and privilege for me to participate in the 8th Convocation of the University of Science and Technology Meghalaya.

At the outset, I congratulate each one of the graduating students for your outstanding performance and success as you have completed your degree programme from this prestigious institution. I also congratulate the faculty members and guardians for shaping the young minds. Today a total number of 1305 students will be receiving degrees at different levels in this convocation including 15 PhD scholars.

Let me also congratulate the entire USTM family for becoming the first private university from North East India that has been ranked Grade 'A' recently by the NAAC and to be ranked amongst the top 200 Universities of India by NIRF-2022

I would like to congratulate Padmashri Manas Chaudhuri and Dr NN Dutta, the recipients of the Hon. D.Litt and D. Sc. conferred in recognition of their outstanding contributions in different fields. I wish that they will continue to work in their respective field and achieve greater heights. I also take this opportunity to thank USTM for recognizing the great work done by the awardees.

Dear Students. A mighty banyan tree that provides shade and shelter to thousands grows from a humble seed. Likewise, USTM is also the outcome of a humble beginning by its founder Mahbubul Hoque, and is now growing into a big banyan tree. The university started in the year 2011 with just seven students and it has now more than 6,000 students from all over the North East.

I also got to know that the university is an outcome of its founder Mahbubul Hoque's vision to change the lives of the people of the region by empowering them with education. I have learned that Mr. Hoque, a rank holder in Masters in Computer Science from Aligarh Muslim University had started his edupreneurial journey with just one computer and four students in February 2001. Today, under his Chairmanship, ERD Foundation which is the parent organization is running two CBSE-affiliated senior secondary schools, one engineering college, one law school, one B.Ed School, one Women's College, two pharmacy colleges, one business school apart from the USTM. I am delighted to know that more than 20% of students belonging to underprivileged classes at each institution get free education.

Dear Students. As Swami Vivekananda said in Parliament of Religions in Chicago in 1893, the concept of 'Vasudhaiva Kutumbakam' - the world is one family is the only beacon light for survival, growth, and real progress of human society, particularly in the strife-torn world of today. It was perceived in India in ancient times by our learned sages and saints and has an eternal validity. Swami Vivekananda explained and elaborated on it in the global context.

The basic tenets of the Indian tradition of creation, generation and dissemination of knowledge were expanded in tune with the requirements and needs of the times. The new National Education Policy of the Government of India too emphasizes grooming students as global citizens by providing choice-based education with a focus on skill development and value-based learning in a holistic way.

Higher education is the most powerful tool to build a knowledge-based society. But today higher education is faced with many challenges. A major challenge is, maintaining the quality of education and research. There should be an improvement in the sphere of quality of faculty, students, course content, and infrastructure. Higher education needs to be viewed

as a long-term social investment for the promotion of economic growth.

The private sector needs to be encouraged to participate in higher education. In the pre-independence era private sector played an important role in setting up institutions of higher education. Now in the wake of India's robust growth in the corporate sector, the responsibility of the private sector in participating in the development of higher education and research has assumed added importance. However, there must be safeguards from commercialization of higher education. I am happy to know that USTM is providing free education to deserving students from economically disadvantaged families.

USTM is a symbol of the emotional integration of the North East region. A look into the composition of students of USTM shows that out of 6000 students in the university, there are students from all the northeastern states, giving a platform for the students coming from diverse cultural, ethnic, and linguistic backgrounds to live and learn together making it a melting pot. This has been truly possible for the strategic location of the University.

I am happy to note that USTM has truly become a catalyst for women's empowerment. I am told that more than 57% of students in USTM are girls and more than 75% of Faculties are women.

Dear Students. The northeastern region is India's gateway to the South East Asia. Government of India's Act East policy is definitely going to bring India's North Eastern region and South East Asian countries much closer in days to come. The USTM must position itself to play its role destined for it.

With the explosive growth of knowledge in the past century and with the development of handy tools of information and communication technologies as well as other scientific innovations, competition has become a hallmark of growth all over the world. I am happy to know that USTM has come forward with a mission to produce scholars adequately equipped to face the global forces of competition and the changing needs of the time.

The university has also initiated many flagship programs like the North East Graduate Congress, North East College Principals' Conclave, and APJ Abdul Kalam Memorial Lecture with a view to encourage and inspire the students of the entire North East to come out of their comfort zone and show their talent and inherent potentialities not just in academics but in extra-curricular activities too.

Dear students. I believe that you all have the fullest potentialities and abilities to come out with flying colors in the days ahead and your university must have given you excellent opportunities to realize and re-assert your inherent potential, your dream, your hopes, and aspirations. Now, you will be stepping out of the boundaries of USTM and facing the real world. You have to prove your excellence - the extent of knowledge gathered in this university is not just for easy scoring but to use it for the betterment of the society.

Being the 10th batch of the passed-out students of this university, you have to shoulder a special responsibility. You must be the torch-bearer of your university and make its name shine in the outside world. A strong alumnus is the backbone of a university and I am sure a day is not far when USTM will be at par with the top universities in the country and the world.

The road map charted out by USTM is a laudable vision and I am confident that with burning desire to achieve it, backed by good team work, the USTM will achieve its goal. I extend my all good wishes to the university to achieve its goal and become a world class university by 2030. Shillong, the capital of Meghalaya has been the educational destination since long. I hope this trend will be bolstered by USTM and Meghalaya will be educational destination for even more students.

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In-service Teachers' Training Workshop on Anjuman-I-Islam's

A five-day In-service Teachers' Training Workshop on 'Anjuman-I-Islam's: A Step towards the Implementation of the STEAM Project' was organized by Anjuman-I-Islam's Akbar Peerbhoy College of Education, Vashi, Navi Mumbai, recently. The workshop aimed to equip forty-five teachers from 25 primary and secondary schools of Anjuman I Islam with the necessary skills and knowledge to effectively implement the STEAM project in their classrooms. President, Dr. Zahir I. Kazi inaugurated the programme and in his address, Dr. Kazi encouraged the participants to implement knowledge and skills of training courses in their respective fields. Dr Asma Shaikh, Principal of the College introduced the theme of the Steam Project. STEAM is an essential component of 21st century education and why it is important. She said, "In an ever-changing, increasingly complex world, it's more important than ever that our nation's youth are prepared to bring knowledge and skills to solve problems, make sense of information, and know how to gather and evaluate evidence to make decisions." Enhancing such skills lies at the heart of STEAM education.

STEAM is an educational discipline that aims to spark an interest and lifelong love of the arts and sciences in children from an early age. Science, Technology, Engineering, the Arts, and Math are similar fields of study in that they all involve creative processes and none uses just one method for inquiry and investigation. Teaching relevant, in-demand skills that will prepare students to become innovators in an ever-evolving world is paramount, not only for the future of the students themselves but for the future of the country. Through this holistic approach, students are able to exercise both sides of their brain at once. Projects like these erase the lines that traditionally divide academic subjects and give students a chance to combine concepts and knowledge from across different disciplines to create deeper understanding and solve real-world problems through meaningful, engaged learning.

Ms Fauzia Ansari, Principal, AIBSKES oriented on the Implementation of Programme. She presented the session to the educators, outlining the forthcoming implementation of a STEAM (Science, Technology, Engineering, Arts, and Mathematics) programme across all Anjuman Schools. During the initial session, she underscored the importance of training teachers in the integration of critical skills, including critical thinking, problem-solving, communication, collaboration, creativity, and imagination, within the classroom context through various activities.

Subsequently, in the following session, a comprehensive examination of the 'Full Steam Ahead' pedagogical approach took place. The segment entailed a thorough exploration of the distinct components constituting STEAM education, such as science, technology, engineering, arts, and mathematics, coupled with an in-depth examination of lesson planning and assessment strategies. The intent was to empower educators with the necessary insights and methodologies to effectively craft and deliver STEAM lessons. Furthermore, Ms. Ansari elaborated on the pivotal aspect of integrating these critical skills seamlessly into the STEAM curriculum. This holistic approach seeks to transcend traditional subject boundaries, ensuring a well-rounded educational experience for students across Anjuman Schools.

During the Technical Session, the Resource Person, Dr Namrata Saxena, Assistant Professor, Pillai College of Education and Research, Mumbai spoke on the topic 'Principle of Effective Teaching'. She focused on exploring the concepts of social, psychomotor, and cognitive learning. Dr. Saxena emphasized that learning is intricately tied to experience, enriched by social interactions, enhanced through practice, and amplified by constructive feedback. Her unwavering belief in the autonomy of learners and the importance of cultivating their sense of responsibility resonated strongly with the participants, inspiring them to foster independent and responsible learners in their classrooms.

Dr. Bhaskar Gardas, Assistant Professor at MHSS College of Engineering, Mumbai spoke on the topic 'Curriculum and Cutting Edge Course Design'. He guided participants in creating student-centered courses with a focus on learning objectives, topic design, sequencing, and a narrative framework. He emphasized aligning learning activities, instructional strategies, and assessments with the learning goals and course structure, resulting in more effective and engaging learning experiences.

The Resource Person, Shree Chandrashekhar Chakradeo, Principal, Comprehensive College of Education, Chembur, Mumbai delivered his speech on 'Experiential Learning'. He delved into Kolb's theory of experiential learning, highlighting its cyclical nature and applicability within and outside the classroom. Kolb's experiential learning theory combines a four-stage learning cycle and four learning types, providing a robust foundation for learning and personal growth. Mr. Chakradeo concurred with Kolb's assertion that learning is most effective when learners progress through the cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. By applying this theory, educators can facilitate meaningful learning experiences where information is gained through direct experience and active experimentation, leading to enhanced learning outcomes and holistic development.

Dr Rajendra Magar, Dean, SoCE, AIKTC spoke on 'Outcome Based Education'. Dr. Magar explained how Outcome-Based Education (OBE) addresses key questions i.e. defining desired student abilities, supporting students through student-centered delivery, measuring success through evaluation, and achieving continuous Quality Improvement (CQI) through ongoing evaluation and improvement.

Ms Fauzia Ansari, Headmistress, Anjuman I Islam's Begum Sharifa Kalsekar Girls' English High School, Mumbai discussed the topic on 'Century Educator: Critical Thinking and Problem-Solving, Communication and Collaboration and Creativity and Imagination**.** She trained the participants on embedding these essential skills within the curriculum and aligning them with STEAM activities. The training encompassed various aspects of deep learning structures, Bloom's taxonomy, open-ended questions, mind mapping exercises, assessment techniques, and the integration of technology. Through her guidance, educators gained valuable insights and practical tools to foster these crucial 21st-century skills in their students, preparing them to excel in an ever-evolving world.

Ms Fauzia Ansari, Headmistress, Anjuman I Islam's Begum Sharifa Kalsekar Girls' English High School, Mumbai delivered her topic on 'STEAM Pedagogy'. She highlighted its different components and core competencies. She emphasized the importance of connecting STEAM concepts with the real world and problem-solving. Participants learned effective lesson designing, integrating real-world scenarios to foster critical thinking and problem-solving skills in students. Mapping these concepts with activities and assessments allowed educators to measure the impact of learning outcomes more effectively. By the end of the session, participants were well-equipped to implement STEAM-based approaches that not only fostered creativity and imagination but also empowered students to tackle real-world challenges through innovative problem-solving.

Dr Usha Borkar, Prof, HJ College of Education took the session on 'Assessment Technique Tool'. She covered various assessment techniques, including student feedback, formative and summative evaluation, digital assessment, and classroom-based methods. The session emphasized the importance of aligning assessment with learning objectives and providing meaningful feedback to enhance student learning and achievement.

Dr Fouzia Khanam, Assistant Professor, AI's APCE conducted the session on 'Cooperative Learning and Techniques'. She introduced various techniques such as Jigsaw, Think-Pair-Share, Round Table, and Gallery Walk, using interactive processes and STEAM examples to demonstrate their effectiveness in fostering collaboration and critical thinking among students.

Dr Shireen Patel, Assistant Professor, AI's APCE spoke on the topic 'Cooperative Learning and Techniques- STAD'. She shared her insights on the STAD (Student Team Achievement Division) cooperative learning technique. Drawing from her Ph.D. study, she highlighted the value of cooperative learning as a cutting-edge and enjoyable method that fosters activity, interdependence, and cooperation among students, leading to mutual understanding and growth. She emphasized that all types of learners can benefit from this strategy, and students can apply their knowledge in STEM studies effectively. The STAD method makes learning biology, physics, and chemistry simple and enjoyable, providing a distinct learning component in the lesson-planning process.

Dr Asma Shaikh, Principal, AI's APCE spoke on the topic 'Cooperative learning – 7E's'. Dr. Shaikh discussed the effectiveness of the 7E learning cycle model as an instructional strategy. She emphasized its benefits in delivering the curriculum and facilitating the learning process. By using the 7E model in classrooms, students gain a deeper understanding of concepts, leading to increased achievement and improved retention of learned material. This approach enhances science process skills, critical thinking, analytical

thinking, and overall attitude towards various subjects, surpassing conventional teaching methods. Dr. Shaikh encouraged instructors and teachers to adopt the 7E model in their teaching, which comprises Elicit, Engage, Explore, Explain, Elaborate, Evaluate, and Extend. During the session, she demonstrated a lesson based on the 7E's and provided practical guidance for its implementation.

The Valedictory Session featured esteemed guests from the management, Vice President Mr. Mushtaq Antulay and Dr. Shaikh Abdullah along with Treasurer, Mr. Moiz Miyajiwala encouraging participants for future implementation. The training elevated participants from passive engagement to active involvement, resulting in well-deserved certificates upon completion. An inspiring and transformative experience fostering creativity and critical thinking for their students. The certificates were awarded to participants after their feedback. The Vote of Thanks was proposed by Dr Irfan Lakhani, Associate Professor of AI.

International Conference on Machine Learning, Image Processing, Network Security, and Data Sciences

A two-day International Conference on 'Machine Learning, Image Processing, Network Security, and Data Sciences' is being organized by the Department of Computer Science and Engineering, National Institute of Technology, Hamirpur from December 21-22, 2023. The event will bring together researchers, experts, and practitioners from different fields to share their knowledge, insights, and experiences on the latest advancements and innovations in these domains. The conference aims to provide a platform for interdisciplinary collaborations and foster a vibrant community of researchers and practitioners in these areas. The event will provide an excellent opportunity for participants to learn from each other, network, and collaborate on new research projects. The Tracks of the Event are:

Machine Learning and Computational Intelligence

- Theoretical Computer Science.
- Artificial Intelligence.
- Pattern recognition.
- Computer Graphics.
- Virtual Reality.
- Distributed and Cloud Computing.
- Signal Processing.
- Software Architecture.
- Soft Computing.
- Grid and Cluster Computing.
- Evolutionary Algorithms.
- Ubiquitous Computing.
- Parallel and Distributed Networks.
- Perceptual Computing, and Related Topics.
- Learning using Ensemble and Boosting Strategies.
- Active Machine Learning.
- Manifold Learning.
- Fuzzy Learning.
- Kernel-based Learning.
- Genetic Learning.

Image Processing and Computer Vision

- Watermarking Methods and Protection.
- Wavelet Methods.
- Image Data Structures and Databases.
- Multi-resolution Imaging Techniques.
- Multimedia Systems and Applications.
- Novel Image Processing Applications.
- Camera Networks and Vision.
- Cognitive and Biologically Inspired vision.
- Active and Robot Vision.
- Fuzzy and Neural Techniques in Vision.
- Medical Image and Video Analysis.
- Color and Multispectral Processing.
- Computational Imaging.
- Video Processing and Analytics.
- Visual Quality Assessment.
- Deep Learning for Images and Video.
- Human Activity Recognition.
- Software Tools for Imaging.
- 3D Imaging.

Data Sciences and Big Data

- Big Data Management.
- Platforms and Technologies for Big Data.
- Data Retrieval.
- Big Data Storage Techniques.
- Data Mining and Warehouse.
- Data Visualization.

- Modelling Structure and Storage of Big Data.
- Scalability and Portability Issues of Big Data.
- Big Data Recommender Systems.
- Digital Forensics.
- Parallel Processing of Big Data.
- Distributed Access to Big Data.
- Applications of Big Data and Related Topics.
- Web Mining.
- Social Network Analysis.
- Text Mining.
- Sentiment Analysis.
- Algorithms.
- Novel Theoretical Models.
- Novel Computational Models.
- Data and Information Quality.
- Data Integration and Fusion.

Network and Cyber Security

- Network Performance Analysis.
- Human Factors in Security and Privacy.
- Security and Privacy in ad hoc Networks.
- Security and Privacy in e-services.
- Security and Privacy in Grid Computing.
- Security and Privacy in Mobile Systems.
- Cyber Risk and Vulnerability Assessment.
- Cyber-crime and Warfare.
- Insider Threat Detection and Prevention.
- Critical Infrastructure Protection.
- Intrusion Detection and Prevention.
- Botnet Detection and Mitigation.
- Visual Analytics for Cyber Security.
- Security and Privacy in Social Network.
- Machine Learning for Biometric Security and Privacy.
- Security and privacy in Wireless Sensor Networks.
- Security and Privacy in Pervasive Computing.

For further details, contact, Organising Secretary, Department of Computer Science and Engineering, National Technology of Hamirpur, Himachal Pradesh-177005. E-mail: *mind2023@nith.ac.in.* For updates, log on to: *https://mind2023.nith.ac.in*.

Seminar on Digital Citizenship at Tata Institute of Social Sciences, Mumbai

A two-day National Postgraduate Student Seminar on 'Digital Citizenship in Contemporary India' is being organized by the School of Media and Cultural Studies, Tata Institute of Social Sciences, Mumbai from January 12-13, 2024.

Access to digital devices and the Internet is increasingly seen as crucial for practicing, enhancing, and enjoying citizenship; a phenomenon that we may loosely recognise as digital citizenship. Digital and online technologies have become an integral part of our lives, providing opportunities for education and work, collaboration and community-building, social development and progress, even as a majority of such infrastructure has come to be owned by private interests who profit from exploiting user data in a variety of ways. Nonetheless, access to digital and online technologies enables expression and connections that facilitate economic, social, and cultural rights that together constitute citizenship. Without such access, citizenship stands to be eroded of its substantive qualities in contemporary times. It is also true that while some individuals get to enjoy full citizenship, others experience a deficit because of historical and structural inequalities.

Even as we navigate this terrain marked by private interests and social and economic inequalities, it is essential to explore what the concept of digital citizenship may mean in contemporary India and how to make it more inclusive and responsive. Amid the pandemic-induced digital acceleration, the country stands at a crucial juncture for defining its digital citizenship landscape. While the digital divide has marginally improved through a combination of state policy and private sector participation, the situation is far from ideal. Especially concerning are the issues around user data and its surreptitious use for a range of commercial and governance applications without much transparency or recourse to redressal. Equally worrying are the ways in which online spaces have been used by individual and organised groups to troll and harass journalists, human rights defenders, and gender, caste, and religious minorities.

Neither 'digital', nor 'citizenship' are stable ideas in a fixed relationship with each other as has been made abundantly clear during the COVID-19 pandemic, when social and economic relations were

strained by unprecedented duress. Citizens, especially the younger ones, have used this uneven terrain of digital and online technologies to inscribe themselves in the public sphere through ingenuity and creativity, especially when restricted from accessing public spaces and institutions, such as the mainstream media. From explicitly political actions involving the use of social media for organising, gaining visibility, and amplification of their concerns, to more reflexive artistic expressions, young people have used digital and online media to not merely assert their citizenship but to also enliven and enrich it. Also, given the affordances and reach of digital and internet technologies, the notion of digital citizenship is becoming increasingly difficult to circumscribe within the context of the nation-state; its horizons exceed national or territorial boundaries, especially in the context of flows of global capital, global value chains and labour, displacement and migration, and shared concerns around ecology. The Themes of the Event are:

- Citizenship in Both National and Global Contexts with a Reference to Digital Infrastructures, Policies, and Practices.
- Digital Divide: Geography, Identity, and Terms of Access.
- Democratic Norms and Processes.
- Populism, Propaganda, and Disinformation.
- e-Governance, Including Digitisation of Public Data and Services.
- Political-economy of the Internet and Digital Media.
- The Role of the Private Sector in Digital and Online Media. Concerns Around Consolidation and Emergence or Oligopolies.
- Transparency Concerns around Data Protection and Surveillance and Their Economic and Political Impact.
- Digital Media and Public Sphere-participation, Cultural Production, and Public Opinion.
- Displacement: Refugees and Migration.
- Trolling, Stalking, Online Harassment and Sexual Violence.
- Users/Audiences: Anxieties Around Screen Use, Online Presence, AI, etc.
- Methods: Studying Digital Cultures.

For further details, contact Organising Secretary, School of Media and Cultural Studies, Tata Institute of Social Sciences, Mumbai, Maharashtra-400088, Mobile No: 08580642013 or 07304284008, E-mail: *framesofreference.smcs@gmail.com*. For updates, log on to: *https://www.tiss.edu/events.* ❑

AIU News

Short-term Capacity Building Programme on Technology and Office Management

A five-day Short-term Capacity Building Programme on 'Technology and Office Management' was organised by the Association of Indian Universities (AIU) - Academic and Administrative Development Centre, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu from July 31- August 04, 2023. The event targeted the non-teaching staff of Higher Education Institutions. Around 327 participants from all over India attended the programme through online mode.

In her presiding remarks, Dr. V Bharathi Harishankar, Vice Chancellor, Avinashilingam Institute for Home Science and Higher Education for Women highlighted the value of an agile workforce at all levels of administration and mentioned that flexibility and configurability are the two characteristics of an agile individual. Further, the speaker emphasized that technology will enable everyone to work in an open and transparent manner.

Prof. R Srinivasan, Member of State Planning Commission, Government of Tamil Nadu delivered the inaugural address on 'Imperative Role of Technology in Office Management'. The speaker stated that Governance sets the parameters under which administration operates. Most of the time personal interests of the service provider and the recipient might not line up. The concluding remarks highlighted the growth of Fintech service in Tamil Nadu. To exploit the opportunities embracing technology becomes the need of the hour. Dr. K Ramya, Nodal Officer welcomed the gathering, Dr. P Santhi, Programme Coordinator presented the event briefly and a vote of thanks was delivered by Dr. K Kanniammal, Programme Co-coordinator.

The next session on the topic 'Role and Significance of ICT in HEIs and Exploring Hardware and Software Concepts' was handled by Mr. B Meinathan**,** Technical Consultant**,** Nettel Solutions India Private Limited, Coimbatore. The session discussed AOMEI, Pycharm, Django, and Flask. ICT promotes higher-order thinking skills, encourages collaboration and integration is a key part of the national curriculum.

Mr. K Santhosh Kumar, Zonal Manager, Accent Techno Soft, Coimbatore lead the session on 'Computer Networks, Internet and Office Automation'. The speaker emphasised that computer networks support online education, provide users access to learning materials, and improve communication and information accessibility. The automation of the Internet and offices places a strong emphasis on the creation of cutting-edge educational techniques. AI can automate routine processes, increasing productivity and efficiency across a range of industries.

Prof. S P Thyagarajan, Distinguished Professor and Advisor to Chancellor, Vellore Institute of Technology, Chennai presented on the topic 'Professionalism in Workplace'. The resource person stated that professionalism should be shown by being alert, receptive, and proactive. Honesty/integrity is the unwavering adherence to the highest ethical standards.

Ms. A Moogambigai, Senior Technical Trainer, CADD Centre Training Services, Coimbatore lead the session on 'Word Processing Applications'. Demonstrative session was provided by the resource person on creating, formatting and storing of document. Further, spreadsheet applications and usage was demonstrated with practical examples.

The session on 'MS PowerPoint and File Management' was handled by Dr. Sathiyaseelan Shanmugam, Director, Primoris Systems India Pvt Ltd, Coimbatore. Various features and applications of powerpoint, creating visually appealing presentation was demonstrated. File Management facilitates sharing, reduces the risk of losing important information, and can serve as a backup if something goes wrong.

Mr. G Arulprakash, Manager, Business and Operations of Cloud Reign Technologies lead the session on 'Email and Calendar Management: E-mail Etiquettes and Collaboration Platforms'. The speaker stated that Email etiquette is essential to maintaining professional image and it allows writers to maintain control over their messaging. Further, collaboration platforms help in document management, idea sharing, and task administration.

Dr. Lalitha Balakrishnan, Former Principal, MOP Vaishnav College for Women, Chennai handled the session on 'Technology and Examination Process'. The speaker presented various examination processes that have been automated at their institute. Further, she mentioned that technology has enabled examination results to be produced on time and has reduced errors to a greater extent.

The session on 'Good Governance, Disciplinary Procedures, RTI, ICC' was handled by Dr. S Kowsalya, Registrar, Avinashilingam Institute for Home Science and Higher Education for Women. The speaker insisted that non-teaching staff should handle disciplinary cases with sensitivity and professionalism. Governance needs to be fair and impartial and RTI requests and the obligations of public authorities discussed by him.

Dr. Rahul Ratnakar Marathe, Professor, Department of Management Studies, IIT, Madras presented the Workflow Automation at IIT and demonstrated the certain operations and activities that could be handled without the need for human intervention. Workflow Automation makes work more efficient, simple, and consistent.

The session on 'Overview of Public Financial Management System (PFMS)' was handled by Mr. M S Nagaraj, Chartered Accountant. The resource person clearly explained direct benefit transfer, zero balanced accounting and digital signature certificate. Participants were oriented about the role of agency administrator, agency data operation and agency data approver.

Mr. T R Ramakrishnan, Former Deputy Registrar cum Additional COE of University of Madras lead the session on the topic 'Establishment Rules and Processes'. The resource person explained about the regulatory mechanisms to be strictly followed

in Higher Education Institutions in order to ensure seamless flow of academic and administrative activities. He further insisted establishment section staff to developing and sustain excellent relationships with students and faculty, as well as preserve dignity by treating them with care and love.

CA K Jalapathi, Chartered Accountant, M/S Anbarasu and Jalapathi, Coimbatore presented on the topic 'Application of GST and IT to HEIs'. The comprehensive session began with a quick explanation of TDS and GST. Under Sections 12AA and AB, Charitable Institutions enjoy the tax exemption. There is no exception for services offered by educational institutions in the form of training or coaching in the arts and culture. The taxability of educational services was explained as follows: educational connected services are exempt, while others, such as renting of land or buildings and consultation fees obtained from third parties, are taxed at 18% were emphasised too.

Mr. S Sardar Malik, Former Joint Director, L.F. Audit initiated on the topic 'Auditing in HEIs'. The speaker explained about categories of institutions namely central, state and deemed universities funded by Ministry of Education (MoE), Govt. of India. The University Grants Commission (UGC) regulates the functions of all Higher Educational Institutions that serve the student community. Any fund received is accounted for verification. Payment and receipt are to be audited differently.

The session on 'Automation in Examination' was led by Dr. V Viswanathan**,** Professor, School of Computer Science and Engineering and Deputy Controller of Examination, Vellore. The exam automation aims to automate every step of the examination process, including the creation of exams, the uploading of question papers for various exam formats, and the reliable and rapid evaluation of results. Exam automation guarantees that the exam procedure is simple and requires little work from both the examinee and the examiner.

Mr. V Balasubramanian**,** Internal Audit Officer of Avinashilingam Institute for Home Science and Higher Education for Women presented on the topic 'GFR Rules 2017'. The speaker explained about floating a Tender and e-Procurement. Further, the speaker stated that the new Manual on Procurement of Works has been extensively revised in keeping with GFR 2017 and in consonance with the fundamental principles of transparency, fairness, competition, economy, efficiency, and accountability.

Mr. V M Prabhakaran, Founder and CEO, Visaithalam Solutions, Coimbatore stated that cyber security will take over all departments in the firm. The most serious issue that institutions confront is malware attack. Malware will affect all personal information, and the data will be shared with the third party attempting to access it. To overcome it one have to keep software up-to-date, avoid opening suspicious emails, use Antivirus and Antimalware software on the electronic devices, use a security file-sharing solution to encrypt data.

In the Valedictory Session, Dr. P Santhi, Programme Coordinator, Dean, School of Commerce and Management mentioned about day-to-day examples of integration of technology. With the integration of technology, the job of the administrative professional has swiftly advanced over the last decade, as office automation has infiltrated corporate lives. Technology has automated/simplified most of the office administrative activities like answering phones, taking messages and transferring calls, scheduling events, meetings, appointments, and updating calendars, handling mail and faxes, enrolling memos, preparing reports, ensuring document accuracy, maintaining databases and filing systems, integrating information for distribution to employees and customers, basic bookkeeping and many more.

Dr. P P Ajayakumar, Director, UGC- HRDC, University of Kerala delivered the valedictory address. The resource person shared a case study of Microsoft 365 which developed a new company intranet with SharePoint, creating automated document workflows to replace arduous manual processes, and using bot technology to collect data from multiple sources automatically. The five-day event ended successfully with the report presentation by Dr. K Kanniammal, Coordinator and the Vote of Thanks was proposed by the Nodal Officer of the event. ❑

THESES OF THE MONTH

SCIENCE & TECHNOLOGY

A List of doctoral theses accepted by Indian Universities
(Notifications received in AIU during the month of August-September, 2023)

AGRICULTURAL & VETERINARY SCIENCES

Horticulture]

1. Chakraborty, Susmita. Evaluation of bottle gourd [***Lagenaria siceraria*** (Mol.) Standl.] germplasms for horticultural traits in Garo Hills, Meghalaya. (Dr. A K Chaurasiya), Department of Horticulture, North Eastern Hill University, Shillong.
2. Sangma, Lyang B. **Identification and characterization of potential ornamental plants in Garo Hills, Meghalaya**. (Dr. A K Chaurasiya), Department of Horticulture, North Eastern Hill University, Shillong.

BIOLOGICAL SCIENCES

Biochemistry

1. Saravan Kumar, P. **Deciphering the role of gut enzymes, endosymbionts and semiochemicals in greater Wax moth, Galleria mellonella (Linnaeus)**. (Dr P D Kamala Jayanthi), Department of Biochemistry, Jain University, Bangalore.
2. Umesha, M. **Expression of anti-apoptosis genes using Beta-glucosidase (Bgl) promoter for fusarium wilt resistance in banana cultivar rasthali**. (Dr T R Usha Rani), Department of Biochemistry, Jain University, Bangalore.

Biotechnology

1. Chettri, Upashna. **Studies on co-occurrence of heavy metals and antibiotics tolerance among bacteria along Teesta river**. (Prof. S R Joshi), Department of Biotechnology & Bioinformatics, North Eastern Hill University, Shillong.
2. Dattatraya, Khajje Diksha. **Molecular characterization and detection of baculovirus infecting oak tasar silkworm Antheraeaproylei**. (Dr K M Ponnuvel), Department of Biotechnology, Jain University, Bangalore.
3. Jamdhade, Preeti Bhagwanrao. **Search for the effect of herbal formulations on various targets of urinary tract infection pathogens**. (Dr. L H Kamble), Department of Biotechnology, Swami Ramanand Teerth Marathwada University, Nanded.
4. Kaushik, Kalpana. **Effect of cryopreservation of preantral follicles on estradiol synthesis pathways and oocyte development in ruminant**. (Dr. P S P Gupta), Department of Biotechnology, Jain University, Bangalore.
5. Mohanty, Madhuchhanda. **In-silico docking studies to understand the molecular interactions in organic, inorganic and hybrid experimental systems**. (Dr. Rajani Kanta Mahapatra), Department of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar.

Botany

1. Ali, Akib. **Engineering flavonoid biosynthesis pathway for rutin biosynthesis in grains of black rice, *Oryza sativa* L**. (Prof. Nikhil K Chrungoo), Department of Botany, North Eastern Hill University, Shillong.
2. Babita Kumari. **Assessment of genetic diversity and phylogenetic relationship within the genus *Chenopodium* from Indian Himalayan Region**. (Prof. Nikhil K Chrungoo), Department of Botany, North Eastern Hill University, Shillong.]
3. Regula, Sunitha Satyanarayana. **Studies on invitro conservation and propagation of selected rare, endangered plants from Marathwada Region**. (Dr. D. R. More), Department of Botany, Swami Ramanand Teerth Marathwada University, Nanded.
4. Sayanna, N Manojkumar. **Studies on ethnobotanical phytochemical aspects of plants used Bykolam Tribe in adjoining Region of Telangana and Maharashtra States**. (Dr. D R More), Department of Botany, Swami Ramanand Teerth Marathwada University, Nanded.

Zoology

1. Chen, Risa Parkordor. **Evaluation of nematocidal and cestocidal activities of selected anthelmintic ayurvedic formulations in rodent models**. (Prof. A K Yadav), Department of Zoology, North Eastern Hill University, Shillong.
2. Darbeswar, Mayur Vaijnath. **Studies on helminthic fauna of freshwater fish species of the Genus Channa**. (Dr. Dhanraj Balbhim Bhure), Department of Zoology, Swami Ramanand Teerth Marathwada University, Nanded.
3. Sarkar, Ashish. **Studies on efficacy and toxicity of anthelmintic compound (S) isolated from *Lysimachia ramosa* Wall ex Duby**. (Prof. B Roy), Department of Zoology, North Eastern Hill University, Shillong.

EARTH SYSTEM SCIENCES

Environmental Science

1. Mago, Monika. **Assessment of vermi-technology in solid waste management**. (Dr. Renuka Gupta and Dr. VK Garg), Department of Environmental Science, J.C. Bose University of Science and Technology, YMCA, Faridabad.

ENGINEERING SCIENCES

Aerospace Engineering

1. Ramesh Raju, S. **Performance evaluation of IRNSS in differential mode and application studies**. (Dr Raju Garudachar), Department of Aerospace Engineering, Jain University, Bangalore.

Biomedical Engineering

1. Majhi, Vinayak. **Automated detection of Parkinson's disease based on ayurvedic principle**. (Dr. Sudip Paul and Prof. Goutam Saha), Department of Biomedical Engineering, North Eastern Hill University, Shillong.

Chemical Engineering

1. Sharma, Deva Nand. **Sequestration of inorganic pollutants from aqueous solution utilizing euphorbia thymifolia and boerhavia diffusa bioadsorbents**. (Dr. Anil Kumar Yadav), Department of Chemical Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

Civil Engineering

1. Gupta, Mayank. **Effect of fine aggregate replacement by granulated blast furnace slag on the self-cured geopolymer concrete**. (Dr. N H Kulkarni), Department of Civil Engineering, Swami Ramanand Teerth Marathwada University, Nanded.
2. Jagannatha, V. **Climate resilient water security for urban settlements: A case study on Bengaluru, India**. (Dr Shashishankar A and Dr. Mohammed Inayathulla), Department of Civil Engineering, Jain University, Bangalore.
3. Nagaraja, K. **Strength and durability studies on ternary blended high strength fibre reinforced concrete with hybrid fibres**. (Dr. H Sudarsana Rao), Department of Civil Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

Computer Science & Engineering

1. Anu. **Efficient resource allocation in fog computing**. (Dr. Anita Singhrova), Department of Computer Science & Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.
2. Barwaniwala, Jumana. **Standardization of industrial Internet of Things framework for rectification of complex issues and challenge**. (Dr. Saurabh Jain), Shri Vaishnav Institute of Computer Applications, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore.
3. Choudhari, Upendra Durgadasrao. **A Study of ICT tools with respect to learner's achievement using evolutionary algorithm based techniques**. (Dr. Sudhir B Jagtap), Department of Computer Science & Engineering, Swami Ramanand Teerth Marathwada University, Nanded.
4. Garg, Ashish. **Enhanced GAN based fair synthetic data generation model**. (Dr Ajay S Kushwaha), Department of Computer Science and Information Technology, Jain University, Bangalore.
5. Gyatso, Karma. **Design of an integrated machine learning and deep learning model for predictive analysis**. (Dr R Jayanthi and Dr R Suchithra), Department of Computer Science and Information Technology, Jain University, Bangalore.
6. Lalchhanhima, R. **Synthetic aperture radar image segmentation using soft computing techniques**. (Prof. Debdatta Kandar), Department of Information Technology, North Eastern Hill University, Shillong.
7. Lingwal, Surabhi. **Development of analytical and predictive techniques for machine learning**. (Dr. Komal Kumar Bhatia and Dr. Manjeet Singh), Department of Computer Engineering, J.C. Bose University of Science and Technology, YMCA, Faridabad.
8. Pohrmen, Fabiola Hazel. **Blockchain based cryptographic schemes applicable to Internet of Things**. (Prof. Goutam Saha), Department of Information Technology, North Eastern Hill University, Shillong.
9. Safwan, Abdu Saif Al-Shaibani. **A system outline for discovery of proactive and knowledge driven decisions from virtually integrated data sources using data analytics and big data technologies**. (Dr. Parag Bhalchandra), Department of Computer Science & Engineering, Swami Ramanand Teerth Marathwada University, Nanded.
10. Sajitha, M. **Detection and prevention of replica attacks in static and mobile wireless sensor networks**. (Dr. D Kavitha and Dr. P Chenna Reddy), Department of Computer Science & Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
11. Saleh, Ehab Issa. **Development of open-source middleware for high-performance volunteer computing**. (Dr B S Chandrasekar), Department of Computer Science & Engineering, Jain University, Bangalore.
12. Verma, Navneet. **IOT centered diabetes monitoring and predictive model**. (Dr. Sukhdip Singh and Dr. Devendra Prasad), Department of Computer Science & Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.

Electrical & Electronics Engineering

1. Baig, Z Tanveer. **Integrated frame work for low cost animal tracking and health monitoring using WSN**. (Dr. Chandrasekar B S), Department of Electronic Engineering, Jain University, Bangalore.
2. Dhall, Sangeeta. **Analysis and design of a multilevel security mechanism for data communication networks**. (Dr. Shailender Gupta), Department of Electronics Engineering, J.C. Bose University of Science and Technology, YMCA, Faridabad.
3. Patidar, Nilesh. **Investigation of architectural and functional aspects of nano-electronic digital devices using quantum – dot cellular automata**. (Dr. Namit Gupta), Shri Vaishnav Institute of Science and Technology, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore.
4. Rajesh, M N. **Detection and local staging of prostate cancer using machine learning algorithm**. (Dr Chandrasekar B S), Department of Electronic Engineering, Jain University, Bangalore.
5. Vinod Kumar, P. **Modeling & control of self-balancing robot using artificial intelligence techniques**. (Dr N Kamala), Department of Electrical Engineering, Jain University, Bangalore.

Electronics & Communication Engineering

1. Arikatla, Jaya Lakshmi. **Improved spectrum sensing and interference management in multi cluster cognitive radio networks**. (Dr. G N Swamy and Dr. M N Giri Prasad), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
2. Nakra, Abhilasha. **Study and analysis of mental state using BCI systems by modelling, simulation and optimization**. (Dr. Manoj Duhan), Department of Electronics & Communication Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.
3. Praveen Kumar, N. **Power reduction of 4-tap FIR filter circuit along with cache memory using FINFETs for SoC design applications**. (Dr. B Stephen Charles and Dr. V Sumalatha), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
4. Ramana Kumari, A. **Detection and classification of dental caries in X-ray images using adaptive neural networks with optimized hybrid sea lion squirrel search algorithms**. (Dr. S Nagaraja Rao and Dr. P Ramana Reddy), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
5. Rao, D Raghunatha. **Robust channel estimation approach to spectrum sensing with crowd sensors**. (Dr. T Jayachandra Prasad), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
6. Rudrama, K Rani. **Design and analysis of fractal slot based microstrip patch antenna using different substrate material for wideband applications**. (Dr. P Siddaiah and Dr. M N Giri Prasad), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
7. Saini, Mehak. **Performance enhancement of MIMO systems in wireless communication**. (Dr. Surender Kumar Grewal), Department of Electronics & Communication Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.
8. Sharma, Devesh. **Design and analysis of miniaturized UWB and MIMO antenna for 4G/5G wireless technology**. (Dr. Ravi Kumar and Dr. Rajesh Kumar Vishwakarma), Department of Electronics & Communication Engineering, Jaypee Institute of Information Technology, Noida.
9. Srujana, R. **Design and verification of an optical memory device based on surface plasmon resonance**. (Dr Panduranga Rao M V and Dr Preeta Sharan), Department of Electronic Engineering, Jain University, Bangalore.
10. Vanitha, K. **Novel approaches for multimodal medical image fusion using fuzzy sets and adaptive PCNN**. (Dr. D Satyanarayana and Dr. M N Giri Prasad), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
11. Verma, Dinesh Kumar. **Performance analysis of WDM-PON for future optical broadband access networks**. (Dr. Amit Kumar Garg), Department of Electronics & Communication Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal.
12. Vijaya Lakshmi, A. **Facial emotion recognition using hybrid optimization algorithms**. (Dr P. Mohanaiah), Department of Electronics and Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

Mechanical Engineering

1. Annapurna, S. **Design and analysis of flow distribution through manifolds in avionics cooling**. (Dr. A. C. Niranjanappa and Dr. K. Hemachandra Reddy), Department of Mechanical Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

2. Sarangi, Manoj Kumar. **Flow and heat transfer aspects of ternary composite nanofluids**. (Dr. Manoj Kumar Nayak), Department of Mechanical Engineering, Siksha O Anusandhan University, Bhubaneswar..
3. Sudhakar, T. **An analysis on implementation of six sigma in power plant for improved performance**. (Dr. B Anjaneya Prasad and Dr. K. Prahlada Rao), Department of Mechanical Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.]

MATHEMATICAL SCIENCES

Mathematics

1. Choudhury, Ashoka. **Modelling self- efficacy and mathematics anxiety among students of higher education in India**. (Dr. Vinod Kumar Murti), Department of Mathematics, Jain University, Bangalore.
2. Dubey, Nikita. **A study on fixed point theorems and their applications**. (Dr. Satish Shukla), Shri Vaishnav Institute of Science, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore.
3. Garg, Divesh. **Reliability modeling and profit analysis of stochastic systems**. (Dr. Reena Garg), Department of Mathematics, J.C. Bose University of Science and Technology, YMCA, Faridabad.
4. Muqheet, Amthul. **Unified approach to group, group action, homotopy, and its relevance in human ear Mathematics**. (Dr. Arathi Sudarshan), Department of Mathematics, Jain University, Bangalore.
5. Rai, Shweta. **A study on fixed point theorems for single-valued and set-valued contractive type mappings**. (Dr. Satish Shukla), Shri Vaishnav Institute of Science, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore.

MEDICAL SCIENCES

Anatomy

1. Sanjay Singh. **Assessment of IL-6 and karyotyping analysis in bone marrow of leukaemia patients and to evaluate its diagnostic as well as prosgnostic values**. (Dr. Medha Das), Faculty of Medical Sciences, Rama University, Kanpur.

Microbiology

1. Maurya, Manoj Kumar. **Phenotypic identification of dermatophytes and antifungal susceptibility pattern from clinical specimens of dermatophytosis and genotypic characterization of T Rubrum**. (Dr. R Sujatha), Faculty of Medical Sciences, Rama University, Kanpur.

Pharmaceutical Science

1. Hiremath, Gavisiddaiah S. **Hepatoprotective and nephroprotective activity of *Cardiospermum halicacabum* linn**. (Dr. Y Padmanabha Reddy), Department of Pharmaceutical Sciences, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
2. Kolhe, Nitin Suryabhanji. **Design synthesis and biological evaluation of some new chemical entities as potential antimalarial agents**. (Dr. Lalit V Sonawane and Dr. O G Bhusnure), Department of Pharmacy, Swami Ramanand Teerth Marathwada University, Nanded.

PHYSICAL SCIENCES

Chemistry

1. Deepak. **Design, synthesis and characterization of fluorescent pyridine-based conjugated molecules and their liquid crystalline properties**. (Dr Ahipa T N), Department of Chemistry, Jain University, Bangalore.
2. Pawar, Devidas Chandar. **Studies on synthesis and characterization of nitrogen heterocycles as metal chelates and their biological investigations**. (Dr. B S Dawane), Department of Chemistry, Swami Ramanand Teerth Marathwada University, Nanded.
3. Prasuna, K M. **Synthesis of schiff base metal complexes and their applications**. (Dr. K Seshaiah), Department of Chemistry, Jawaharlal Nehru Technological University, Hyderabad.
4. Rajula Rama Devi. **Analysis of synthetic pesticides in soil and citrus fruit samples in and around pulivendula, A P using UHPLC and GC-MS/MS techniques**. (Dr. C. Ramachandraiah and Dr. G V Subba Reddy), Department of Chemistry, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.
5. Siddiqa, Aisha. **Development of high surface area carbon and nanocomposite electrode materials for high-performance supercapacitors**. (Dr Mahesh Padaki and Prof D H Nagaraju), Department of Chemistry, Jain University, Bangalore.

Nanotechnology

1. Akash, S. **Performance and stability enhancement of quantum dot and perovskite solar cells**. (Dr R Geetha Balakrishna), Department of Nanotechnology, Jain University, Bangalore.]
2. Padmakar, Parimal. **Nanoparticle based metal-organic framework composites for biomedical applications**. (Dr. Varsha Brahmkhatri and Prof. Shajesh Palantavida), Department of Nanotechnology, Jain University, Bangalore.

Physics

1. Kalita, Raju. **Study on variation of weather and climate system in the complex Terrain of Meghalaya using a dense network of automatic weather stations**. (Prof. Atul Saxena), Department of Physics, North Eastern Hill University, Shillong. ❑

ST. THOMAS COLLEGE, PALAI

Arunapuram P.O., Palai, Kerala-686 574.
Ph: 04822-212317, 212316
Website. www.stcp.ac.in E-mail: principal.stc@gmail.com

VACANCY
(Re-Notification)

Assistant Professor
Chemistry - 1 (PwBD)

Applications are invited for the post of Assistant Professor in Chemistry. Age and qualification shall be as per UGC/ Government of Kerala/Mahatma Gandhi University, Kottayam, norms. The application form and other details can be downloaded from the college website (**www.stcp.ac.in**). Duly filled in application forms and all required documents may be submitted to the college office during working hours either by hand or by post on or before the 30th day from the date of this notification. This is in-continuation of notification dtd: 23/03/2023 of the Manager. Preference shall be given to hearing impaired candidates (PwBD). If eligible candidates under the category of hearing impaired have not applied in response to this re-notification, rotation order as per No. 242/2022/HEDN dtd: 18/05/2022 will be followed [Section 34 (2) of the RPWD Act].

Palai — Sd/-
30/10/2023 — Manager

B A M COLLEGE, THURUTHICAD

Kerala-689597
Phone: 0469 2682241, 8078292241
Email:office@bamcollege.ac.in;
Website:www.bamcollege.ac.in

WANTED

Applications are invited from eligible candidates for the following Faculty position:

Assistant Professor Economics- 1 (PWD)

Age, Qualification and Scale of Pay as per UGC, M.G University and Government of Kerala rules. The appointment is subject to the approval of M.G University / Government. Application forms can be obtained from College office or downloaded from college website on payment of **Rs.1,5OO**/-, to the account number mentioned in the application form. Apply **within one month** of this notification. As per the G.O (Ms) No.242/2022/HEDN dated 18/05/2022, the post published in the notification dated 28/10/2023 will be treated as PWD (Persons with Disabilities) category as mentioned above.

Thuruthicad — (S/d)
28/10/2023 — Manager

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI
No. SGBAU/8/C-3406/2023, Date – 19/10/2023

Name of the College – Jagadamba Mahavidyalaya, Achalpur City, Distt. Amravati (M.S.) Pin Code – 444806

WANTED

Applications are invited for Full Time Regular Posts as per following details in the Faculty of Science & Technology / Humanities / Commerce & Management / Interdisciplinary Studies.

Vacancies for Grant-in-aid Courses / Programmes

Sr. No.	Name of the Post	Subject /Course	No. ofPost	Category as per NOC on dt. 06.10.2023
01.	Principal	-----	01	Open – 01
02.	Assistant Professor	Physics	01	SBC – 01
03.	Assistant Professor	Commerce	01	EWS – 01

(उपरोक्त पदास मा. न्यायालयामध्ये दाखल याचिका क्र. १२०५१/२०१५ च्या अंतिम निकालाच्या अधिन राहून मान्यता देण्यात येत आहे.)

For Qualifications / Experience / Pay Scale and other details / Conditions, visit university website **www.sgbau.ac.in** and College website **www.jmvach.ac.in.**

Applications on plain paper giving complete bio-data along with copies ofcertificates and testimonials should be sent to the office on or before **15/11/2023**.

Ramakant Sherkar
President

Dr. Bhumika Wankhade
Off. Principal

SRI PADMAVATI MAHILA VISVAVIDYALAYAM
(Women's University), TIRUPATI-517502

(Notification no. 1/SPMVV/T.Estt/backlog SC/ST/2023 Dt. 30.10.2023)

Limited Recruitment notification for SC/ST Backlog Vacancies

Applications in the prescribed format are invited online from women candidates only who are **Indian citizens** and **Overseas Citizens of India (OCIs)** for the following cadres of SC & ST Backlog Vacancies for various departments on direct recruitment basis:

Cadre	SC	ST	Total
Assistant Professor	-	01	01
Associate Professor	02	02	04

The detailed information of the above posts relating to qualification, experience, pay scales, reservation, link for submission of filled-in online application etc., can be obtained from the University website: **www.spmvv.ac.in** (OR) https://**recruitments.universities.ap.gov.in.**

The last date for submission of online application is **5.00** p.m. on **20.11.2023**. The last date for the submission of hardcopy of application along with the self-attested relevant documents is **5.00** p.m. on **27.11.2023**.

NOTE

1. The above notification is issued in consonance with the directions given by a Division Bench of Hon'ble High Court of Andhra Pradesh in W.A.No.214; 251; 264; 267; 268; 272; 276; 277; 279; 282; 413 and 452 of 2021, dated: 11.07.2023 vide common order and subject to result of SLPs pending adjudication by Hon'ble Supreme Court against the said common orders. The notification No.SPMVV/Estt/ A1/Backlog/2021, dated 31.7.2021 stands cancelled.
2. The University reserves the right to fill or not to fill any of the post(s) without giving any reason whatsoever.

Place: Tirupati
Date: 30.10.2023

REGISTRAR

SRI PADMAVATI MAHILA VISVAVIDYALAYAM
(Women's University), TIRUPATI-517502

(Notification No.2/ SPMVV/T.Estt. /Assistant Professor (Regular)/2023 , 30.10.2023)

Recruitment notification for Assistant Professors (Regular Vacancies)

Applications in the prescribed format are invited online from **Women candidates only who are Indian citizens and Overseas Citizens of India (OCIs)** for the following Regular Vacancies of teaching positions for various Departments on direct recruitment basis:

Assistant Professors –	Open Category - 21; SC- 07; ST- 03; BC (A)- 04; BC (B)-03; BC (C) -01; BC (D) – 03; BC (E)- 02 EWS- 04

The detailed information of the above posts relating to qualification, experience, pay scales, reservation, link for submission of filled-in online application etc., can be obtained from the University website: **www.spmvv.ac.in** (OR) **https://recruitments.universities.ap.gov.in.**

The last date for submission of online application is **5.00 p.m.** on **20.11.2023.** The last date for the submission of hardcopy of application along with the self-attested relevant documents is **5.00 p.m.** on **27.11.2023.**

NOTE:

1. The above notification is issued in consonance with the directions given by a Division Bench of Hon'ble High Court of Andhra Pradesh in W.A.No.214; 251; 264; 267; 268; 272; 276; 277; 279; 282; 413 and 452 of 2021, dated: 11.07.2023 vide common order and subject to result of SLPs pending adjudication by Hon'ble Supreme Court against the said common orders.
2. The University reserves the right to fill or not to fill any of the post(s) without giving any reason whatsoever.

Place: Tirupati
Date: 30.10.2023

REGISTRAR

SRI PADMAVATI MAHILA VISVAVIDYALAYAM
(Women's University), TIRUPATI-517502

(Notification No.3/ SPMVV/T.Estt. /Associate Professor /BC Backlog & Regular/2023 , 30.10.2023)

Part – A (BC Backlog)

Applications in the prescribed format are invited online from **Women candidates** only who are **Indian citizens** and **Overseas Citizens of India (OCIs)** for the following cadre of BC Backlog Vacancy for department of Social Work & Economics on direct recruitment basis:

Associate Professor: (1 – BC-A) (Social Work)

Part – B (Regular)

Applications in the prescribed format are invited online from **Women candidates** only who are **Indian citizens** and **Overseas Citizens of India (OCIs)** for the following Regular Vacancies of teaching positions for various Departments on direct recruitment basis:

Associate Professors: Open Category -	14; SC- 05; ST- 02; BC (A)- 03; BC (B)-02; BC (C) -01; BC (D) – 01; BC (E)- 01EWS- 03

The detailed information of the above posts relating to qualification, experience, pay scales, reservation, link for submission of filled in online application etc., can be obtained from the University website **www.spmvv.ac.in** (OR) **http://recruitments.universities.ap.gov.in.**

The last date for submission of online application is **5.00 p.m. on 20.11.2023** and The last date for submission of hardcopy of application along with the relevant documents is **5.00 p.m. on 27.11.2023.**

NOTE:

1. The above notification is issued in consonance with the directions given by a Division Bench of Hon'ble High Court of Andhra Pradesh in W.A.No.214; 251; 264; 267; 268; 272; 276; 277; 279; 282; 413 and 452 of 2021, dated: 11.07.2023 vide common order and subject to result of SLPs pending adjudication by Hon'ble Supreme Court against the said common orders. The notification No.SPMVV/Estt/ A1/Backlog/2021, dated 31.7.2021 stands cancelled.
2. The University reserves the right to fill or not to fill any of the post(s) without giving any reason whatsoever.

Place: Tirupati
Date: 30.10.2023 REGISTRAR

SRI PADMAVATI MAHILA VISVAVIDYALAYAM
(Women's University), TIRUPATI-517502

(Notification No.4/ SPMVV/T.Estt./ Professor /2023, dated 30.10.2023)

Recruitment notification for Professors

Applications in the prescribed format are invited online from **Indian citizens** and **Overseas Citizens of India (OCIs)** for the following Regular Vacancies of teaching positions for various Departments on direct recruitment basis. Both Men and Women can apply. Other things being equal, women will be given preference:

Professors – OC- 09; SC- 03, ST- 01; BC (A)- 1; BC (B) -01, BC (C)- 01, EWS -01

The detailed information of the above posts relating to qualification, experience, pay scales, reservation, link for submission of filled-in online application etc., can be obtained from the University website: **www.spmvv.ac.in** (OR) **http://recruitments.universities.ap.gov.in.**

The last date for submission of online application is **5.00 p.m. on** 20.11.2023**.** The last date for the submission of hardcopy of application along with the self-attested relevant documents is **5.00 p.m. on** 27.11.2023.

NOTE:

1. The above notification is issued in consonance with the directions given by a Division Bench of Hon'ble High Court of Andhra Pradesh in W.A.No.214; 251; 264; 267; 268; 272; 276; 277; 279; 282; 413 and 452 of 2021, dated: 11.07.2023 vide common order and subject to result of SLPs pending adjudication by Hon'ble Supreme Court against the said common orders.
2. The University reserves the right to fill or not to fill any of the post(s) without giving any reason whatsoever.

Place: Tirupati
Date: 30.10.2023 REGISTRAR

Dnyan Prabodhini Mandal's

SHREE MALLIKARJUN

&

Shri. Chetan Manju Desai College

Delem-Canacona, Goa-403 702

Reaccredited by NAAC with Grade "A" with a CGPA Score of 3.25 (02nd Cycle)

Website: https://shreemallikarjuncollege.ac.in Email: shreemallikarjuncollege@gmail.com

Applications with full Biodata are invited from Indian Citizens for the post of **PRINCIPAL.** The required minimum qualifications for the post of Principal are as follows:

A. ELIGIBILITY: (1.) Ph.D. Degree. (**2.**) Professor/Associate Professor with a total service/experience of at least fifteen years of teaching/ research in Universities, Colleges and other institutions of Higher Education. **(3.)** A minimum of 10 research publications in peer reviewed journals as approved by Goa University from time to time or UGC-listed Journals, out of which at least two should be in Scopus/Web of Science Journals. **(4.)** A Minimum of 110 Research Score as per Appendix 11, Table-2, of Goa University Statute SC-16.

B. TENURE: A College Principal shall be appointed for a period of 5 years, extendable for another term of 5 years on the basis of performance assessment by a Committee appointed by the University, constituted as per Goa University Statute SC-16.

ESSENTIAL REQUIREMENTS: (a) Knowledge of Konkani Language. **(b)** 15 years of Residence Certificate in Goa, issued by competent authorities.

DESIRABLE REQUIREMENTS: (a) Knowledge of Marathi Language

SCALE OF PAY: As prescribed by the UGC, Goa University and Directorate of Higher Education, Govt. of Goa, from time to time.

SERVICE CONDITIONS: As prescribed by the UGC, Goa University, Directorate of Higher Education, Govt. of Goa, and other competent authorities from time to time.

Applicants who are already employed shall forward their applications through proper channel.

Applications complete in all respect, with photograph, along with self-certified photocopies of statement of marks of all public examination from S.S.C onwards, copy of 15 years Residence Certificate, Experience Certificate, Publications, Research score sheet, and other relevant certificates should reach the Chairman at the above address of the Mandal **within 20 days** from the date of publication of this advertisement.

Place: Delem-Canacona, Goa
Date: 29/10/2023

Shri. Chetan Manju Desai
CHAIRMAN
DNYAN PRABODHINI MANDAL

Council of Education, Kolhapur

D. R. K. College of Commerce, Kolhapur,

Night College of Arts and Commerce, Kolhapur &
Shahaji Law College, Kolhapur

(C/o D.R.K. College of Commerce, 649, 'C' Ward, Azad Chowk, Tal- Karveer, Dist- Kolhapur -416002. (M.S.)
(Affiliated to Shivaji University, Kolhapur)
(Permanently Granted)

W A N T E D

Applications are invited from eligible candidates for the following posts:

Sr. No.	Name of Post/ Subject	Subject wise Vacant Posts	Subject wise vacant posts	Total Number of Vacant Posts	Total Reservation
A) Principal					
1.	Principal (Night College of Arts and Commerce, Kolhapur & Shahaji Law College, Kolhapur)		02	02	ST-01 and VJ(A)-01
B) Assistant Professor					
1.	English	1- Full Time	01	04	VJ(A) -01, OBC- 02, Open to All -01
2.	Marathi	1- Full Time	01		
3.	Commerce	1- Full Time	01		
4.	Economics	1- Full Time	01		

Place : Kolhapur
Date :

Secretary
Council of Education, Kolhapur

Note : For detailed information about post, qualifications and other terms and conditions please visit University website: www.unishivaji.ac.in.

Uttar Bharatiya Sangh's
MAHENDRA PRATAP SHARADA PRASAD SINGH COLLEGE OF ARTS, COMMERCE & SCIENCE
629/1243, Behind Teachers Colony, Bandra (E), Mumbai-400 051.

MINORITY

APPLICATIONS ARE INVITED FOR THE FOLLOWING POSTS FROM THE ACADEMIC YEAR 2023-2024:

UN-AIDED

Sr. No.	Cadre	Subject	Total No. of Post	Category
1.	**Assistant Professor**	Commerce	01	01-OPEN
2.	**Assistant Professor**	Accountancy	01	01-OPEN
3.	**Sports Director**	Physical Education	01	01-OPEN
4.	**Librarian**	--	01	01-OPEN

The above posts are open to all, however candidates from any category can apply for the post.

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 8th March, 2019 and University circular 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 **PRESIDENT, UTTAR BHARATIYA SANGH'S MAHENDRA PRATAP SHARADA PRASAD SINGH COLLEGE OF ARTS, COMMERCE & SCIENCE, Plot No. 629/1243, Behind Teachers Colony Bandra (E), Mumbai-400 051. within 15 days** from the date of publication of this advertisement. This is University approved advertisement.

Sd/-
PRESIDENT

Baliram Bahuuddeshiya Shikshan Sanstha, Jalna
GANPATI ART'S AND SCIENCE COLLEGE

WANTED

Applications are invited from the eligible candidates for the following post of **PRINCIPAL** and **Assistant Professors** to be filled in **Baliram Bahuuddeshiya Shikshan Sanstha Jalna Sanchalit, Ganpati Art's and Science College, Biloli, Tq., Biloli Dist. Nanded** on **PERMANENT NON GRANT BASIS**. Eligible candidates should submit their applications along with all necessary documents **within 15 days** from the date of publication of the advertisement by **Registered Post Only**. The candidates of Reserved Category should submit one copy of their application to the Assistant Registrar (Special Cell), Swami Ramanand Teerth Marathwada University, Nanded by **Registered Post Only**.

Note : This advertisement is published as per **No Objection Certificate** issued by the Government of Maharashtra, Department of Higher and Technical Education with letter no. JDHE Nanded/ NOC/2022-23/4172 Date 29/08/2023 and 1) S.R.T.M. University letter no. Special Cell/2023-24/1935 Date 12/09/2023. 2) S.R.T.M. University letter no. Special Cell/2023-24/1936 Date 12/09/2023.

Sr. No.	Subjects	No of Posts	Reservation
1.	Principal	01	Unreserved
2.	English	01	Unreserved – 02, SC – 01, VJ(A) - 01, OBC – 01, EWS – 01
3.	Marathi	01	
4.	History	01	
5.	Political Science	01	
6.	Physical Education Director	01	
7.	Librarian	01	

Essential Qualification :

Minimum educational qualification for the post of Assistant Professor will be as per Regulation of UGC (2018) and G.R. of Government of Maharashtra Misc-2018/C.R.-56/18/UNI-I Dated 08 March 2019.

Salary & Allowances: *Pay Scale as per UGC, State Government of Maharashtra & S.R.T.M. University, Nanded rules from time to time.*

Note :

1. Prescribed application form is available on the University website : **www.srtmun.ac.in**. 2. No T.A./D.A. will be paid to attend the interview. 3. Eligible candidates those who are already in service should submit their applications through proper channel. 4. All attested Xerox copies of certificates and other relevant documents should be attached with the application form. 5. Reservation for VJ category is internally transferable. 6. PwD and Women Reservation will be strictly followed as per Government Resolution. 7. Relaxation of 5% marks at P.G. level for SC/ST candidates only. 8. The appointment on the basis of final decision of Hon'ble High Court, Aurangabad Bench of Writ Petition No.12051/2015.

Address :-

Correspondence address :

Ganpati Art's and Science College, Behind Krishi Uttpann Bazar Samiti, Near Krida Sankul, Biloli, Tq. Biloli, Dist. Nanded – 431710. Contact Mob : 9766983944, 9373114421.

Mrs. Kamal V. Jadhav
Secretary
Baliram Bahhuddeshiya Shikshan
Sanstha Jalna

Prof. Dr. Pratap Ganpatrao Rampure
President
Baliram Bahhuddeshiya Shikshan
Sanstha Jalna

SHRI SWAMI VIVEKANAND SHIKSHAN SANSTHA

2130 E,Tarabai Park, Kolhapur

(Affiliated to Kolhapur, Pune, Mumbai & Sambhaji Nagar (Aurangabad) Universities)

(Permanently Grantable)

WANTED

Applications are invited from eligible candidates for the following posts:

Sr. No.	Name of the posts/subject	Subject wise Vacant Posts	University	Total number of posts	Total Reservation
A) Principal					
1	Principal	09	07 -Shivaji University, Kolhapur 01- Dr. Babasahab Ambedkar Marthwada University, Chh.Sambhaji Nagar (Aurangabad) Dr.Bapuji Salunkhe Law College. Dharashiv 01- Savitribai Phule Pune University, Pune Samajbhushan Ganpatrao kalbhor College, Lonikalbhor	**09**	ST- 01, VJA- 01, NT-D – 01, EWS- 01, and Open- 05
B) Assistant Professors					
1	Marathi	2 FT	56- Shivaji Uniersity, Kolhapur	**58**	SC- 04, ST- 04, VJA- 01, NTB- 02, NTD- 01, OBC- 10, SBC- 01, EWS- 08, and OPEN- 27
2	Political Science	4 FT			
3	Physics	8 FT			
4	Botany	4 FT			
5	Zoology	5 FT			
6	Statistics	5 FT			
7	Commerce	4 FT			
8	Computer Science	1 FT			
9	Electronics	2 FT			
10	Mathematics	2 FT			
11	English	2 FT			
12	Hindi	2 FT			
13	History	2 FT			
14	Economics	3 FT			
15	Geography	2 FT			
16	Chemistry	8 FT			
1	Marathi	1 FT	02- Dr. Babasahab Ambedkar Marathwada University, Chh.Sambhaji Nagar (Aurangabad) Ramkrushn Paramhans College, Dharashiv		
2	Computer Science	1 FT			

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Conditions For Principal And Assistant Professor:

1. Educational qualifications, Pay Scales and Service Conditions are as prescribed by the apex body, Government of Maharashtra, Shivaji University, Kolhapur, Dr. Babasaheb Ambedkar Marathwada University, Chh. Sambhaji Nagar (Aurangabad) and Savitribai Phule Pune University, Pune from time to time.
2. Appointment to the post of Principal will be for a period of 5 years from the date of appointment or up to the attainment of the age of superannuation of the candidate whichever is the earlier.
3. For the post of the Principal, it is necessary to submit the API certificate issued by respective universities, of having minimum 110 Research Score as per Appendix-II, Table – 2 mentioned in Govt. Resolution dated: 08/03/2019.
4. Associate Professor/Professor with a total experience of fifteen years of teaching / research administration in Universities, Colleges and other institutions of higher education.
5. Reservation in this advertisement is as per Maharashtra educational Institutes (Reservation in Teachers Cadre) Act 2021 notification dated : 07/04/2022 and Govt. Resolution from Higher and Technical Education Department of Govt. of Maharashtra dated : 11/04/2022.
6. Reservation for SC/ST categories are interchangeable as per Govt. GR dated: 05/12/1994.
7. Reservation for VJNT categories is internally transferable.
8. Relaxation of 5% will be provided from 55% to 50% of the marks at the Master's degree level for SC / ST category candidates.
9. Reserved category candidates are advised to send a copy of their application to the Dy. Registrar, Special cell of the respective universities.
10. PWD and Women's reservation will be strictly followed as per Govt. Resolution.
11. Reserved category candidates outside the State of Maharashtra will be treated as Open Category.
12. Reserved category candidates shall produce the caste validity certificate as per the directives issued by the State Government vide Circular No. BCC-2011/ Pra.Kra 1064-2011-16 B dated 12.12.2011.
13. Reserved category candidates from the category except SC/ST shall produce Non- Creamy layer certificate at the time of interview.
14. Those who are already in service should apply through proper channel.
15. Incomplete application will not be entertained.
16. Applications giving full details should reach to the SECRETARY, Shri Swami Vivekanand Shikshan Sanstha, 2130 E ward, Tarabai Park, Kolhapur-416003 **within 15 days** from the date of publication of this advertisement. Prescribed application form can be had from Sanstha office on payment of Rs. 500/- in cash.
17. For this recruitment, Terms & Conditions as mentioned in the letter of the Dy. Secretary, Higher and Technical Education Dept. Mantralay, Mumbai Ref No. JDHE Kolhapur/NOC/2019/42 Date: 08.09.2023 are applicable.
18. Please note that the recruitment procedure initiated by this advertisement subject to decision by Hon. Bombay High-Court, Aurangabad Bench on Writ Petition No. 12051/2015.

Place: Kolhapur
Date: 05/10/2023

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