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हल्द्वानी

प्रवेश प्रारंभ

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गतिविधि: एनएसएस और रेड क्रॉस

प्रवेश हेतु

प्रमुख विशेषताएं

- उत्तराखंड विधानसभा अधिनियम संख्या 23/2005 द्वारा स्थापित
- राष्ट्रपति पुरस्कार प्राप्त मुक्त एवं दूरस्थ शिक्षा विश्वविद्यालय
- किसी के लिए भी, कभी भी, कहीं भी शिक्षा (आयु, समय और स्थान का लचीलापन)
- कामकाजी और ग्रामीण क्षेत्र के लोगों के लिए उच्च शिक्षा
- NEP-2020 के अनुसार सभी यूजी कार्यक्रम/पाठ्यक्रम में प्रवेश
- ऑनलाइन प्रवेश: ग्रीष्मकालीन सत्र (जुलाई) और शीतकालीन सत्र (जनवरी)
- आर्मी की विधवाओं, विकलांग व्यक्तियों, जेल कैदियों के लिए विशेष शुल्क छूट
- अध्ययन केंद्र, परीक्षा केंद्र, कार्यक्रम सुधार/परिवर्तन के लिए ऑनलाइन आवेदन करें
- परामर्श सत्र, प्रयोगशाला कार्यशाला/प्रैक्टिकल परीक्षा
- सुविधाजनक केंद्रों पर परीक्षा, डिग्री के लिए ऑनलाइन आवेदन करें

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National Education Policy–2020: *Quo Vadis?*

H A Ranganath*

The country has waited over three decades for a policy with curative measures to address the ills prevailing in the ecosystem of Higher Education (HE). The National Education Policy-2020 (NEP-2020) is the first education policy of the 21st century. It was heartening to see the Hon'ble Prime Minister on a public platform during the conclave on 7th August 2020, announcing the NEP. With great panache and sureness, he demonstrated the commitment of the Government to take forward the recommendations while remaining careful enough to remark and reflect on a few grey areas.

In the past, although higher education reforms have been high on the agenda of many governments, the recommendations of many commissions/committees on education have not been implemented in totality. Now, the question is to take stock of the implementation of the recommendations NEP- 2020 during these four years. The National Education Policy (NEP- 2020) has recommended a reduction in institutional diversity, proposing only three categories of institutions: (1) research, (2) research and teaching, and (3) teaching. Moreover, an overarching body, the National Higher Education Regulatory Authority, will be the only regulator for higher education, including professional education. The important recommendations concerning Higher Education in the NEP are:

- Transforming the regulatory system of higher education– the Higher Education Commission of India (HECI) with its four verticals, namely
  i. National Higher Education Regulatory Council (NHERC),
  ii. National Accreditation Council (NAC),
  iii. Higher Education Grants Council (HEGC), and
  iv. General Education Council (GEC).
- Effective governance and leadership for higher educational institutions through the Board of Governors;
- Introducing HEIs with high-quality multidisciplinary and cross-disciplinary flexible four-year programmes;
- Catalysing quality academic research in all fields through a new National Research Foundation; and
- Using and integrating technology under the National Educational Technology Forum (NETF).

Now, one has to introspect the attempts made to translate the recommendations of NEP–2020. To my knowledge, attempts to

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translate the above-mentioned much-appreciated recommendations are not visible. In principle, the most desired provision of the 'four pillars' should have been erected along with HECI to guide the implementation of NEP–2020 across the country. Even though there were attempts to establish these pillars, so far, it has not happened. The consequence is that it appears that the multi-storeyed NEP is being built without pillars. Even today, multiple national regulatory agencies like UGC, AICTE, NCTE, and NAAC are functioning. One of these, the UGC, which should not have been in existence as per NEP, is busy issuing guidelines/regulations on different facets of HE. During the last three years, UGC has issued over 50 regulations. Now, one has to know how many universities and HEIs have institutionalised these regulations of UGC. A monitoring system to ascertain this is not in place. The latest draft regulations are (1) Minimum Qualifications for Appointment and Promotion of Teachers and Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education Regulations, 2025 and (2) Grading HE institutions based on the implementation of NEP. Without getting into the microdetails of the regulations issued by UGC, one has to look at whether these are aligned with the NEP or not. The regulations issued have to be examined from academic, technical, and legal points of view. I expected that the guidelines not only have to take care of the expectations and advice of NEP but also have to be futuristic. Higher Education not only has to survive today but also has to get ready for tomorrow. Instead, some of the provisions of the regulations are retrogressive by relaxing the eligibility criteria for teaching positions. The two important concepts promoted by NEP are multi-inter and cross-disciplinary campuses and programmes along with 'quality' in teaching and research have no place in regulations. Even for the appointment of the Vice Chancellor, instead of taking forward the procedure articulated by NEP, the new regulations are controversial and will have legal implications. Even the attempt to grade HE institutions based on the implementation of NEP is faulty and redundant. The parameters identified for the 'qualifiers' and 'quantifiers' steps defy objectivity. The HEIs for no fault of them will be ineligible to get grants since respective states have declined to implement NEP. The victims are students and faculty. The national-level examinations and tests do not discriminate between students of NEP-implemented and NEP-rejected states as well as those of centrally funded institutions. The present picture of Higher Education across the country is messy to the disadvantage of students.

The NEP–2020 had promised to address many of the challenges faced by the ecosystem of HE and initiate remedial measures to take HE forward. Many of the major vision statements of NEP are yet to be initiated. Academia hopes that the fate of recommendations of NEP–2020, which are drafted with a futuristic vision, will be different from the previous education commissions of our country. ❑

Water and Water Resources Conservation in India: Challenges and Best Practices[#]

N P Melkania* and Asha Pandey**

Water is a growth medium and a universal solvent. Water – the lifeblood of ecosystems, vital for human health and well-being is a pre-condition for economic prosperity too. If one cannot find water for his/her daily use for the first half of the day, he/she may not likely be able to survive conveniently. So, appreciation of water and all that it offers, and water resources conservation is the need of the hour. Of the total estimated availability of 1400 million cu km of water globally, only 0.003 per cent (45,000 million cu km) is fresh water that could be used for drinking, hygiene, agriculture, and industry. But, not all of it is accessible as part of it flows into remote rivers during seasonal floods. The agriculture sector is the biggest user of water worldwide, withdrawing water about 70 per cent of all surface and groundwater through irrigation. Globally, rainfed farming produces 60 per cent of the world's food on 80 per cent of cultivated land; irrigated farming produces 40 per cent of the world's food on 20 per cent of land (FAO, 2021). The FAO's estimates that over the last century, global water withdrawal grew 1.7 times faster than the population, aggravating concern over the sustainability of water use as demand for agricultural, industrial, and domestic use continues to rise. Estimate reveals that with a growing human population by 2050, compared to 2012, agriculture will need to produce almost 50 per cent more food grains, fodder for livestock, and biofuel to fulfil the global demand and to achieve 'zero hunger' (FAO, 2021). Thus, the total water demand for all uses will likely be 1180 Billion Cubic Meters (BCM) by 2050.

Water Availability in India

The main source of water in India is the annual precipitation as rainwater and snowfall. Out of about 4000 BCM of total available water, only 28 per cent or 1123 BCM is fresh water (690 BCM surface water and 433 BCM groundwater). The MoJS (2022) has estimated 398 BCM annual extraction of groundwater in India. The annual groundwater extraction is recorded 239.16 BCM for all uses, out of which 208.49 BCM (87 per cent) is used by the agriculture sector alone, yet, half of the area under agriculture is rainfed. The IPCC (2021) highlighted more sensitivity of the water cycle to global warming, resulting in an increase in droughts, floods, and cyclones even with 1.0^0 C temperature rise.

Harbouring 18 per cent of the world's human population, India has only 4.0 per cent of her water resources. The per capita availability of water (<1000 m^3) has placed India as one of the most water-stressed countries in the world (NITI Aayog, 2018). Water is an essential input for agricultural production, food security, and environmental sustainability.

Traditional water systems based on management by local community have served insurance against water crises. The farmers' associations for construction and maintenance of water systems were once widespread, e.g., *panchayat* in Maharashtra and Karnataka; and *nattamai, kavai maniyam, nir maniyam, oppidi sangam* or *eri variyam* (tank committee) in Tamil Nadu. The day-to-day operation of irrigation systems used to be looked after by local irrigation functionaries, such as, *kohlis* in Himalaya; *patkaris*, *havaldar* and *jogalaya* in Maharashtra; and *nirkatti, nirganti, nirpaychi, niranikkan* or *kamkukalti* in Karnataka and Tamil Nadu (Shiva, 2002).

The Central Water Commission's study titled *'Assessment of Water Resources in India – 2024'* reported India's average annual water availability 2,115.95 billion cubic meter (BCM) between 1985 and 2023, which is 1.06 times higher than the 2019 estimate (i.e., 1,999.20 BCM between 1985 and 2015). The increase in groundwater recharge has been credited mainly to an increase in recharge from water bodies, tanks, and water conservation structures. Brahmaputra (592.32 BCM), Ganga (581.75 BCM), and Godavari (129.77 BCM) are

[#]*The Article is being published to commemorate the World Day of Glaciers and the World Water Day.*

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recorded as the top three highest water availability basins. The bottom three basins include Sabarmati (9.87 BCM), Pennar (10.42 BCM) and Mahi (13.03 BCM). The annual extractable groundwater is assessed as 406.19 BCM, and the annual extraction of groundwater for all uses is 245.64 BCM.

The recent governmental initiatives taken in India to improve the availability of water include: *Jal Jeevan Mission* – 2019 (55 litre/day of functional tap water to every rural household by 2024), *Atal Bhujal Yojana* – 2019 (improving groundwater management in States, Gujarat, Haryana, Rajasthan, Uttar Pradesh, Maharashtra, Madhya Pradesh and Karnataka), *Jal Shakti Abhiyan* – Catch the Rain (improving sources and sustainability of water resources), *AMRUT* 2.0 of 2021 (covering all statutory towns of India to ensure universal coverage of water supply and make cities water secure), and Mission *Amrit Sarovar* – 2022 (developing and rejuvenating 75 water bodies in each district of the country). Cities, *viz*., Bangaluru, Chennai, Kolkata, Mumbai, Delhi, Ahmedabad, Guwahati, Lucknow and Srinagar (Kashmir) face the crisis of availability of drinking water, primarily due to rapid urbanization. Attempts are being made to revive traditional water resources, lakes, ponds, and tanks across the country and to restore the wetlands.

State of Groundwater Contamination

Box 1 enumerates emerging challenges for managing the groundwater resources in India.

The annual Groundwater Quality Report-2024, released by the Central Groundwater Board on 31 December 2024 has recorded widespread groundwater contamination in the States Rajasthan, Haryana, and Andhra Pradesh. The Report revealed 440 districts of India with excessive nitrate concentration, increasing from 359 mg l^{-1} in 2017. Monsoon rainfall tends to increase nitrate levels. Rajasthan, Karnataka and Tamil Nadu have maximum contamination of nitrate (>permissible limit of 45mg l^{-1}). In coastal and South India, an alarming trend of nitrate concentration has been recorded (Maharashtra 35.74 per cent, Telangana 27.48 per cent, Andhra Pradesh 23.5 per cent, and Madhya Pradesh 22.58 per cent). Fluoride concentration also exceeded the permissible limit (1.5mg l^{-1}) in States Rajasthan, Haryana, Telangana,

Box – 1: Emerging Challenges for Groundwater Management in India

Groundwater Depletion

- Long-term decline of groundwater levels mainly in States Rajasthan, Gujarat, Tamil Nadu, Punjab and Delhi.
- In most of the cities, depending on groundwater for drinking water supplies, the water level has declined up to 30m and more.
- Traditional water harvesting methods, once in vogue in semi-arid and arid regions of the country, have either been abandoned or become defunct in most cases.

Groundwater Pollution

- In several areas of the country, the groundwater resources are polluted or getting polluted on account of overapplication of fertilizers and pesticides, indiscriminate disposal of effluents from industries, and untreated urban sewage.
- Presence of naturally-occurring Arsenic, Fluoride, and Iron in groundwater, in excess of permissible limits recommended for human consumption, prohibits its use for drinking purpose in some States of India.

Shortage of Drinking Water Storage in Urban Areas

- Sustainability of urban water supply in several urban areas across the country is a constraint; the rapid pace of urbanization has further aggravated the problem.

Seawater Ingress in Coastal Aquifers

- Exploitation of groundwater from coastal aquifers is ultimately leading to seawater intrusion into the freshwater aquifers. Coastal aquifers in parts of Gujarat, Tamil Nadu and undivided Andhra Pradesh are experiencing salinity ingression.

Source: CGWB (2007)

Andhra Pradesh, and Karnataka. Arsenic levels were also found elevated (permissible limit 10.00 ppb) in flood plains of the rivers Ganga and Brahmaputra [affected regions include West Bengal, Jharkhand, Bihar, Uttar Pradesh, Punjab, Madhya Pradesh (Rajnandgaon district), Manipur, and Assam]. Uranium concentration has also been recorded above permissible limit (30 ppb) in the States Rajasthan, Gujarat, Haryana, Punjab, Andhra Pradesh, Karnataka and Tamil Nadu. Northern and Central India have more iron content in groundwater (permissible limit 1.0 mg l^{-1}); the affected States include Bihar, Jharkhand, Odisha, West Bengal, Chhattisgarh, and Uttar Pradesh. The state Haryana has the highest number of districts with electrical conductivity value of groundwater more than permissible limit (300 µS cm^{-1} at 25°C). Overall, the groundwater in the country is calcium-bicarbonate type with dominance of calcium, followed by sodium and potassium in terms of cations, and HCO_3, followed by Cl and PO_4 in terms of anions. In regard to human health, a high nitrate level will reveal "Blue baby syndrome". Long-term exposure to fluoride and arsenic contamination will cause fluorosis and cancer or skin lesions, respectively. Chronic exposure to uranium can lead to kidney damage and failure. The contamination of iron and high electrical conductivity mostly influence the aesthetic quality of ground water.

State of Pollution in Indian Rivers

The Central Pollution Control Board, in 2018, has identified 351 polluted river' stretches in India; Maharashtra has the largest number of polluted stretches (53), followed by Assam (44), Madhya Pradesh (22). Kerala (21), Gujarat (20), Odisha (19), and West Bengal = Karnataka (17). The main causes of pollution in rivers are recorded as discharge of untreated and partially-treated sewage from cities and towns, industrial effluents in the river catchment, dumping of solid waste on river banks, and other non-point sources of pollution. In Rajasthan, the Luni River and its tributaries – the lifeline of *Thar*, with chemical effluents of > 600 textile units entering the groundwater, the farmers of the area can no longer use it for irrigation, leading to the development of barren land due to water pollution [Deodhar, A. 2015; see CSE (2025); pp 383-385]. Mumbai's Mithi River, once a freshwater river supporting local communities to make their livelihood, be it farming or fishing, has now the misfortune of facing extreme degradation of water quality from its sources to estuary [Stalin, D. 2025; see CSE (2025); pp. 386-370]. The Musi River in Telangana, downstream of the two dams in Hyderabad, is now polluted heavily as the city's sewage and industrial waste from North and South basins drain into the river [Sarwath, 2025; see CSE (2025); pp. 371-373]. In Pune, pollution in the Mutha River is domestic predominantly, but the Mula River suffers from an industrial pollutant load [Deodhar, 2025; see CSE (2025); pp 383-385]. Owing to microplastic pollution as experienced by the Indian rivers now, the microplastics available in river water are easily being ingested by the aquatic organisms, and, thus influencing all food chain organisms adversely.

In northern India, over-extraction of water through the construction of over 900 dams and reservoirs, release of untreated and partially- treated sewage and industrial wastes, destruction of natural vegetation in the river catchments, and encroachment of flood plains have cumulatively led to current unhealthy status of river Ganga [Shekhar, 2025; see CSE (2025); pp 364-366]. The river Ganga is no more *aviral* (continuous uninterrupted flow) in characteristics and *nirmal* (pure unpolluted) in the state. Almost all tributaries of the river Yamuna are affected by fragmentation, abstraction, pollution, and channelization.

The situation has, thus, changed over time. The perennial rivers have turned into seasonal ones due to a shortage of water; the healthy rivers now merit inclusion in the list of sick rivers or rivers under threat. Jhelum, one of the main tributaries of the river Indus, is facing the brunt of rapid socio-economic transformation and environmental degradation. The rivers in the northeastern region of India face chemical and microbiological degradation; the rivers in West Bengal are in an alarming state of decay. In Tamil Nadu, the rivers face the inevitable concomitant of industrial pollution and urbanization. In the State of Gujarat, major rivers have been dammed (Ramaswamy, 2015). Wrong land uses in the catchments; deforestation for timber; agriculture and plantation agriculture; interference with flow by dams and diversions, and indiscriminate sand mining have adversely affected the hydrological and ecological health of the rivers. The floodplains that used to serve as a river, like bark for a tree trunk, have now been mercilessly encroached upon for cultivation and human settlement development.

In conclusion, the predominance of the human-led engineering-cum-economic approach over the nature-led engineering-cum-ecological economic approach has led to the death of rivers through gradual decay. The ecological significance of the floodplains for the rivers and of the silt for agricultural nutrients remained ignored altogether by the activities of the humans of the Anthropocene era.

Thus, all types of water resources, *viz*., surface water courses - rivers, streams, and rivulets or gullies or *nalas*; surface water bodies - lakes, ponds, marshlands, and icepacks; and groundwater - shallow and deep groundwater, have now become liabilities rather than assets on account of pollution predominantly. The high-altitude lakes are also not an exception. For example, the Roopkund lake (also known as the "Lake of Skeletons") lying at 16,500 feet asl at the base of Mount Trishul in Chamoli district of the Garhwal Division in Uttarakhand (=Indian Central Himalaya) is shrinking, both in width and depth, due to decreased snowfall and increased rainfall. The human-induced climate change is considered the leading factor for altered precipitation patterns.

Water Conservation Practices in Indian Agriculture

The Rain Water Conservation (RWC) is carried out by collecting fallen rainwater through agronomic and engineering measures. The widely adopted *in-situ* rainwater harvesting techniques include natural farming, bunding, terracing, contour farming, broad bed furrow systems, micro basins, ridge and tie riding, mulching, and deep ploughing (NITI Aayog, 2021). In case of *ex-situ* rainwater harvesting, the run-off is diverted, and stored for later use in artificial reservoirs e.g., dugout ponds, diversion pond, tanks, tank-cum-well systems in plateau region; traditional systems like *Khadins*, *Rela* and *Tal* in Rajasthan; *Virda* in Gujarat; *Haveli* system in Madhya Pradesh; *Jalkund* (lined small pond) in Maharashtra and Assam; *Niru Oni* in Karnataka; *Khal*, *Khul*, *Chal*, and *Ghul* in Uttarakhand; *Khatri* or *Diggi* in Himachal Pradesh; and *Zabo* in Nagaland. Methods recommended to increase water use efficiency in agriculture are: micro irrigation, drip irrigation, fertigation schedules for crops and cropping systems, mulching, use of drought-tolerant crops and cultivars, and less water-intensive crops (Arora, 2023).

New Initiatives and Best Practices for Water Conservation

In India, constitutionally, water is a State subject. The provision of a reliable, safe, and sustainable supply of water has now emerged as a challenge due to geographical and institutional constraints. Nearly 600 million humans face high-to-extreme water crisis in India. Water quality at present is evident by India's 120 rank (among 122 countries) in the Water Quality Index (NITI Aayog 2018). States, *viz*., Karnataka, Bihar, and Uttar Pradesh have been reported as the most water-scarce States of India on account of poor social-economic component, apart from the physical availability of water (Chopra and Ramachandran, 2023).

The United Nations has recognised access to safe drinking water and sanitation as a basic human right, and also included it as one of the 17 Sustainable Development Goals (SDGs). Water resource management, thus, plays a crucial role and has proved the main challenge for emerging economies like that of India. SDG 6.4 addresses water use efficiency (WUE) and water stress, aiming by 2030 to "sustainable increase in WUE across all sectors, and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and reduce significantly the number of human sufferings from water scarcity". The year 2023 had National and international significance for the world's water-related goals. The United Nations adopted a resolution in 2017, declaring 2018-2028 as the International Decade for Action on Water and Sustainable Development. The year 2023 was the mid-year to the decade of action on water, and also for the SDGs. SDG 6 focuses on the sustainability and sustainable management of water, and sanitation for all. The alignment of SDG 6 with SDG 13 calls for urgent action to combat anthropogenic climate change and its adverse impacts on biota and ecosystems.

India has planned towards the water as the future and emphasized water resource conservation as the centre of social thinking. To promote the practice of artificial recharge for groundwater, a Manual as a guide to the practitioners has been developed by the Central Groundwater Commission as early as 2007 (CGWC 2007). The National Water Mission, one of the eight missions under National Action Plan on Climate Change - 2009, is promoting conservation of water through *"Catch the Rain Campaign"* by using the slogan *"Catch the rain where it falls, when*

it falls". The initiative for producing maximum crop yield with minimum water include *Sahi Fasal* Campaign; River Development and Ganga rejuvenation (DoWR, RD and GR 2023); *Bhartiya Prakriatik Krishi Paddyati;* National Water Mission; *Pradhan Mantri Krishi Sinchayee Yojana*; *Har Khet Ko Pani*, Per drop more crop, Atal Mission for Rejuvenation of Urban Transportation; and Repair, Renovation and Restoration of Water Bodies Scheme (MoJS, 2023[a]).

The Bureau of Water Use Efficiency (BWUE) was set up by the Govt. of India under the Department of Water Resources, River Development, and Ganga Rejuvenation on 20th October 2022 for promotion, regulation, and control of efficient use of water in irrigation, industrial and domestic sectors. The BWUE has published the Indian Standards for addressing water use efficiency (MoJS, 2023[b])

The central government established the National Ganga River Basin Authority on 20 February, 2009 under 3(3) of the Environment (Protection) Act 1986. In October 2016, the Ministry of Jal Shakti (GoI) established the National Ganga Council under the Environment (Protection) Act, 1986 for the river Ganga and her Tributaries. Initiatives for increasing WUE in the domestic sector include water-efficient plumbing products and Atal Mission for Rejuvenation and Urban Transport (AMRUT) of the Ministry of Housing and Urban Affairs (GoI). Initiatives for increasing WUE in the industrial sector include benchmarking studies for water-intensive industries, *viz.,* Thermal Power Plant, Textile, Pulp and Paper, and Steel industry, awarded by National Water Mission to TERI (The Energy and Resources Institute, New Delhi), to assist in policy for enhancing industrial WUE in India.

Epilogue

The sustainable management of water resources in India is threatened by factors, such as, rapid urbanization, industrialization, and human-induced climate change. Efficient water management, including, for example, the reduction of water loss throughout the grid pipelines; improved sustainable irrigation systems; and investment in rainwater harvesting and desalination can contribute effectively to building water resilience. Addressing the water crisis needs a collaborative ecosystem where all stakeholders, such as technology providers (R&D Institutions and Higher Education Institutions), civil society and its organizations (NGOs), corporations, investors and governmental organizations, work together. Civil society organizations are crucial in bridging the trust deficit between technology providers and local farmers and between the government and local farmers. They can facilitate the technology transfer and good governance practices, build trust, and provide support and training, owing to their deep-rooted community connections. Empowering small and marginal-farmers can, to a great extent, solve the water crisis in Indian agriculture. Farmers are more likely to adopt new best practices when introduced by trusted entities (e.g., School teachers, *Vaidyas,* and social workers, to name a few), compared to unknown technology providers. Therefore, one needs to explore opportunities to collaborate even with competitors.

It is too often stated that wars in the future will be fought over water. Between the years 1990 and 2023, 1473 instances of violence, conflicts and water-related issues have been reported worldwide (see *Down to Earth*, 22 March, 2024). Nearly two-thirds of all water-related conflicts since 1990, have occurred in the past decades. The application of the concept of 'virtual water analysis' (Virtual water or hidden water or embedded water in the water that remains in hidden form in the products and services we buy and the processes we use every day.) in exported products would act as a significant determinant in controlling the misuse, overuse and abuse of limited water resource in water scarcity area especially. For example, 1334 m^3/ tonne average virtual content of wheat at the world level means importing or exporting one ton of wheat is tantamount to importing or exporting 1334 tons of water in a virtual sense (Jana 2025). Thus, water saving can be done in agronomic cultivation by increasing imports and restricting exports with high virtual water content. Israel and Jordan have formulated policies to reduce or abandon the export of water-intensive products. Thus, the virtual water trade can bring change in the water cycle.

Tomorrow never comes. So, we need not postpone responsibility/opportunity to save water, but must postpone indefinitely doing wasteful utilisation of water. According to Copernicus Climate Change Service, the world's first warmest day occurred on 6th July 2023, as the world was 1.5^0C hotter in July 2023 than in the average July before industrialisation. As

a result, *the UN Secretary General Antonio Guttress declared 'arrival of the era of global boiling and end of the era of global warming'.* This will certainly accelerate the water crisis alarmingly. Thus, the challenges to be addressed are:

i. how to achieve community and the end of beneficiaries' participation at various stages of water conservation programmes' implementation from the stage of identifying the need to prioritize the conservation activities, implementation, and community-led monitoring of water works, and

ii. how to achieve productive participation of the local institutions - *Panchayat* and *Gram Sabha* in rural areas, and Residents Welfare Society in urban India; and citizens' interest groups- the Non-Governmental Organisations, and Farmer Producers Organizations, in the interest of society at large and the Nation.

Recall that mistakes (e.g., wasteful use of water) are a natural part of learning, and failure (e.g., limitations of technologies or operational constraints) is not something to be ashamed of. We must develop a growth mindset in society to achieve sustainable use of water and water resources.

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To Our Readers

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

The Art of Good Listening: Some Strategies for Teachers

Ritu Dangwal*

As educators, we face innumerable challenges that significantly impact students. The answer lies in our approach, particularly in our interactions. Even with the best of intentions, we sometimes fail to use the right words or tone when questioning, thereby hindering communication. So, how can we improve? The first step is to ask: Am I listening to understand, or am I listening to respond? Listening is an art—once mastered, it becomes a powerful tool for fostering meaningful connections and achieving positive outcomes. Listening provides insight into students' thoughts and feelings. As educators, we build a bridge of trust and connection, and once this connection is established, learning naturally follows. It is only natural to expect students to listen to their teachers, but what about vice versa? Do teachers listen to their students? Reflect on your listening skills and answer the following questions:

1. *Do you constantly interrupt students when they talk?*
2. *Do you try to hasten conversations with students using nonverbal cues such as facial expressions or gestures?*
3. *Do you multi-task (ex. grade papers) while conversing with students?*
4. *Do you wait to hear an entire question or answer given by a student in class?*
5. *Do your thoughts wander when engaged in conversations with students?*

If you answered "Yes" to two or more of these questions, you should consider improving your listening skills. Good listening is key to good teaching. The next question is 'how?' After thorough research in this area, the author has come up with a clear understanding of the concept of active listening and how it can be inculcated to become a good teacher.

Active Listening

Listening is a *two-way* process; both teachers and students are expected to pay attention to what is being conveyed. Only then does effective communication take place. Teachers need to be effective listeners for the following reasons:

To Connect with Students

For a teacher to build a good rapport and trust with students, students must feel listened to. This affirmation helps students overcome inhibitions when approaching teachers lending to a safe environment.

To Understand Students

Being good listeners enables teachers to understand their students better. Effective conversations with students can help identify strengths and interests of students.

To Give Students a Voice

Students need to know that they have a voice. This encourages them to be active participants in the learning process. Feedback from students helps teachers to improve their teaching methodologies and make it student-centric.

What is Active Listening?

We are taught reading and writing skills...but what about learning? Are we taught how to truly listen?

Listening is a skill of critical significance in all aspects of our lives, from maintaining our relationships to getting jobs to taking notes in class, to figuring out which bus to take to the airport. It is extremely important to understand that listening involves more than just hearing words directed at us. Listening is an active process by which we make sense of, assess, and respond to what we hear.

An effective listener must hear and identify speech sounds directed towards them, understand the message, critically evaluate or assess the message, remember what's been said, and to information received. In other words, s/he has to be an active listener.

As educators, active listening can help create a space where students can think more clearly about what they are saying and thinking.

Benefits of Active Listening

- Promotes positive classroom culture which leads to a positive school culture

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- Improves teaching and learning
- Establish a better teacher-student relationship
- Learners see themselves as active partners in their education; they become more invested in their learning
- Learners feel that they are in a safe environment where they are willing to express their concerns, ask questions, ask for help, and take risks.

Reasons Why Listening is Important for Teachers

To Show Respect and Motivate Students

When someone is listened to, they feel valued than if they are spoken over or talked at. When you listen to students, they feel that they are respected more, and feel good about themselves, which in turn makes them want to do more. In other words, they are motivated. Increased motivation makes them more likely to work harder and achieve more.

To Find out What's Going on With Students

If you support students, you need to know what's going on in their lives. Some students will be open and informative, but others won't. Active listening is a really good way to get kids to open up. You need to know about difficulties in their academic life as well as their lives outside school if you are to be able to point them in the best direction for appropriate help and support or to give it yourself. Active listening can help in both these areas. A skilled active listener can help students find their way out of difficulties, which is even better as it increases their self-motivation.

To Be an Effective Role Model

Whether you notice or not, as a teacher you have a significant influence on students: you are a role model for them. Setting an example as a listening and caring person will rub off and you will be helping students to develop as listeners too (Box-1 & Box-2).

Key Takeaways

- When educators participate in active listening, they set aside their prejudices and opinions. They do not disagree, pry, warn, lecture, evaluate, diagnose, or demand.
- The following words inhibit communication and decrease the chances of students being able to deal with their difficulty in a constructive way:
  - "*You should know better...*"
  - *"You think you have it bad..."*
  - *"Your problem is..."*
  - *"You had better..."*

Box-1: Case--1 of Good Listening and Effective Communication

Example 1

Active listening can be used in short encounters to defuse a situation.

- Student says, "*I hate Jatin…"*
- Teacher responds, "*You're really angry*."
- Student says, "*Yes, I am. He hit me for no reason*!"
- Teacher might state, "*Would you like to write down what happened*?" or "*Would you like to tell Jatin how you feel*?"
- The teacher could then encourage the student to use the "When you _____, I feel_____, because _____" statement.
- Student then could say, "*When you hit me*, *I felt sad and angry, because I don't treat you that way*." Or the student may answer, "*I'm okay," or "I'll talk to Jatin*."
- Most students do not like to write down the details of what happened, but it can be offered as an option.
- Since the student's feeling was acknowledged, s/he would probably be less resentful.
- Instead, if the teacher had said, "*You're okay. Get your book out*," or "*You shouldn't be angry*," the student might have absorbed the anger and then later expressed it inappropriately.

Thus, helping students express their negative emotions without fear of being judged or punished can have a positive impact on their actions.

Box-2: Case--2 of Good Listening and Effective Communication

Example 2

- Mr. Sharma, a math teacher in a Delhi High School, noticed Rohan lingering after class, his shoulders slumped. "*Rohan, is everything alright*?" Mr. Sharma asked gently.
- Rohan, usually a bright student, mumbled, "*I failed the test, sir. I studied so hard*."
- Instead of immediately focusing on the marks, Mr. Sharma said, "*I can see you're really disappointed. Tell me what's bothering you the most*."
- Rohan explained how he had spent hours revising, even skipping his favorite cricket match, and felt like he had let himself and his parents down.
- Mr. Sharma listened patiently, nodding occasionally. "*It sounds like you put in a lot of effort, and it's frustrating when the result doesn't reflect that*," he acknowledged. "*Let's look at the test together. Maybe we can identify where things went wrong, not to dwell on the past, but to learn for the future."*
- He then spent time with Rohan, going over each problem, not just pointing out mistakes, but also asking Rohan to explain his thought process.
- By focusing on Rohan's feelings and the learning process, Mr. Sharma helped Rohan to process his disappointment and regain his confidence.

- *"Here is where you are wrong..."*
- *"Who? What? When? Why?*" (Asking too many questions can put the child on the defensive.)

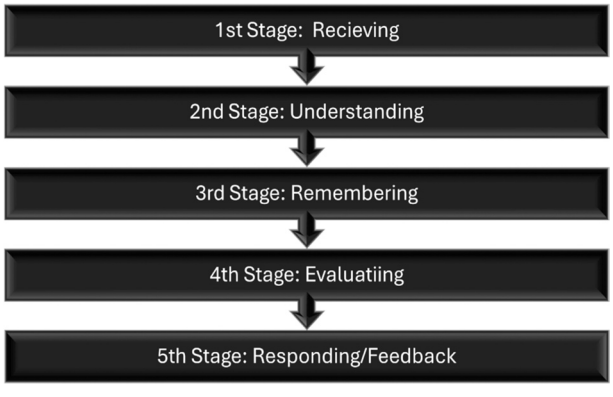
Stages in Active Listening?

When engaging with a particular speaker, a listener can use several degrees of active listening, each resulting in a different quality of communication with the speaker. Effectively engaging in all five stages of the listening process lets us best gather the information we need from the world around us (Fig-1).

Receiving Stage

The first stage in the listening process is the receiving stage, which involves hearing and attending. *Hearing* is a physiological process of registering sound waves as they hit the eardrum. As obvious as it may seem, to effectively gather information through listening, we must first be able to physically hear what we're listening to. The clearer the sound, the easier the listening process. Paired with hearing, *attending* is the other half of the receiving stage. Attending is the process of accurately identifying and interpreting sounds we hear as words. The sounds we hear have no meaning until we give them their meaning in context. Listening is an active process that constructs meaning from both verbal and nonverbal messages.

Fig-1- Stage in Active Listening



Understanding Stage

The second stage in the listening process is the understanding stage. Understanding or comprehension occurs when both the speaker and audience share an experience of meaning. In this stage, the audience determines the context and meanings of the words they hear. Determining the context and meaning of individual words, as well as assigning meaning in language, is essential to understanding sentences, and, thus, both are essential to understanding a speaker's message.

Even when we have understood the words in a message, because of the differences in our backgrounds and experiences, we sometimes make the mistake of attaching our meanings to the words of others. *For example*, *say you have made plans with your friends to meet at a certain movie theatre, but you arrive and nobody else shows up. Eventually, you find out that your friends are at a different theatre across town where the same movie is playing*.

Understanding others is influenced by our perceptions and experiences. Therefore, at the understanding stage of listening we should be on the lookout for places where our perceptions might differ from those of the speaker. One tactic for better understanding a speaker's meaning is to ask questions. Asking questions allows the listener to fill in any holes he or she may have in the mental reconstruction of the speaker's message (Box 3).

Remembering Stage

In the listening process, the remembering stage occurs as the audience categorizes and retains the information they've gathered from the speaker for future access. Memory—allows the person to record information about people, objects, and events for later recall. This process happens both during and after the speaker's delivery. Memory is essential throughout the listening process. We depend on our memory to fill in the blanks when we are listening and to let us place what we are hearing at the moment in the context of what we've heard before.

For example, if you forgot everything that you heard immediately after you heard it, you would not be able to follow along with what a speaker says, and conversations would be impossible. Moreover, a friend who expresses fear about a dog she sees on the sidewalk ahead can help you recall that the friend began the conversation with her childhood memory of being attacked by a dog. Everyone has different memories; the speaker and the listener may attach different meanings to the same statement. In this sense, establishing common ground in terms of context is extremely important, both for listeners and speakers.

Evaluating Stage

In this stage of the listening process, the listener assesses the information they receive both qualitatively and quantitatively. Evaluating allows the listener to form an opinion of what they heard and, if necessary, to begin developing a response.

We might be thinking, "This makes sense" or, conversely, "This is very odd." Because everyone embodies biases and perspectives learned from widely diverse sets of life experiences. Evaluations of the same message can vary widely from one listener to another. Even the most open-minded listeners will have the opinions of a speaker, and those opinions will influence how the message is evaluated. During the evaluating stage, the listener determines whether or not the information they heard and understood from the speaker is well constructed or disorganized, biased or unbiased, true or false, significant or insignificant. They also ascertain how and why the speaker has come up with and conveyed the message that they delivered. This process may involve considerations of a speaker's personal or professional motivations and goals (Box-4).

Responding Stage

Responding—sometimes referred to as feedback—is the fifth and final stage of the listening process. It's the stage at which you indicate your involvement. Almost anything you do at this stage can be interpreted as feedback. For example, you are giving positive feedback to your instructor if, at the end of class, you stay behind to finish a sentence in your notes or approach the instructor to ask for clarification. The opposite kind of feedback is given by students who gather their belongings and rush out the door as soon as class is over.

Box-3: Case of Understanding the Listened Content

Scenario

- A young woman, Leela, approaches her teacher, Mr. Singh, after a discussion about the importance of preserving local folk art.
- She says, "*Sir, I just don't see why we need to spend so much time on these old crafts. They're not practical.*"
- Mr. Singh, who deeply values the cultural heritage of Rajasthan, might perceive Leela as disrespectful or dismissive of tradition. He might assume she's influenced by modern, Westernized ideas.
- Instead of reacting based on his perception, Mr. Singh asks: "*Leela, when you say, 'not practical,' could you explain what you mean by that? What do you consider to be practical*?"

The responding stage is the stage of the listening process wherein the listener provides verbal and/or nonverbal reactions. Nonverbal signals can include gestures such as nodding, making eye contact, tapping a pen, fidgeting, scratching or cocking their head, smiling, rolling their eyes, grimacing, or any other body language. These kinds of responses can be displayed purposefully or involuntarily. Responding verbally might involve asking a question, requesting additional information, redirecting or changing the focus of a conversation, cutting off a speaker, or repeating what a speaker has said back to her in order to verify that the received message matches the intended message (Box-5).

Effective Listening Techniques

Some of the active listening techniques that will help you become a good communicator and better teacher are presented here.

(i) ***Maintaining Eye Contact*****:** Deliberately look directly at a person, for a significant portion of the time, to show attentiveness, engagement, and build rapport, while being mindful not to stare intensely and respecting cultural norms about eye contact.

(ii) ***Focus on the Speaker*****:** Give your full attention to the person speaking, minimizing distractions and avoid planning your response too early.

(iii) ***Non-verbal Cues*****:** Use positive body language like nodding, maintaining eye contact, and an open posture to demonstrate engagement.

(iv) ***Verbal Cues*****:** Utilize verbal prompts like "*yes," "I see," or "tell me more*" to encourage the speaker and show you're following along.

(v) ***Paraphrasing:*** Repeat key points of the speaker's message in your own words to confirm comprehension.

(vi) ***Summarizing*****:** Briefly recap the main points of the conversation to ensure you've captured the key information.

(vii) ***Withholding Judgment*****:** Avoid forming opinions or assumptions about the speaker's message until you've fully heard them.

(viii) ***Letting the Speaker Finish:*** Allow the speaker to complete their thoughts before responding or asking questions.

(ix) ***Not Interrupting***: Listening without cutting them off, allowing them to fully express their thoughts and feelings before responding. This can be achieved by using non-verbal cues like nodding, maintaining eye contact, and verbal affirmations like "*uh-huh*" to show engagement without interrupting the flow of their speech.

(x) ***Pausing Before Responding***: Give the person time to finish his/her thoughts before formulating your response.

(xi) ***Respecting Silence***: Sometimes silence can be meaningful, so don't feel pressured to fill every gap with words.

(xii) ***Asking Clarifying Questions*****:** Using brief, open-ended questions to ensure that you have understood what the person is saying.

Box-4: Case of Evaluating the Listened Content

Scenario

- Mr. Patel, a science teacher, has just explained the concept of photosynthesis.
- A student, Aarav, raises his hand and says, "*Sir, I understand that plants need sunlight, but I don't get how they make food from it. It sounds like magic*."
- Mr Patel recognizes Aarav's statement as a fact (plants need sunlight) and an expression of confusion/wonder ("It sounds like magic").
- He knows that Aarav truly wants to understand. And concludes that Aarav's confusion stems from the complexity of the explanation and the abstract nature of the process.
- Instead of saying, "*It's not magic, it's science*," Mr. Patel responds with, "*You're right, Aarav, it can seem like magic! Let's break it down into simpler steps*."
- He then proceeds to draw a diagram on the board, using simple language and analogies to explain how plants convert sunlight into food.
- By evaluating Aarav's statement, Mr. Patel tailors his response to address the student's specific needs and promote better understanding.

Box-5: Case of Effective Responding Process

In-depth active listening requires effort, yet the time spent with a troubled student will often have beneficial results. The following are the steps you can use:

1. Locate a private place to meet away from other students, noise, and interruptions. Sit facing the student, make eye contact, be silent and listen.
2. Show interest by giving your undivided attention to the child.
3. Be open, accepting, respectful and nonjudgmental no matter what is being expressed. You do not have to agree with the child, only reflect what you hear to help further the student's self-understanding.
4. Watch for non-verbal clues and listen to underlying feelings, as well as for information.
5. Make sure your facial expression and body language match what the student is saying.
6. Uncross your arms and legs and relax. If a child says, "*My grandpa's in the hospital*," look sad, lean forward, put yourself in the child's place and try to understand his or her perspective.
7. Restate what you think the child said in your own words.
8. You could say something like, "*You feel (state the feeling) because (state the content).*" However, be careful not to overuse this sentence structure.
9. Avoid long comments; short, simple ones are more effective.
10. Continue to listen and repeat feelings and content heard.
11. Use an occasional nod of encouragement and say "*uh-huh*" now and then to demonstrate that you hear the student.
12. Ask clarification questions when necessary, such as "*Could you tell me more*?"
13. Try to avoid misinterpreting what the student says.
14. Help the child feel free to correct any of your misunderstandings by saying something like: "*Let me see if I've heard you correctly....*" Then after reiterating ask, "*Is that right*?"
15. Keep focus on the child and his or her main concern.
16. Summarize by bringing together main thoughts, facts and feelings.
17. Ask the student what he or she will do next.

Examples of clarifying questions in counselling:

- "*When you say you feel 'overwhelmed,' what specifically are you feeling overwhelmed by*?"
- "*Can you describe what happened just before you felt that way*?"
- "*Are you saying that your biggest concern right now is...?"*
- "*Could you explain a bit more about what you mean by 'not good enough'*?"
- "*Did I understand correctly that you felt disappointed when...*?"

Things to Avoid to Make Communication Effective

Interruption

(i) This disrupts the speaker's flow and conveys a lack of respect for their thoughts.

(ii) It implies that your contribution is more important.

(iii) Frequent interruptions can make the speaker feel unheard and frustrated, hindering effective communication.

Impatience

(iv) This includes fidgeting, glancing at your watch, sighing, or tapping your foot.

(v) It signals that you're eager for the conversation to end, making the speaker feel rushed and undervalued.

(vi) This also can cause the speaker to withhold information, or to rush their statements, leading to less effective communication.

Judging/Arguing

(vii) While the speaker is talking, you're internally formulating counter-arguments or forming negative judgments.

(viii) This prevents you from truly listening and understanding their perspective.

(ix) This internal dialogue can cause you to miss important points of the speaker's statements.

Multitasking during the Conversation

(i) Checking your phone, working on your computer, or engaging in other activities while someone is speaking.

(ii) This shows a lack of focus and disrespect, making the speaker feel unimportant.

(iii) This also makes it nearly impossible to understand the other person's point of view.

Projecting Your Ideas

(i) Instead of listening, you're focused on imposing your thoughts and solutions on the speaker.

(ii) This can shut down the speaker's creativity and prevent collaborative problem-solving.

(iii) This results in a conversation that is more of a monologue.

Thinking about What to Say Next

(i) You're so preoccupied with formulating your response that you're not fully present in the conversation.

(ii) This leads to superficial listening and misses opportunities for deeper understanding.

Having Expectations or Preconceived Ideas

(i) You enter the conversation with fixed notions about what the speaker is going to say or what the outcome should be.

(ii) This can bias your interpretation of their words and prevent you from considering alternative perspectives.

Becoming Defensive

(i) Even if the speaker's intentions are neutral, you interpret their words as criticism or a challenge.

(ii) This leads to defensiveness, which shuts down open communication and creates conflict.

Use Condescending, Aggressive, or Closed Body Language

(i) This includes crossing your arms, rolling your eyes, speaking in a sarcastic tone, or having a dismissive posture.

(ii) These nonverbal cues undermine your words and create a hostile or uncomfortable environment.

Listening with Bias

(i) You filter the speaker's words through your prejudices and beliefs, rejecting anything that contradicts your worldview.

(ii) This prevents you from learning and growing and hinders effective communication.

Jumping to Conclusions

(i) You assume you know what the speaker is going to say before they finish, and interrupt to complete their thoughts.

(ii) This can be disrespectful and inaccurate, and it prevents the speaker from expressing themselves fully.

(iii) This also shows a lack of patience.

Conclusion

Good listening indicates your respect for the student and taking the first step in building a relationship of trust and commitment which is very essential in the teacher-student relationship. Unlike passive listening which is just a little more than hearing, active listening is a two-way communication technique that demands empathy, attention, practice and a lot of conscious effort. In this paper some of the strategies to hone effective listening skills and use them as tools to enhance communication between a teacher and student are presented. Teachers can use these strategies to climb the ladder of their careers. ❑

Unveiling the Rich Tapestry of Indian Knowledge Systems: A Comprehensive Exploration

Nazneen Khan*, Manish Mishra, and Rashmi Soni*****

India's intellectual heritage is one of the oldest and most diverse in the world, encapsulating a vast reservoir of knowledge that has profoundly influenced various domains of human understanding. The Indian Knowledge Systems (IKS) represent this rich legacy, encompassing a wide spectrum of disciplines, including philosophy, medicine, mathematics, astronomy, linguistics, art, and governance. These systems are not merely relics of the past but are living traditions that have demonstrated remarkable adaptability and relevance over millennia. From the profound philosophical discourses of the *Upanishads* to the scientific rigor of texts like *Charaka Samhita* and *Aryabhatiya*, IKS exemplifies an enduring tradition of innovation, inquiry, and cultural synthesis.

Historically, IKS has been characterized by its interdisciplinary approach, integrating spiritual wisdom with practical applications. For instance, ancient Indian mathematicians like Aryabhata and Brahmagupta made pioneering contributions to algebra, geometry, and astronomy, which influenced global scientific advancements. Similarly, Ayurvedic texts like *Sushruta Samhita* laid the foundations of surgical practices and holistic medicine. These knowledge systems were deeply rooted in the ethos of sustainability, harmony with nature, and the well-being of society, principles that resonate with contemporary global challenges.

The resurgence of interest in IKS, particularly in the context of educational reforms like India's National Education Policy (NEP)- 2020, underscores its potential to enrich modern education and research. The NEP -2020 advocates for the integration of IKS into the academic curriculum, emphasizing its role in fostering critical thinking, creativity, and a sense of identity among students. This policy aims to bridge the gap between traditional knowledge and contemporary education, ensuring that the wisdom of the past is not only preserved but also harnessed to address the needs of the present and the future.

This paper offers a conceptual exploration of Indian Knowledge Systems, focusing on their historical evolution, thematic contributions, and potential integration into modern education and research frameworks. By examining the philosophical foundations, scientific achievements, and cultural significance of IKS, the paper seeks to highlight its enduring relevance in a rapidly changing world. Furthermore, it discusses how a nuanced understanding and application of IKS can contribute to creating a more holistic, inclusive, and sustainable educational paradigm, aligning with the broader goals of NEP–2020.

Conceptual Framework

Historical Overview

The historical evolution of Indian Knowledge Systems (IKS) is a testament to the rich intellectual and cultural legacy of India, spanning thousands of years. This development can be broadly categorized into three major periods, each contributing uniquely to the growth and diversification of IKS.

Ancient Foundations

The ancient period marks the genesis of Indian Knowledge Systems, deeply rooted in the Vedic tradition. The Vedic corpus, including the *Rigveda*, *Samaveda*, *Yajurveda*, and *Atharvaveda*, serves as the cornerstone of Indian intellectual thought. These texts were not merely religious hymns but encompassed profound philosophical, scientific, and cosmological inquiries.

- *Philosophical Insights*: The *Upanishads*, often referred to as the culmination of Vedic thought, delved into metaphysical questions concerning the nature of existence, consciousness (*Brahman* and *Atman*), and the interconnectedness of all life. They laid the foundation for various schools of Indian philosophy, including Vedanta, Sankhya, and Yoga.
- *Scientific Inquiries*: The *Brahmanas* and *Aranyakas* provided practical and ritualistic

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knowledge, reflecting an early understanding of astronomy, agriculture, and ecology, essential for societal development.

- *Interdisciplinary Approach*: The holistic nature of Vedic knowledge integrated spiritual insights with material sciences, ensuring a balance between ethical and practical pursuits.

Classical Flourishment

The classical period represents the zenith of Indian intellectual and scientific achievements, marked by systematic advancements in diverse fields such as mathematics, medicine, astronomy, and linguistics.

- *Mathematics:* Aryabhata and Brahmagupta emerged as pioneers in the field of mathematics and astronomy. Aryabhata's *Aryabhatiya* introduced concepts such as zero, trigonometry, and the rotation of the Earth, while Brahmagupta's *Brahmasphutasiddhanta* expanded on algebra and geometry. These contributions had a profound impact on global scientific thought, influencing Arab and European scholars.
- *Medicine:* The *Charaka Samhita* and *Sushruta Samhita* laid the foundations of Ayurveda, emphasizing holistic health, diagnostics, and surgical procedures. Sushruta, often regarded as the "Father of Surgery," detailed surgical techniques, including rhinoplasty and cataract removal, showcasing advanced medical knowledge for the time.
- *Linguistics*: Panini's *Ashtadhyayi* revolutionized the study of language with its precise grammatical framework, influencing modern linguistic theories. His work remains a cornerstone in understanding the structure and function of Sanskrit.
- *Astronomy and Philosophy*: This period also saw the development of sophisticated astronomical models and philosophical treatises, reflecting a deep engagement with the natural and metaphysical worlds.

Medieval Contributions

The medieval period witnessed the amalgamation of indigenous knowledge systems with external influences, particularly from Islamic, Persian, and later European traditions. This era fostered a synthesis of ideas, enriching IKS with diverse perspectives.

- *Astronomy and Mathematics*: Scholars like Bhaskara II continued the legacy of mathematical innovation, exploring calculus-like concepts and advanced geometry. During this time, knowledge exchanges with the Islamic world facilitated the translation and transmission of Indian texts, enhancing global scientific discourse.
- *Architecture and Arts*: Medieval India saw remarkable advancements in architecture, as seen in the intricate designs of temples, palaces, and urban planning. The construction of stepwells, observatories, and monumental structures like the Sun Temple at Konark and the Brihadeeswara Temple in Tamil Nadu reflected the application of engineering, geometry, and aesthetics.
- *Literature and Cultural Synthesis*: Literary works like the *Rajatarangini* by Kalhana and the *Geet Govinda* by Jayadeva reflected a blend of historical narratives, devotional themes, and poetic finesse. The Bhakti and Sufi movements during this time emphasized inclusivity and the integration of spiritual traditions.

The medieval period demonstrated a dynamic exchange of ideas, showcasing the adaptability of IKS in responding to new influences while retaining its core values. This era's contributions laid the groundwork for a resilient knowledge tradition that could thrive amidst changing socio-political contexts.

Thematic Richness of Indian Knowledge Systems (IKS)

Indian Knowledge Systems (IKS) represent a vast and interdisciplinary tradition of knowledge, showcasing an exceptional thematic richness. Rooted in both practical and spiritual domains, IKS offers timeless insights that remain relevant for addressing contemporary challenges. Its thematic diversity spans philosophy, ethics, science, medicine, arts, and aesthetics, each contributing to a holistic understanding of life.

Philosophy and Ethics

The philosophical and ethical dimensions of IKS serve as its foundational pillars, providing frameworks for understanding existence, morality, and the pursuit of knowledge.

- *Philosophical Schools*: Indian philosophy is characterized by its diversity, with six classical schools (*Shad-darshanas*)—Vedanta, Nyaya,

Sankhya, Yoga, Mimamsa, and Vaisheshika—each offering unique perspectives on metaphysics, epistemology, and ethics. For instance, Vedanta focuses on self-realization and the unity of existence, while Nyaya emphasizes logical reasoning and critical inquiry.

- *Ethical Living:* Texts such as the *Bhagavad Gita* and the *Dharmashastras* outline principles of ethical conduct, duty (*dharma*), and the pursuit of higher goals (*moksha*). These teachings emphasize balance, mindfulness, and social harmony.
- *Practical Application*: The integration of ethical principles in everyday life is evident in the emphasis on community welfare, environmental stewardship, and non-violence (*ahimsa*), making these teachings relevant in contemporary contexts like sustainability and global ethics.

Science and Technology

IKS reflects an advanced understanding of natural and applied sciences, with contributions that continue to inspire modern disciplines.

- *Mathematics*: Indian mathematicians like Aryabhata, Brahmagupta, and Bhaskara II made groundbreaking contributions to algebra, arithmetic, and geometry. Concepts such as zero, the decimal system, and quadratic equations originated in India and influenced global mathematical thought.
- *Astronomy*: Astronomical texts like Aryabhata's *Aryabhatiya* and Varahamihira's *Brihat Samhita* detailed planetary motions, eclipses, and time calculations with remarkable precision, forming the basis of advanced astronomical studies.
- *Metallurgy and Engineering*: Ancient India excelled in metallurgy, as seen in artifacts like the Iron Pillar of Delhi, which resists corrosion despite being over a millennium old. Techniques in temple architecture, water management (stepwells), and urban planning showcase sophisticated engineering knowledge.
- *Applied Sciences*: Fields like agricultural science, environmental management, and textile technology reflect the practical application of scientific principles, emphasizing sustainability and innovation.

Medicine and Wellness

IKS places a strong emphasis on holistic health and well-being, integrating physical, mental, and spiritual dimensions.

- *Ayurveda*: Known as the "science of life," Ayurveda is one of the oldest medical systems in the world. Texts like the *Charaka Samhita* and *Sushruta Samhita* cover preventive care, diagnostics, pharmacology, and surgical techniques. Ayurveda's emphasis on balance (*doshas*), diet, and lifestyle continues to influence modern wellness practices.
- *Yoga*: Rooted in texts like the *Yoga Sutras* of Patanjali, Yoga offers a comprehensive approach to mental and physical well-being. Its practices, including asanas, pranayama (breathing techniques), and meditation, have gained global recognition for reducing stress and promoting mindfulness.
- *Preventive and Holistic Care*: The focus on preventive care, mental resilience, and harmony with nature aligns with contemporary approaches to health and wellness, making IKS highly relevant in addressing modern lifestyle diseases and mental health challenges.

Arts and Aesthetics

Indian art forms embody a deep understanding of human emotions, creativity, and cultural expression, rooted in philosophical and spiritual traditions.

- *Classical Music and Dance*: Indian classical music, represented by Hindustani and Carnatic traditions, is based on intricate systems of ragas and talas, which evoke specific emotions (*rasas*). Similarly, classical dance forms like Bharatanatyam, Kathak, and Odissi are deeply symbolic, combining rhythm, expression, and storytelling.
- *Literature*: Indian literature, ranging from epics like the *Mahabharata* and *Ramayana* to poetic works like Kalidasa's *Shakuntala*, reflects profound insights into human nature, relationships, and values. These texts continue to inspire literary and artistic traditions globally.
- *Visual Arts and Aesthetics*: Paintings, sculptures, and architecture in India, such as the frescoes of Ajanta and the carvings of Khajuraho, demonstrate an intricate understanding of form, proportion, and symbolism. The *Shilpa Shastras* provide guidelines for creating art that is both spiritually uplifting and aesthetically pleasing.
- *Cultural Significance*: The *Natya Shastra*, an ancient treatise on performing arts, integrates music, dance, drama, and aesthetics, reflecting

the interdisciplinary approach of IKS. It emphasizes the transformative power of art in evoking emotions and fostering collective cultural identity.

Relevance of Indian Knowledge Systems (IKS) in the Contemporary Context

The Indian Knowledge Systems (IKS) hold immense relevance in addressing critical challenges of the modern world. Rooted in holistic and interdisciplinary approaches, IKS offers solutions that resonate with contemporary global concerns, including sustainability, education, healthcare, and governance. Its principles and practices, refined over centuries, can provide innovative insights to navigate the complexities of the 21st century.

Sustainability

Sustainability is a pressing global challenge, and IKS offers profound lessons on living in harmony with nature.

- *Ecological Wisdom in Texts*: Ancient texts like the *Atharvaveda* emphasize the interconnectedness of all life forms, advocating for the responsible use of natural resources. Concepts like *Rta* (cosmic order) and *Prakriti* (nature) underpin a worldview that promotes environmental balance and respect for biodiversity.
- *Sustainable Agriculture*: Traditional Indian agricultural practices, such as crop rotation, organic farming, and water conservation techniques like stepwells and rainwater harvesting, align with modern sustainable farming practices.
- *Climate Action*: IKS encourages lifestyle choices that minimize environmental impact, such as reducing waste and adopting renewable energy sources. The Gandhian philosophy of minimalism and self-sufficiency also draws heavily from these traditional values.
- *Global Environmental Goals*: The principles of sustainability embedded in IKS align with contemporary frameworks like the United Nations' Sustainable Development Goals (SDGs), offering culturally rooted strategies for ecological resilience.

Education

The integration of IKS into modern education systems can foster critical thinking, ethical sensitivity, and cultural pride among learners.

- *Holistic Learning*: IKS promotes a well-rounded approach to education, integrating spiritual, emotional, and intellectual development. This aligns with the National Education Policy (NEP) 2020, which emphasizes the importance of value-based education and critical inquiry.
- *Indigenous Knowledge in Curricula*: Including IKS in academic curricula can help students appreciate the contributions of Indian thought to global knowledge, fostering a sense of identity and pride. For example, teaching Panini's grammar or Aryabhata's mathematics alongside contemporary subjects can encourage interdisciplinary thinking.
- *Ethical and Cultural Sensitivity*: IKS emphasizes ethics and values, as seen in texts like the *Bhagavad Gita*, which provide guidance on decision-making, leadership, and resilience. Such teachings are particularly relevant in a rapidly globalizing yet culturally diverse world.
- *Critical Thinking*: The logical rigor of schools like Nyaya and Vaisheshika offers valuable methodologies for critical reasoning and problem-solving, skills that are essential in modern education and research.

Healthcare

The contributions of Ayurveda and Yoga to global health and wellness demonstrate the practical relevance of IKS in addressing modern healthcare challenges.

- *Preventive Healthcare*: Ayurveda emphasizes the importance of preventive care, focusing on diet, lifestyle, and mental balance to maintain health. This aligns with modern trends in preventive medicine and wellness practices.
- *Global Recognition*: Practices like Yoga and meditation, rooted in Indian traditions, have gained widespread acceptance for their ability to reduce stress, improve mental health, and enhance overall well-being. The International Day of Yoga is a testament to their universal appeal.
- *Complementary Medicine:* The integration of Ayurvedic and Yoga practices with modern medicine provides a holistic approach to healthcare, addressing both physical and psychological dimensions of health. For instance, Ayurvedic herbs are being researched for their potential in treating chronic illnesses and boosting immunity.

- *Mental Health*: Techniques like *Pranayama* (breathing exercises) and mindfulness meditation offer effective solutions for managing anxiety, depression, and other mental health issues, challenges that have become more pronounced in the digital age.

Governance and Policy

Ancient Indian texts on governance and statecraft provide timeless insights into ethical leadership, policy-making, and administration.

- *The Arthashastra*: Authored by Chanakya (Kautilya), this treatise offers comprehensive guidance on governance, diplomacy, and economic policy. Its principles of ethical leadership, strategic planning, and efficient resource management remain relevant for modern policymakers.
- *Justice and Administration*: Texts like the *Manusmriti* and *Rajadharma* emphasize the importance of justice, fairness, and accountability in governance, aligning with contemporary ideals of democracy and rule of law.
- *Decentralization and Community Engagement*: Traditional systems of self-governance, such as Panchayati Raj, reflect the principles of participatory democracy and decentralized administration, which are crucial for inclusive development.
- *Sustainability in Policy*: The integration of ecological and ethical considerations into governance, as outlined in ancient Indian texts, offers valuable lessons for creating policies that balance economic growth with environmental sustainability.

Challenges and Opportunities in the Integration of Indian Knowledge Systems (IKS)

While Indian Knowledge Systems (IKS) hold immense potential to enrich various domains of modern life, several challenges impede their widespread adoption and integration. Addressing these challenges presents opportunities to unlock the transformative potential of IKS on both national and global scales.

Challenges in Integrating IKS

Translation and Accessibility

- *Untranslated Texts*: A significant portion of IKS knowledge exists in ancient languages like Sanskrit, Pali, and Prakrit. Many texts remain untranslated or are only partially translated, limiting accessibility to a broader audience.
- *Arcane Forms*: Some texts are written in highly specialized or symbolic forms, requiring expertise in traditional interpretive methodologies (*Shastric commentaries*).
- *Lack of Standardization*: Discrepancies in translations and interpretations can lead to a fragmented understanding of core concepts, further complicating integration efforts.

Interdisciplinary Engagement

- *Bridging Traditional and Modern Disciplines*: The integration of IKS into modern scientific, technological, and social frameworks requires interdisciplinary collaboration, which is often lacking in academia and research.
- *Methodological Challenges*: Modern academic standards often emphasize empirical methods that may not align seamlessly with the experiential and philosophical nature of IKS.
- *Knowledge Silos*: Researchers and practitioners working in traditional and modern knowledge domains often operate in isolation, limiting opportunities for meaningful dialogue and synthesis.

Perception Barriers

- *Stereotypes and Misconceptions*: IKS is sometimes perceived as outdated, unscientific, or irrelevant to modern needs. Such stereotypes discourage engagement from younger generations and international scholars.
- *Lack of Awareness*: Many stakeholders, including educators, policymakers, and students, lack awareness of the depth, diversity, and relevance of IKS, further marginalizing its integration.
- *Cultural and Political Sensitivities*: Efforts to promote IKS are sometimes viewed through political or ideological lenses, which can hinder unbiased exploration and acceptance.

Opportunities for Advancing IKS

Digitization of Manuscripts and Knowledge Systems

- *Preservation and Accessibility*: Digitization initiatives can preserve fragile manuscripts and make IKS knowledge widely accessible to scholars, educators, and the general public. Platforms like the National Digital Library of

India (NDLI) and international collaborations can play a pivotal role.

- *Open Access Platforms*: Creating user-friendly, multilingual digital archives of IKS texts and interpretations can democratize access and encourage global engagement.
- *AI and Machine Learning*: Advanced technologies can assist in deciphering, categorizing, and analyzing ancient texts, enabling automated translation and thematic exploration.

Research Funding for Interdisciplinary Projects

- *Encouraging Cross-Disciplinary Research*: Providing grants and funding for projects that bridge IKS with modern fields like sustainability, artificial intelligence, and mental health can stimulate innovation and integration.
- *Academic Integration*: Establishing dedicated centers of excellence for IKS in universities and research institutions can foster academic exploration and collaboration.
- *Incentivizing Young Scholars*: Scholarships and fellowships for students and researchers focusing on IKS can cultivate a new generation of experts who are equipped to modernize traditional knowledge.

International Collaboration

- *Globalizing IKS Principles and Practices*: Partnering with international institutions can help showcase the universal relevance of IKS, particularly in areas like yoga, Ayurveda, and environmental ethics.
- *Cross-Cultural Dialogue*: Collaborative research and exchange programs can promote a richer understanding of IKS, positioning it as a valuable contributor to global knowledge systems.
- *Cultural Diplomacy*: India's soft power can be enhanced by promoting IKS globally through initiatives like the International Yoga Day, Ayurveda conferences, and exhibitions of traditional art and science.

Conclusion

This paper underscores the enduring relevance of Indian Knowledge Systems (IKS) in addressing contemporary challenges and enriching modern society. It highlights the vast intellectual, cultural, and scientific contributions of IKS, tracing its historical evolution from the Vedic and classical periods to its amalgamation with external knowledge traditions during the medieval era. The thematic richness of IKS, spanning philosophy, science, medicine, arts, and governance, reveals its potential as a comprehensive framework for holistic development.

In the context of the modern world, IKS offers profound insights into sustainability, healthcare, education, and ethical governance. Its principles align seamlessly with contemporary global priorities, such as environmental conservation, mental health, and ethical leadership. By integrating IKS into education and policy frameworks, as envisioned in the National Education Policy (NEP) 2020, India can foster critical thinking, cultural pride, and innovative problem-solving among future generations.

Despite its immense potential, the integration of IKS faces challenges, including the inaccessibility of texts, the need for interdisciplinary engagement, and prevailing misconceptions about its relevance. However, the opportunities presented by digitization, research funding, and international collaboration offer a pathway to overcome these barriers. By leveraging technology, fostering cross-disciplinary dialogue, and globalizing its principles, IKS can become a dynamic contributor to global knowledge systems.

In conclusion, this paper advocates for the resurgence of IKS as a vital intellectual and cultural resource, capable of addressing modern challenges while preserving and celebrating India's rich heritage. The integration of IKS into contemporary systems is not merely a cultural necessity but a strategic imperative to create a sustainable, inclusive, and ethical society.

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Sustainable Practices in the Light of National Education Policy–2020: An Analytical Study

Indu Bala* and Manisha Rani**

"The volume of education continues to increase, yet so do pollution, exhaustion of resources, and the dangers of ecological catastrophe. If still more education is to save us, it would have to be education of a different kind: an education that takes us into the depth of things." —E.F. Schumacher

Education for sustainable development is a key enabler to achieving sustainable development goals. In this context, sustainable practices are required elements to build a sustainable society. To decrease emissions, pollution, and waste and to save energy, environmental sustainability practices combine sensible resources as a key component of daily activities. Environmental study is becoming a necessary part of the curriculum of schools and higher education. National Education Policy 2020 also emphasizes sustainable development. Sustainable education practices are none other than education for sustainable development. Environmental, human, and economic health and vitality are all aided by sustainable practices. Sustainability assumes that resources are finite and should be used wisely and cautiously in light of long-term priorities and repercussions of resource use. This article provided a brief idea about the different studies that have been conducted in India on sustainable practices in the field of education and other practices that are related to sustainability.

Education is a way to learn, explore, and understand the needs of society, the environment, and the planet. Education plays a key role in promoting sustainability and creating understanding about the importance of a sustainable world, which helps to make others aware of the need to achieve sustainable development goals. As we know, sustainable development means meeting present needs without affecting the needs of future generations. Education can make a sustainable world, and in this direction, Education for Sustainable Development (ESD) is an important initiative of UNESCO that allows every individual to acquire knowledge, skills, necessary values, and attitudes to promote a sustainable world. It covers many sustainable development issues in teaching-learning, like sustainable consumption, climate change, disaster risk management, and sustainable practices. ESD also promotes many competencies in teaching-learning, like decision-making, critical thinking, and collaborative work. It is a key driver to achieve sustainable development goals, mainly goal four, 'Quality Education'. The focus of UNESCO is to include 'Environmental Education' as a part of curricula for achieving SDGs. In India, the Central Board of Secondary Education (CBSE) also included Environmental education as a mandatory part of the curriculum in 2005. UGC also focuses on 'environmental studies' for undergraduates from all disciplines across all Central universities (UGC, 2003) as a six-month compulsory course, whereas for Post-Graduation, UGC introduced special PG courses related to climate change and environmental studies. For undergraduate courses for all streams of higher education, UGC designed a six-month module syllabus to be compulsorily implemented. Tata Institute of Social Sciences and The Energy and Resources Institute also offered courses related to sustainability studies or environmental studies and renewal energy. For sustainable futures, education is needed to build interdisciplinary knowledge structures, curricula, and pedagogy underlying professional education practices.

National Education Policy-2022 and Sustainable Education Practices

According to NEP–2020, education is key for recognizing a person's full potential, generating an inclusive society, and promoting the development of the nation. The key to India's sustainable emergence and leadership on the world scene in terms of economic growth, social justice and equality, scientific advancement, national integration, and cultural preservation is to ensure universal access to high-quality education. This document mainly emphasizes sustainable development goal four, i.e., 'Ensure inclusive and equitable quality education

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and promote lifelong learning opportunities for all'. NEP–2020 focused on achieving sustainable development through education. Sustainable development and living, as well as global well-being, are also introduced in the vision of this policy. This policy is accentuated by including environmental studies and sensitivity towards sustainable development and conservation in all B.Ed. Programs that will help create environmental awareness and become an integral environmental education as part of school curricula. Environmental education can work as a subsystem of the mainstream formal education system, economic system, cultural system, and socio-economic system to educate people directly. NEP–2020 mentioned that higher education plays an utmost role in sustainable livelihoods. For sustainable practices, this policy emphasizes including climate change, waste management, pollution, sanitation, conservation, and sustainable development in environmental education, which will further help to empower P-learners to become aware and understand global issues and participate in shaping more peaceful, tolerant, inclusive, secure, and sustainable societies.

Initiatives towards Environmental Education in India

Many policies in India emphasise environmental education for sustainable development.

- Starting from Nai Talim (1937) or basic education, which was proposed by Mahatma Gandhi, which focused on environment education and sustainable education practices in the form of simplicity, self-sufficiency, and harmony with nature, where environment education refers to ecological issues and environmental crisis and sustainable education practices refers to self-reliance, handicraft and care centre education respectively.
- The National Policy on Education (1986) recommended promoting environmental awareness. This policy also pointed out environmental engineering and environmental research.
- The National Curriculum Framework for School Education (2000) mentioned in their draft that sustainable development must be part of vocational education programmes with a focus on creating awareness regarding environmental concerns. In addition, it is also emphasized to include 'Environment, resources and sustainable development' in many subject areas such as geography, sociology, economics and so on, and also discussed creating awareness among students regarding the grassroots level of environmental issues to achieve sustainable development. This policy discussed developing environmental studies, environmental consumption, environmental education, environmental concern, environment context, environmental problem, and environmental awareness in their document.
- National Curriculum Framework (2005) focused on integrating environmental studies into the curriculum. Also, focus on environmental education and sustainable habitant. According to this document, awareness of environmental concerns must be permitted in the entire school curriculum. NCF 2005 pointed out that environmental education is the best initiative to understand and minimise the issues regarding the environment.
- The National Curriculum Framework for Teacher Education (2009) suggested including Environment Studies (EVS) in school curricula. The pedagogy course on EVS emphasises the integration of science, social science, and environmental education. NCFTE 2009 focused on environmental studies and sustainable development.
- The Green School Program is an initiative of the 'Centre for Science and Environment' (CSE). It is an environmental education curriculum designed to discreetly sensitise pupils to the environment through engaging and thought-provoking exercises. It is also an environment management system that utilises students to audit the use of natural resources on school campuses. Implementing practical solutions to reduce resource waste, it assists schools in becoming excellent environmental managers. Some of the Green School Programme outcomes have produced several positive effects, including: enabling behaviour change in students by teaching and modeling sustainable living; providing reliable data to the federal and state governments for long-term policy changes in school infrastructure and curriculum; and assisting schools in becoming resource-efficient over time, including maximising energy efficiency, reducing waste generation, and harvesting and recycling water.

In this way, we see that all these policies/schemes/documents/programme discussed education for sustainable development.

Existing Literature

Mohanty, A., and Dash, D. (2018). In their research paper, researchers discussed Education for Sustainable Development, which is an initiative of UNESCO for achieving Sustainable Development Goals (SDG), especially SDG 4 – *'quality education and lifelong opportunities for all*'. To reform the education system and achieve SDG-4, it is required to improve the basic unit of educational institutions that help to collectively improve the learning of students, performance of teachers, and school culture. The motive to adopt ESD in the school system is to enhance learning and to provide various ways to students so that they understand and become responsible regarding sustainable practices, conservation of resources, protecting our environment, promoting inclusive learning and equality, and helping further in shaping our world for sustainable habitat.

Bangay, C. (2016). The researcher explored the conceivable participation of education in sustainable development. In this study, the researcher discussed the relationship between education and sustainable development. Along with some NGOs that work on environment education, environmental sustainability and sustainable development goals such as the Centre for Environment Education, National Green Corps, Paryavaran Mitra. In this paper, the researcher discussed the problem of sustainable development on a global level by analysing a specific education programme in India. The researcher explained that India is the most populated country, so it is difficult to make everyone aware of the environment and sustainability. Hence, through education, we may enhance our ability to adapt to the challenges of a changing environment and reduce our environmental issues and vulnerability. This study explained that education is key to increasing sustainable practices to achieve sustainable development goals.

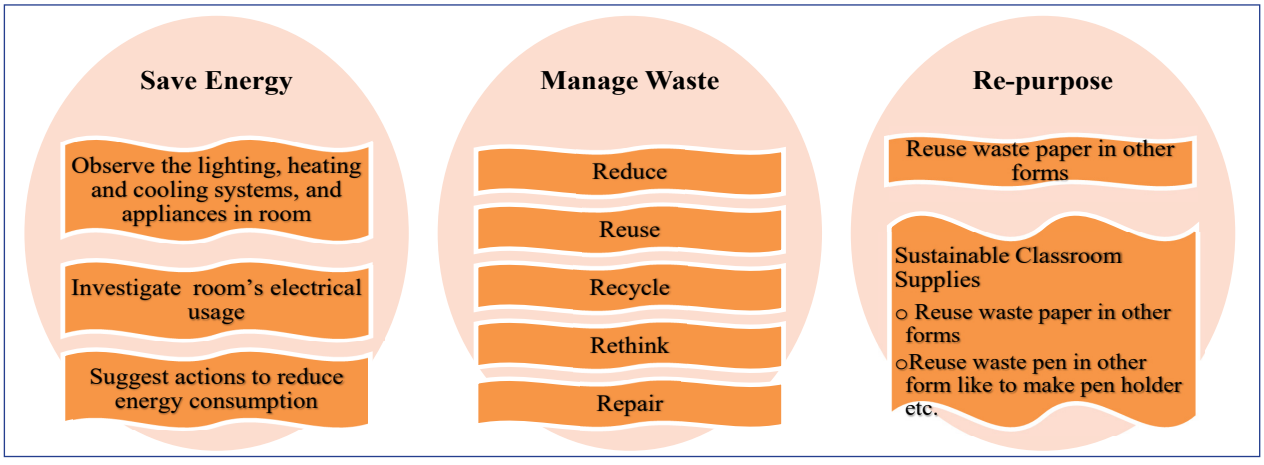
UNESCO (2014). This book is presented by Alka Tomar on behalf of the UNESCO project. This book is the 15 Shortlisted Projects of Education for Sustainable Development initiatives from India. It is presented as a story on good practices regarding Education for Sustainable Development. This book explains the project, which aims to enhance the understanding of ESD's pivotal role in empowering citizens to achieve the transformation to more sustainable societies. According to the book, education can increase sustainable practice and awareness related to sustainable development, and for this, it is important to engage students in practicality so they can understand, be aware, and adopt sustainable practices.

Transforming Education for Sustainable Futures (2021). This background paper pointed out some of the most important issues affecting India's school, higher education, and teacher education sectors. This paper mentioned that one of the most critical systemic risks to achieving sustainable development goals is climate change. According to the Global Climate Risk Index 2020, India is the fifth most vulnerable country in the world to climate change impacts. So, India focused on decreasing climate change issues and promoting sustainability; therefore, despite a long history of coal-based power generation, India is also witnessing the rapid deployment of a variety of climate solutions, from renewable solar and wind power to proactive disaster management. Education plays a vital role in empowering a new generation of citizens, workers, stockholders, and policy-makers to set a higher standard for climate action. Therefore, the Indian government revised the National Education Policy 2020. As part of its adherence to the SDG, Climate change and environmental issues are mentioned by NEP-2020 as being crucial to "empower learners to become aware and comprehend global challenges and to become active supporters of a more peaceful, tolerant, inclusive, secure and sustainable society". This report also emphasised the importance of developing practice-based knowledge repositories, curricular framing and pedagogical methodologies. This report focused on the fact that including environmental education in the curriculum of school textbooks and higher education is not enough; practical practices regarding sustainability is the utmost important step to achieve sustainable development goals.

Blake, J. et al.., (2013). Researchers emphasised in their study to examine the nature and applications of transformative learning as a pedagogical strategy to drive change toward sustainability. While established disciplinary boundaries and pedagogies are being challenged by the growing environment and sustainable agenda, which may serve as another impetus for the sustainable education agenda in higher education, it will help to promote sustainable educational practices.

Some Sustainable Education Practices

Fig 1: Some Sustainable Education Practices



Suggestions

Fig 2: Suggestions Regarding Sustainable Practices

Alternative Ways	•Time to find out and adopt different alternatives ways to promote Sustainability
Develop Senses of Responsibility	•Through modification of curriculum, extra curricular activities, exibitions, tour etc. need to develop senses of responsibility regarding sustainable pratices.
Review Supply Chain & Implement Sustainable Practices	•The supply chain is responsible for most of the environmental impact. By their nature, supply chains often involve energy intensive production transportation, as goods are manufactured and shipped around the world.
Investment in Renewable Energy	•Renewable energy, often referred to as clean energy, comes from natural sources or the process of continuos rep lenishment, for example sunlight, wind energy. So investment in renewable energy is a best option for sustainable practicies.
Promote Afforestation	•Climate change and forest ecosystem is closely connected with each others. Forest helping in reducing CO_2 in the atmosphere and introducing more O_2. So it is must important to promote afforestation.
Promoting 5'R	•It includes refuse, reduce, reuse, repurpose, and recycle. Need to promote to follow 5'R through educational practice.

Sharma, B. (2014). The researcher discussed that sustainable development policies emphasise the importance of education, which is now crucial for raising awareness of environmental protection among students, researchers, educators, and local communities. In this paper, the researcher provides an outline of how research and higher education contribute to a nation's sustainable growth and promote sustainable educational practices. According to the conclusion of their study, the Indian government and state governments are implementing numerous scientific programmes to advance research and higher education standards. National policies on environmental education have been created as a result of the fact that environmental protection has become a crucial component of a nation's curriculum.

Conclusion

This paper explored some initiatives to promote sustainable educational practices in India. According to many reviews, policies, and projects, it is clear that India is working on environmental and sustainable

education. However, environmental studies are included in the curriculum, many environmental and sustainable development courses are also available, and governmental initiatives for sustainable habitats are also included. Despite all these efforts, this study reflected a picture that shows there are still some gaps; by overcoming or reducing these, we can achieve sustainable development. For this, the practical involvement of learners, policymakers, and stakeholders regarding sustainable practices is required on an urgent basis. Our existence and identity depend on the environment directly or indirectly. So, sustainable educational practices are the key enabler for developing awareness among the citizens and for creating a sustainable society.

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Attention Contributors!

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Fear of Failure: A Catalyst for Growth and Success

Jagdeep Dhankhar, Hon'ble Vice President of India delivered the Convocation Address at the 8th Convocation Ceremony at the Jan Nayak Choudhary Devi Lal Vidyapeeth, Sirsa, Haryana on March 05, 2025. He said, "Always put Civic Duties, Fundamental Duties over rights. Always nurture your family, your teachers, your elders, your neighborhood, because that is our civilizational culture. Believe in the environment, because that is something we are concerned about. Alarmingly, a worrisome scenario is there. We do not have another earth to live on. The situation is cliffhanging. We are virtually collapsing. We have to find a way out." Excerpts

I'm here for my dear students and let me tell you, dear students, those who are in the last benches, there are no backbenchers here. Only they sit on back benches so, my greetings to those at the end also.

It is an absolute privilege and honor to impart convocation address at an institution that bears the name it does. The last century had not seen stalwarts of nature, very few of them, like Chaudhary Devi Lal. When I look at them, they have served India and done their mission, time for us to resolve, we will do the same, we will serve the Nation. **हम भारतीय हैं, भारतीयता हमारी पहचान है, राष्ट्रधर्म सर्वोपरि है।**

We have to put the nation first always. There can be no interest higher than national interest. Personal and political interests are insignificant.

A convocation address is not easy to deliver because students expect something really amazing. I will make an earnest effort. My first sermon to you is, I have throughout been a gold medalist, that was an obsession with me. I was always in fear of what would happen if I didn't come at number one. Let me share it with you, **कुछ नहीं होता, थोड़ा खेल ज्यादा खेल लेता, दोस्तों से बात कर लेता।** Therefore do not be obsessed, allow your life to go like a river not like a canal built by parents.

ज़माना था बच्चा पैदा हुआ मा बाप ने तय कर दिया डॉक्टर बनेगा, इंजीनियर बनेगा, आईएएस बनेगा। If you look around, boys and girls, your basket of opportunities is ever-enlarging. It is there in the blue economy, it is there in the space economy. You are in *Bharat* at a time when no Nation in the last decade has grown as fast and as large as *Bharat*. Big economic upsurge, phenomenal infrastructure growth, deep digitisation, technological penetration.

If I share some figures with you, you will be surprised. Per capita, the internet consumption of *Bharat* is more than that of China and the USA taken together. If we go about our digital transactions, the digital transactions are four times the combined transactions of the USA, UK, France, and Germany.

If you examine our economy, that was very fragile a decade ago. When I with the blessings of Chaudhary Devi Lal, had the occasion to enter Parliament as a Member of Parliament and became a Minister with his blessings and guidance, what was the economic situation? **सोने की चिड़िया कहलाने वाले देश का सोना विदेश में गिरवी रखना पड़ा।** It was placed to two banks of Switzerland, airlifted to sustain our credibility. Our foreign exchange reserves today are over 700 billion.

You are lucky to be living in times when *Bharat* is dotted with hope and possibility. There is an ecosystem in place of affirmative government policies, and hand-holding policies that allow you full legroom to exploit your talent and potential, realise your ambitions and aspirations. Meritocracy prevails now. When that is the scenario, you must think big. Never be under stress, never be under tension. Fear of failure is the worst fear in life because it is a myth. There is nothing like failure, it is an attempt that has not succeeded. Some people were so pessimistic that Chandrayaan-2 was called by them as a failure.

I was governor of the state of West Bengal. I was in the Science City, boys and girls of your age were with me, it was around 2 a.m. I remember September 2019. Chandrayaan-2 came very close to the lunar surface but could not touch it. It was, according to me, more than 90% success. And that is why Chandrayaan-3 became a success and therefore, failure is a myth. Failure gives you an opportunity to further improve. Many greatest accomplishments in history have never succeeded in the first attempt.

If you have boys and girls, a brilliant idea in your mind, don't allow that idea to be parked in your mind. That will be the greatest injustice to you and

to humanity. Experiment, think out of the box. Look at what has happened in this country, particularly last decade. Startups, unicorns, and of huge dimensions.

Therefore, never fear, never have tension, never have stress. Go for experimentation; go as per your attitude. You will have enough to contribute to the Nation. If the International Monetary Fund called India as a favorite global destination of investment and opportunity, boys and girls, it was not for government jobs. It was on account of the opportunities and those opportunities today are available at sea surface, deep sea, ground, deep ground, sky, and space. You only have to think big. Take a leap.

Convocation is not the end of education because education is always about learning. Let me quote a pre-Socrates era, I am quoting Heraclitus. Heraclitus, a great philosopher, gave us one aspect of life which is often quoted. 'The only constant in life is the change,' and he buttressed it by an illustration. 'The same person cannot be in the same river twice, because neither the river is the same, nor the person is the same.'

So, change has to be there, and right now the change is epochal, change is much beyond any hurricane. Disruptive technologies, Artificial Intelligence, the Internet of Things, Blockchain, Machine Learning, and every moment we are having a paradigm shift. Every moment is a change that brings huge challenges and every challenge has to be converted into an opportunity that is to be done by you, boys and girls.

When you step into the new building of Parliament, you will come to know that, in the face of COVID-19, the greatest pandemic we faced in the century, in less than 30 months the building came up, the entire infrastructure came up. And our 5,000 years of civilizational reflection is there in Parliament.

Boys and girls, no Nation in the world has grown as fast with such a big leap as Bharat in the last decade. This has given one situation, people have tasted development, they have seen development. They are there, for aspirational mode and if people are in aspirational mode, there can be restive situations, there can be restlessness, a problem but that problem has to be addressed by each and every individual.

Let me give you certain suggestions. Dear boys and girls, always put Civic Duties, Fundamental Duties over rights. Always nurture your family, your teachers, your elders, your neighborhood, because that is our civilizational culture. Believe in the environment, because that is something we are concerned. Alarmingly, a worrisome scenario is there. We do not have another earth to live in. The situation is cliff hanging. We are virtually collapsing. We have to find a way out.

I will conclude by leaving a thought with you. We all need to promote economic nationalism. Gandhi Ji gave us the slogan Swadesi. The Prime Minister has given, 'Be Vocal for Local.' If we do not have avoidable imports, we'll be saving more than hundreds of billions of dollars in our foreign kitty. That will give work to our people. Entrepreneurship will blossom. You can do it. In this room, if you find out about our clothing, you'll come to know that they are stitched outside the country. Better quality is available here so, national interest, national economic interest can never be compromised on fiscal gains.

Always take pride in the person, in whose name, in whose memory the institutions are there. People have glorified human beings very rarely, you can get Padma Bhushan, you can get *Bharat Ratna*, you can get all awards but where do you get the title of Rashtrapita? Where do you get the title of Sardar? Where do you get the title of 'Tau? Tau is here, Tau oversees us.

I have been mentored in politics by Tau. What I learned from him is to keep on working for development of the society and never ignore the rural landscape and the farmers.

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Management Development Programme on Continuous Learning, Skill Development and Innovations

A five-day Online Management Development Programme on 'Continuous Learning, Skill Development and Innovations for Promoting Startup Ecosystem and Entrepreneurship' was organized by the Shri Vaishnav Vidyapeeth Vishwavidyalaya (SVVV), Indore – Micro, Small & Medium Enterprises (MSME) Incubation Centre from March 04-08, 2025. The event was sponsored by Ministry of MSME, Govt. of India and ACE Foundation IIT Indore. The Chief Guest of the session was Mr. Aman Sinha, Manager, IIT Indore, Advanced Centre for Entrepreneurship (ACE) Foundation. The inaugural session started with the virtual lighting of the lamp followed by the welcome of the guest. Dr. Rakesh Kumar Malviya, Nodal Officer, SVVV – MSME Incubation Centre introduced and presented the overview of programme highlighting the importance of new entrepreneurship, skill development, and startup ecosystem.

Dr. Namit Gupta, Director, SVITS, SVVV Indore welcomed the Chief Guest and addressed the audience. He highlighted the importance of the business landscape, especially in tech and innovation, which is constantly evolving. Continuous learning allows entrepreneurs to adapt to new technologies, market trends, and customer needs.

Mr. Aman Sinha, Manager, IIT Indore, Advanced Centre for Entrepreneurship (ACE) Foundation addressed the gathering. He started his talk by saying that entrepreneurs need to stay updated on best practices in finance, marketing, legal, and operations. Learning about emerging technologies (AI, blockchain, etc.) can open up new business opportunities. He said that by fostering a culture of continuous learning, skill development, and innovation, we can create a vibrant startup ecosystem that drives economic growth and social progress. Dr. Pavan Kumar Gupta, Co-coordinator proposed the vote of thanks.

The first Session was opened with the presence of Mr. Aman Sinha, Manager, IIT Indore, ACE Foundation. His topic was 'Start Smart: Digital Literacy for Entrepreneurs'. He emphasized the critical role of digital skills in today's business world. He also said that digital tools enable targeted marketing campaigns, social media engagement, and Search Engine Optimization (SEO) to attract and retain customers.

Dr. Manmeet Singh, Professor and Head, Management, Oriental University conducted the session on 'Building a Startup Concept to Success'. He mainly focused on five major points, i.e. *Identify a Problem or Opportunity*: Start with a genuine problem you're passionate about solving or an untapped market opportunity. Look for pain points in existing products or services, or emerging trends that create new needs. *Generate and Refine Ideas:* Brainstorm multiple potential solutions. Don't be afraid to think outside the box and challenge conventional wisdom. Refine your ideas based on feasibility, market potential, and your expertise. *Conduct Market Research:* Identify your target audience and understand their needs, preferences, and behaviors. Analyze your competitors and identify their strengths and weaknesses. Assess the market size and growth potential. *Validate Your Concept:* Create a Minimum Viable Product (MVP) to test your core assumptions. Gather feedback from potential customers and iterate on your product based on their input. Use surveys, interviews, and online forums to validate your market demand. *Develop a Business Model Canvas:* Outline your value proposition, customer segments, revenue streams, key activities, and resources. This will help you to visualize your business and identify potential challenges.

Dr. Pooja Dubey Pandey, Founder and CEO, BETI Mushrooms spoke on 'Mushroom Startups: Catalyzing Innovation in the Agri-Tech and Bio-Tech Sectors'. She addressed the audience and said that mushroom startups are emerging as key players in the agri-tech and biotech sectors, leveraging sustainable cultivation techniques, biotechnology innovations, and value-added products. These ventures address global challenges related to food security, environmental sustainability, and healthcare. She emphasizes that Mushroom startups are at the forefront of agri-tech and biotech innovation, offering sustainable solutions across multiple industries. With advancements in technology and increasing

investment, these ventures have the potential to reshape food systems, healthcare, and environmental sustainability on a global scale.

Dr. Gunjan Yadav, Principal, Prashanti Institute of Technology, Ujjain talked on 'From Idea to Reality: Validating Your Startup Concept'. He said that turning a startup idea into a successful business requires more than just enthusiasm—it demands validation. Validation ensures that your idea has real-world potential, reducing risks and increasing the chances of success. Validating your startup concept is crucial for long-term success. By testing assumptions, gathering feedback, and refining your ideas, you increase your chances of creating a viable and profitable business.

Mr. Aditya Upadhayay, Director and CEO, Inventorsden spoke on 'Essentials for Entrepreneurship'. He addressed that entrepreneurship is the process of designing, launching, and running a new business. Success in this journey requires a combination of skills, strategies, and resources. He also highlighted that successful entrepreneurship requires vision, planning, and execution. By mastering these essentials, aspiring entrepreneurs can build sustainable and impactful businesses.

Dr. Pavan Kumar Gupta, Assistant Professor, SVITT, SVVV Indore spoke on 'Impact of Self Realization in Entrepreneurship'. He said that self-realization plays a profound role in the entrepreneurial journey, influencing everything from decision-making to resilience. In essence, self-realization empowers entrepreneurs to lead with purpose, make sound decisions, build strong relationships, and navigate the challenges of building a successful business.

Dr. Mala Shrivastava, Director, Shri Vaishnav School of Management, SVVV Indore delivered the session on 'Marketing in a Startup'. She discussed that marketing in a startup is different from marketing in an established business because startups often operate with limited budgets, smaller teams, and the need for rapid growth.

Dr. Namit Gupta, Director, Shri Vaishnav Institute of Technology & Science, SVVV Indore delivered a talk on 'Approaches and Strategies to Foster Innovation in Startups'. He said that fostering innovation in startups is essential for staying competitive and achieving sustainable growth. He also focuses on cultivating an innovative mindset, customer-centric innovation, leveraging technology and data, building an agile and adaptable team, implementing lean and agile methodologies, etc.

Dr. Upinder Dhar, Vice Chancellor, SVVV Indore spoke on the topic 'Continuous Learning for Promoting Startup Ecosystem and Entrepreneurship'. He emphasized that a vibrant startup ecosystem and the empowerment of entrepreneurs depend heavily on ongoing learning. It ensures long-term success by fostering resilience, creativity, and flexibility. He said that in a company environment that is constantly changing, entrepreneurs may stay ahead of the curve by engaging in ongoing learning. Startups become more robust when they have a strong learning culture that fosters creativity, problem-solving, and adaptation.

Dr. George Thomas, Director, Shri Vaishnav Institute of Management spoke on 'Entrepreneurial Marketing'. He highlighted that startups and small firms with little funding frequently employ entrepreneurial marketing, which is a flexible and creative method of business promotion. Dr. Thomas also concluded that boldness, creativity, and data-drivenness are key components of entrepreneurial marketing. Startups must employ creative, economical methods to attract consumers, increase brand recognition, and grow effectively.

Dr. Rakesh Kumar Malviya, Nodal Officer, SVVV – MSME Incubation Centre discussed 'Decision Making'. He discussed various aspects of decision-making and said that making decisions affects everything from product creation to marketing plans and company expansion, making it an essential entrepreneurial ability. Startups that make good decisions are better able to manage risks, overcome uncertainty, and take advantage of opportunities.

Dr. Gunjan Shukla, Principal, SICCA College Indore SPOKE on the topic 'Trash to Treasure - Business Ideas for a Sustainable Future'. She mainly emphasized that converting garbage into useful products is a successful and environmentally responsible business strategy. Businesses that recycle, upcycle, and repurpose garbage are becoming more popular as sustainability becomes a top concern. Not only does recycling garbage into treasure promote sustainability, but it also presents a lucrative commercial opportunity. Startups can develop environmentally friendly solutions that

benefit people and the environment by repurposing garbage.

Mr. Rohit Bhatt, Cloud Security Architect spoke on 'Cyber Security and Cloud Security'. He shared his experience and discussed that as both consumers and organizations are depending more and more on digital platforms, cloud security, and cybersecurity are essential for protecting data, systems, and privacy.

Mr. Rajneesh Sharma, Founder and Director, Global Trade House and Training Centre Indore spoke on 'How to Do Digital Marketing in Business'. He said that for any company hoping to expand its online presence, draw in clients, and boost sales, digital marketing is crucial. Social media marketing, SEO, email campaigns, and sponsored advertisements are just a few of the tactics that are included.

Dr. Rakesh Kumar Malviya, Nodal Officer, SVVV ─MSME Incubation Centre conducted a brainstorming session on how to identify the problem and its associated challenges in various fields of research.

Mr. Gaurav Goyal, Assistant Director, MSME DFO Indore delivered his talk during the sessions on 'Ministry of MSME Schemes for Entrepreneurship' and 'Udyam Registration'. He discusses the several schemes being run by the Ministry of MSME for young, new and enthusiastic entrepreneurs. He also discusses how startups can get good funding from the government. He step by step focuses on how Udyam registration can be done. Other sessions were idea pitching and networking which were jointly conducted by Dr. Rakesh Kumar Malviya and Dr. Pavan Kumar Gupta. Dr. Rakesh Kumar Malviya, Mechanical Engineering Department, SVITS and Dr. Pavan Kumar Gupta, SVITT, SVVV Indore were the Coordinators of the event.

Symposium on Artificial Intelligence and CAD/CAM/CAE

A two-day Symposium on 'Artificial Intelligence and CAD/CAM/CAE in Engineering/Medicine/ Dentistry' is being organized by the Indian Institute of Information Technology, Design and Manufacturing (IIITDM), Kancheepuram, Chennai from July 12-13, 2025. The Scientists, Academicians, Research Scholars, Physicians, Students from Engineering, Medical, Dental and Clinical Backgrounds, Industry Delegates, and Entrepreneurs may participate in the event.

Artificial Intelligence (AI) plays a transformative role in medical imaging-based diagnosis, treatment planning, and implants procedures by effectively analyzing patient medical data. For example, the integration of AI with 3D printing technologies facilitates the creation of patient-specific prostheses, significantly improving functional outcomes. This symposium highlights advancements in AI, CAD/ CAM/CAE technologies, and their applications in diagnosis, surgical treatments, and the design, fabrication and placement of implants. The Topics of the Event are:

Engineering

- AI in Medical Data.
- AI in Disease Diagnosis.
- AI in CT and MRI.
- CAD/CAM/CAE in Medicine and Dentistry.
- Haptic and Robot in Surgical Planning.
- 3D/4D Printing in Medicine and Dentistry.
- Biomaterials and Biomedical Devices.
- AI in Manufacturing and Digital Twins.
- Patient-Specific Surgical Simulation.

Medicine

- Advances in Orthopaedic Surgery.
- Advances in Spine Surgery.
- Laser/Robot-Assisted Surgery.
- 3D Printing in Surgery.
- Advances in Cardiothoracic Surgery.
- Advances in Neurosurgery.
- Implant Placement Procedure.
- Forensic Medicine.
- Haptic and Robot in Medicine.

Dentistry

- Oral and Maxillofacial Surgery.
- Advances in Orthodontics.
- Advances in Prosthodontics.
- Advances in Periodontics.
- Dental Bone Grafting and Implant.
- 3D Printing in Dentistry.
- Laser/Robot in Dentistry.

- Forensic Dentistry.
- Haptic and Robot in Dentistry.

For further details, contact Organizing Chair, Dr. P Pandithevan, Associate Professor, Department of Mechanical Engineering, Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram, Chennai – 600127, Mobile No: 09797002844 / 019633388592, E-mail: *ppthevan@iiitdm.ac.in.* For updates, log on to: *www.iiitdm.ac.in*

National Conference on Statistical Methods and Applications

A two-day National Conference on' Statistical Methods and Applications in Interdisciplinary Areas' is being organized by the Department of Statistics, Faculty of Mathematical Sciences, University of Delhi, Delhi from April 11-12, 2025. The event aims to bring together researchers, academicians, and professionals to explore the latest advancements in statistical methods across various fields. It serves as a platform for innovative research and collaboration, bridging the gap between theory and practice. Aligned with the vision of '*Viksit Bharat* 2047', the event contributes to nation-building by fostering statistical innovations that address challenges in healthcare, education, technology, and governance. The Areas of the Event are:

- Probability Theory and Applications.
- Statistical Inference.
- Survey Sampling.
- Bayesian Inference.
- Applied Statistics.
- Data Mining.
- Bio Statistics.
- Statistics and Environment.
- Statistical Modelling.
- Time-series Analysis and Forecasting Models.
- Demography and Population Studies.
- Data Science Techniques.
- Design of Experiments.
- Deterministic and Stochastic Modelling.
- Official Statistics.
- Reliability and Quality Control.
- Distribution Theory.
- Order Statistics.

For further details, contact Chair of the event**,** Prof. Poonam Singh, Senior Professor, Department of Statistics, Faculty of Mathematical Sciences, University of Delhi, Delhi-110007. Mobile No: 09810009768, E-mail: *marchsmaia@gmail.com.* For updates, log on to: *https://statistics.du.ac.in/* ❑

ATTENTION UNIVERSITIES !

The University News has a Special Column for Publication of Convocation Addresses and other Special Addresses. The Universities are encouraged to send their Convocation Addresses to the Editor University News regularly for Publication.

Announcement

Special Issue of 'University News'

A **Special Number of University News** on the theme ***'Envisioning Future Higher Education: The Pivotal Role of India'*** is being brought out on the occasion of the **AIU Centenary Celebrations** and **AIU Annual General Meet and National Conference of Vice Chancellors'—2024-25 in May/June, 2025.**

The **Special Issue** will cover the articles of eminent educationists on the afore-mentioned theme. Readers of the University News are also invited to contribute to the Special Number by submitting papers/articles on the above theme by **Apri 30, 2025**. The papers will be published in the Issue subject to the approval of the Editorial Committee of the University News. The contributions are invited on the following Subthemes:

Technological Integration in Higher Education

- Blended Learning Models.
- Integrating Emerging Technologies like AI, Virtual and Augmented Reality in the Learning Process.
- Cyber Security and Data Privacy in Higher Education Institutions.

Leadership and Governance in Higher Education

- Developing Academic Leadership.
- Governance of Public and Private Universities.
- Autonomy and Accountability in HEIs.

Rethinking Assessment and Evaluation

- Innovative Assessment Methods and Experiential Learning.
- Viability of One Nation One Exam System.
- Continuous Comprehensive Assessment.

Globalisation and Internationalisation

- Strategies for International Collaboration.
- Global Classrooms (Attracting International Faculty and Students).
- Challenges and Opportunities in Internationalisation of Higher Education.

Equity, Diversity and Sustainability

- Incorporating IKS in Curriculum and Pedagogy.
- Catering to Equity and Diversity on Campuses.
- Creating Green and Sustainable Campuses.

Any Other Relevant Subthemes

The final decision on the acceptance or otherwise of the article rests with the Editorial Committee. The manuscripts submitted for the Special Issue may be considered for general issues, if not published in the Special Issue. The detailed guidelines for contributors are placed on the AIU Website. Manuscripts may be sent to Dr Sistla Rama Devi Pani Editor, University News, Association of Indian Universities, AIU House, 16 Comrade Indrajit Gupta Marg (Kotla Marg), New Delhi- 110 002 through E-mail: ***ramapani.universitynews@gmail.com*** with a copy to: ***universitynews@aiu.ac.in*** on or before **April 30, 2025**.

THESES OF THE MONTH

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

AGRICULTURAL & VETERINARY SCIENCES

Biotechnology

1. Chaudhary, Roshaniben Kantilal. **Production and optimization of biodiesel by oleaginous microorganisms using agrowaste**. (Dr. Pritiben H Patel), Department of Biotechnology, Ganpat University, Mehsana.

BIOLOGICAL SCIENCES

Biochemistry

1. Rao, Priyashi Parag. **Multimodal approaches of vector borne diseases**. (Dr. Rakesh Rawal), Department of Biochemistry, Gujarat University, Ahmedabad.
2. Thaker, Khushali Mayankbhai. **Characterizations of key enzymes involved in sennoside biosynthetic pathway in Senna (Cassia angustifolia Vahl)**. (Dr. Rushikesh Joshi), Department of Biochemistry, Gujarat University, Ahmedabad.

Biosciences

1. Rai, Roshan. **An analysis of dye remediation and bioactive potential of aspergillus species from domestic wastewater.** Department of Biosciences, Sri Sathya Sai Institute of Higher Learning, Anantapur.

Biotechnology

1. Archana Kumari. **Employing multi-potential rhizospheric microorganisms to remediate toxic residues of organophosphate pesticides**. (Prof. S Krishna Sundari), Department of Biotechnology, Jaypee Institute of Information Technology, Noida.
2. Munir Ibrahim. **Molecular fingerprinting and in-silico analysis of Indian herbal plants for potentially novel therapeutic drug candidates**. (Dr. Ashok Kumar Bishoyi), Department of Biotechnology, Marwadi University,Gujarat.
3. Rami, Nehalkumar Vinodkumar. **Studies on anti-breast cancer potential of phytochemicals derived from selected plant species using *In vitro and In silico* approaches**. (Dr. Bhushan Kulkarni and Dr. Sandesh Chibber), Department of Biotechnology, Ganpat University, Mehsana.
4. Roy Chowdhary, Amit. **Therapeutic strategies in breast cancer management: A precision oncology approach**. (Dr. Birendranath Banerjee and Dr. Naresh Chandra Bal), KIIT School of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar.
5. Vaghasia, Harsha Dhitendrabhai. **Phytochemical based immunomodulation and chemoprevention of HPV mediated cancer of uterine cervix**. (Dr. Rakesh Rawal and Dr. Meenu Saraf), Department of Biotechnology, Gujarat University, Ahmedabad.

Life Science

1. Pal, Aaratrik. **Taxonomic and palynological study of some members of linderniaceae from eastern Himalaya and adjoining plains of India**. (Prof. M Chowdhury), Department of Botany, University of North Bengal, Darjeeling.
2. Verma, Sandhya. **Effect of seed priming on germination behaviour and antioxidant enzyme activities of isabgol under salinity stress**. (Dr. Hiteshkumar A Solanki), Department of Botany, Gujarat University, Ahmedabad.

Microbiology

1. Bhatt, Amishi Rajeshbhai. **Isolation, screening, and characterization of probiotic bacteria and production of antimicrobial peptides from potential probiotic *Lactobacillus* strain**. (Dr. Ramesh Kothari), Department of Microbiology, Saurashtra University, Rajkot.

Zoology

1. Rathore, Harshvardhan Singh. **Understanding aspects of demography and resource partitioning mechanisms of large felids along with abundance and spatial distribution of prey in Similipal Tiger Reserve, Odisha**. (Dr. Bivash Pandav), Department of Wildlife Science, Saurashtra University, Rajkot.
2. Ray, Arpita. **Genotoxic effects of fungicide(s) in the fish *Pethia Conchonius* (Hamilton, 1822) from river Teesta of Northern Region of West Bengal**. (Prof. Min Bahadur), Department of Zoology, University of North Bengal, Darjeeling.

ENGINEERING SCIENCES

Aerospace Engineering

1. Jhanji, Kanu Priya. **Characterization of self-healing composite materials**. Department of Aeronautical Engineering, Hindustan Institute of Technology and Science, Chennai.

Civil Engineering

1. Lashkari, Ruchir. **Impact analysis and prediction of vehicular pollution on ambient air quality of Asian highway 47 at Indore City**. (Prof. Shilpa Tripathi), Department of Civil Engineering, Medi-Caps University, Rau, Indore.

Computer Science & Engineering

1. Barpha, Vidhya. **Hindi fake news detection for social media platform using machine learning approach**. (Prof. Pramod S Nair), Department of Computer Science & Engineering, Medi-Caps University, Rau, Indore.
2. Donald, J P. **Advanced detection and mitigation models for Distributed Denial of Service (DDoS) attacks in Industrial Internet of Things (IIoT)**. Department of Computer Science & Engineering, Hindustan Institute of Technology and Science, Chennai.
3. Kukade, Jyoti. **Detecting anomalies in video using machine learning model**. (Prof. Prashant Panse), Department of Computer Science & Engineering, Medi-Caps University, Rau, Indore.
4. Kushwaha, Sunil Kumar. **A neuro-fuzzy approach for performance enhancement in TCP/IP differentiated services for congestion control**. (Prof. Suresh Jain), Department of Computer Science & Engineering, Medi-Caps University, Rau, Indore.
5. Mishra, Binod Kumar. **Word sense disambiguation in Hindi language using machine learning**. (Prof. Suresh Jain), Department of Computer Science & Engineering, Medi-Caps University, Rau, Indore.
6. Motghare, Sarita M. **An efficient biometric based privacy protection system for data search**. (Prof. Pramod S Nair), Department of Computer Science & Engineering, Medi-Caps University, Rau, Indore.
7. Nair, R Kavitha. **Hybrid fuzzy deep neural network with search optimization for autism disorder detection**. Department of Computer Science & Engineering, Hindustan Institute of Technology & Science, Chennai.
8. Pandya, Vishal Kishorchandra. **Design and development of predictive model for students educational performance using data mining**. (Dr. Rajnikant Pandya), Department of Computer Science, Saurashtra University, Rajkot.
9. Patel, Aniket Rajendrakumar. **Development of effective privacy preserving data stream mining technique**. (Dr. Kiran R Amin), Faculty of Computer Applications, Ganpat University, Mehsana.
10. Patel, Ankitkumar Ratilal. **Enhancement of lightweight cryptography technique for IOT data transmission**. (Dr. Jigneshkumar A Chauhan), Department of Computer Sciences, Ganpat University, Mehsana.
11. Patel, Praveshkumar Somabhai. **Metaheuristic approaches based text summarization for multiple documents**. (Dr. Paresh M Solanki), Faculty of Engineering and Technology, Ganpat University, Mehsana.
12. Rupali. **Automatic text summarization and question-answer generation using deep learning techniques**. (Dr. Parteek Kumar and Dr. V P Singh), Department of Computer Science & Engineering, Thapar Institute of Engineering and Technology, Patiala.
13. Sarkar, Kanishka. **Design and development of a computer based automated system for brain tumor segmentation**. (Dr. Ardhendu Mandal), Department of Computer Science & Technology, University of North Bengal, Darjeeling.
14. Shetty, Sahana. **A scalable and modular strategy for data analytics to improve the productivity in crop using machine learning techniques**. (Dr. Mahesh T R), Department of Computer Science & Engineering, Jain University, Bangalore.
15. Solanki, Sachin. **Extractive methods for text summarization from unstructured text**. (Prof. Suresh Jain), Department of Computer Science & Engineering, Medi-Caps University, Rau, Indore.
16. Soren, Nikita. **Ambient intelligence based DSS for the growth and disease prediction of Oryza Sativa integrated with genetic traits**. Department of Computer Science & Engineering, Hindustan Institute of Technology and Science, Chennai.
17. Suthar, Falguni Ambalal. **Framework to evaluate & improve educational processes in Indian schools & universities**. (Dr. Bhavesh R Patel), Faculty of Computer Applications, Ganpat University, Mehsana.

18. Unnisa, Sarwath. **Improved deep learning model for detection and classification of pneumonia from x-ray images**. (Dr. Vijayalakshmi A), Department of Computer Sciences, Christ University, Bangalore.

Electrical & Electronics Engineering

1. Bais, Devendra Singh. **An IoT framework for soil analysis and soybean disease classification using deep CNN**. (Dr. Vibha Tiwari and Dr. Savita Kolhe), Department of Electronic Engineering, Medi-Caps University, Rau, Indore.
2. Bawane, Sheetal. **Implementation and analysis of smart adaptive array feed for parabolic reflector**. (Dr. Debendra Kumar Panda), Department of Electronics Engineering, Medi-Caps University, Rau, Indore.
3. Biswal, Pravat. **Design and analysis of novel soft-switching transformerless DC-DC converters with high voltage gain**. (Dr. B.V.V. Subrahmanya Kumar), KIIT School of Electronics Engineering, Kalinga Institute of Industrial Technology, Bhubaneswar.
4. Chirantan, Shaswat. **Performance assessment of inverted fed machine drives by hybrid optimization schemes compounding predictive and computational intelligent techniques**. (Prof. Bibhuti Bhusan), Department of Electrical & Engineering, Veer Surendra Sai University of Technology, Burla.
5. Manaswini, R. **Studies on ionospheric effects on IRNSS data and their impact on spaceborne sar observations**. (Dr. Raju Garudachar), Department of Electronics Engineering, Jain University, Bangalore.
6. Mishra, Mamun. **Study and development of passive and hybrid islanding detection methods**. (Prof. Bibhuti Bhusan), Department of Electrical Engineering, Veer Surendra Sai University of Technology, Burla.
7. Mohanty, Ashutosh. **Some novel approaches for islanding detection in grid-connected distributed generation system**. (Dr. Bidyadhar Rout), Department of Electrical Engineering, Veer Surendra Sai University of Technology, Burla.
8. Patil, Gaurav Baludas. **Impact of large scale PV grid integration on power system stability**. (Dr. Santosh Singh Raghuwanshi and Prof. L D Arya), Department of Electronic Engineering, Medi-Caps University, Rau, Indore.

Electronics & Communication Engineering

1. Ahuja, Neha. **Investigation on printed UWB antennas for indoor high data rate communications**. (Dr. Rajesh Khanna and Dr. Jaswinder Kaur), Department of Electronics & Communication Engineering, Thapar Institute of Engineering and Technology, Patiala.
2. Ajay, A. **Investigation of aerosol characteristics over urban and rural locations in Southern peninsular India**. Department of Electronics & Communication Engineering, Hindustan Institute of Technology & Science, Chennai.
3. Bakshi, Shalley. **Meta-heuristic based performance optimization in energy harvesting cognitive radio network**. (Dr. Surbhi Sharma and Dr. Rajesh Khanna), Department of Electronics & Communication Engineering, Thapar Institute of Engineering and Technology, Patiala.
4. Garg, Ruchi. **Secure range free localization against wormhole attack in wireless sensor networks**. (Dr. Tarun Gulati), Department of Electronics and Communication Engineering, Maharishi Markandeshwar University, Ambala.
5. Gurdeep Singh. **Design and development of band-notched UWB microstrip patch antenna using nature inspired optimization algorithms**. (Dr. Kulbir Singh and Dr. Urvinder Singh), Department of Electronics & Communication Engineering, Thapar Institute of Engineering and Technology, Patiala.
6. Hota, Aditya Kumar. **Design and implementation of active inductors for narrowband receiver front-end blocks**. (Dr. Kabiraj Sethi), Department of Electronics & Telecommunication Engineering, Veer Surendra Sai University of Technology, Burla.
7. Kavitha, M. **Design of wideband microstrip antenna with monopole and MIMO structure for WiFi 6E applications and its performance evaluation**. Department of Electronics & Communication Engineering, Hindustan Institute of Technology and Science, Chennai.
8. Sa, Sangeeta. **Rendezvous algorithms for cognitive radio-based wireless communication networks**. (Prof. Arunanshu Mohapatra), Department of Electronics & Telecommunication Engineering, Veer Surendra Sai University of Technology, Burla.
9. Sagar, Kalpana. **Design and performance analysis of surface wave based photonic crystal devices for optical sensing applications**. (Dr Ajay Kumar), Department of Electronics & Communication Engineering, Jaypee Institute of Information Technology, Noida.

10. Sirisha, Madiraju. **A novel algorithm design to increase the robustness in narrow band IOT**. (Dr. Pinjari Abdul Khayum), Department of Electronics & Communication Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

Energy Studies

1. Sonali. **Feasibility of applications of waste driven composite for the treatment of paper and pulp industry wastewater**. (Dr. Anoop Verma), Department of Energy and Environment, Thapar Institute of Engineering and Technology, Patiala.

Mechanical Engineering

1. Chourasiya, Rupesh. **Study of sustainable manufacturing adoption in Indian textile industries**. (Dr. Shrikant Pandey), Shri Vaishnav Institute of Technology and Science, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore.
2. Dey, Suman. **Design and analysis of a single lumen microcatheter for hybrid path planning using multi criteria methods and optimization techniques in vascular networks**. (Dr. Ruby Mishra and Dr. Ritu Maity), Kalinga Institute of Industrial Technology, Kalinga Institute of Industrial Technology, Bhubaneswar.
3. Gangwar, Manoj Kumar. **Development of condition monitoring system for fault identification and diagnosis using machine learning techniques for gear**. (Prof.Rajendra Kumar Shukla and Dr. Neelesh Kumar Sahu), Department of Mechanical Engineering, Medi-Caps University, Rau, Indore.
4. Mishra, Chandrakanta. **Mechanical and tribological characterization of Kenaf/Glass hybrid composite laminates filled with fish scale powder**. (Dr. Chitta Ranjan Deo), Department of Mechanical Engineering, Veer Surendra Sai University of Technology, Burla.
5. Nagwal, Rita. **Performance improvement of circular supply chain using industry 4.0 applications for Small Medium Enterprises (SMEs)**. (Dr. Ravindra Pathak and Dr. Kumar Rohit), Department of Mechanical Engineering, Medi-Caps University, Rau, Indore.
6. Patel, Prabhat. **Exergetic analysis of an IC engine fuelled with nanoparticle additives based on entransy dissipation minimization theory**. (Dr. Ravindra Pathak), Department of Mechanical Engineering, Medi-Caps University, Rau, Indore.
7. Sharma, Jaideep. **Investigation of mechanical properties of AI-7075 alloy with reinforced nano and micro ZrO_2 particles**. (Dr. Chitresh Nayak and Dr. Premanand S Chauhan), Department of Mechanical Engineering, Medi-Caps University, Rau, Indore.

MATHEMATICAL SCIENCES

Mathematics

1. Arulanand, S. **Domination problems in networks**. Department of Mathematics, Hindustan Institute of Technology and Science, Chennai.
2. Bareja, Umang. **Wave propagation in functionally graded porous piezoelectric materials**. (Dr. Anil K Vashisth), Department of Mathematics, Kurukshetra University, Kurukshetra.
3. Jain, Ani. **Identifying the consequences of obesity on chronic diseases through modeling, analysis and simulation**. (Dr. Parimita Roy), Department of Mathematics, Thapar Institute of Engineering and Technology, Patiala.
4. Meenu. **Effect of internal and external dynamics on galaxy properties and their evaluation**. (Dr. Mamta Gulati), Department of Mathematics, Thapar Institute of Engineering and Technology, Patiala.
5. Mittal, Kajal. **Study of iterative form of line graph and its signless laplacian spectrum with reference to graph coloring and domination**. (Dr. Pranjali Kekre), Department of Mathematics, Medi-Caps University, Rau, Indore.
6. Nithya Raj, R. **Metric and partition dimension of benzene oxide and tringulated chemical architectures**. Department of Mathematics, Hindustan Institute of Technology and Science, Chennai.
7. Rahul. **Symmetries and bifurcation analysis of some non-linear partial differential equations**. (Dr. Rajeev Budhiraja), Department of Mathematics, Maharishi Markandeshwar University, Ambala.
8. Saini, Vandana. **Analysis of queues with feedback on stochastic and fuzzy environment**. (Dr. Adesh Kumar Tripathi), Department of Mathematics, Maharishi Markandeshwar University, Ambala.

MEDICAL SCIENCES

Ayurveda

1. Sharada, R. **Pharmoco-therapeutic evaluation of Nagaphani (Opuntia elatior Mil) fruit in pandu with special reference to its efficacy in cancer and chemotherapy associated anemia**. (Prof. R N Acharya), Department of Dravyaguna, Gujarat Ayurved University, Jamnagar.

Biotechnology

1. Swain, Nitish. **Toll like receptor mediated activation of CD8+T cells in rheumatoid arthritis: Insights and implications**. (Dr. Bhawna Gupta), KIIT School of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar.

Forensic Science

1. Mane, Manashree Avinash Rajlaxmi. **Forensic interpretation and evaluation of glass due to impact of weapons**. (Dr. Asha Rajiv), Department of Forensic Science, Jain University, Bangalore.
2. Yadav, Poonam. **Studies on some Indian poisonous plants of forensic significance using GC-MS and DNA barcoding**. (Dr. Swati Dubey Mishra), Shri Vaishnav Institute of Forensic Science, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore.

Gynaecology

1. Venkadalakshmi, V. **A randomized controlled trial to assess the effectiveness of "Extended postpartum comprehensive health care bundle" on selected outcomes of women with preeclampsia at six months**. National Institute of Nursing Education, Postgraduate Institute of Medical Education and Research, Chandigarh.

Pharmaceutical Science

1. Battula, Pradeep. **Interventional, multicentric study on factors contributing to antimicrobial resistance and impact of antimicrobial therapy**. (Dr. Bhupalam Pradeep Kumar), Department of Pharmaceutical Sciences, Jawaharlal Nehru Technological University Anantapur,Ananthapuramu.

PHYSICAL SCIENCES

Chemistry

1. Basak, Shatarupa. **Extensive investigation of nanomaterials of zinc and iron metal oxides and their applications in biological and chemical sciences**. (Prof. M N Roy Dr. Suranjan Sikdar), Department of Chemistry, University of North Bengal, Darjeeling.
2. Buch, Munishkumar Kiritbhai. **Physico-chemical studies and polymorphic stability evaluation of anti-HIV protease inhibitors in fixed dose combination drug product using novel analytical methods**. (Dr. Hasit V Vaghani), Department of Chemistry, Ganpat University, Mehsana.
3. Das, Arindam. **Design and development of synthetic methodologies for medicinally privileged heterocyclic scaffolds**. (Dr. Md Firoj Hossain), Department of Chemistry, University of North Bengal, Darjeeling.
4. Divakar, Swathi V. **Liquid-liquid separation using membrane filtration**. (Dr.Mahesh Padaki and Dr. Geetha Balakrishna R), Department of Chemistry, Jain University, Bangalore.
5. Dutta, Kumaresh. **Innovative approaches towards the synthesis of heterocyclic compounds**. (Prof. P Ghosh), Department of Chemistry, University of North Bengal, Darjeeling.
6. Jain, Naman. **Design, synthesis and chaacterization of thiazole derivatives as DNA and BSA targeting agents using physicochemical techniques**. (Dr. Gyan Prakash Dubey and Dr. Ranjana Aggarwal), Department of Chemistry, Kurukshetra University, Kurukshetra.
7. Parmar, Rahul Valabhai. **Synthesis, characterisation and biological activity of azole as privileged scaffold**. (Dr. Milan S Vadodaria), Department of Chemistry, Saurashtra University, Rajkot.
8. Prahlada, T. **Development of flexible and miniaturized energy storage devices with laser scribed graphene supported electrodes**. (Dr. Debasis Ghosh and Dr. Nataraj S K), Department of Chemistry, Jain University, Bangalore.
9. Rai, Pranesh. **Biological and catalytic activities of some transition metal complexes of ionic liquid- supported ligand systems**. (Prof.B Sinha), Department of Chemistry, University of North Bengal, Darjeeling.
10. Santhosh, K N. **Nanocomposite functional nanomaterials and membranes for water treatment application**. (Dr. Nataraj S K), Department of Chemistry, Jain University, Bangalore.
11. Shanavaz, H. **Synthesis and characterization of metal incorporated amine based covalent organic framework for supercapacitor application**. (Dr. Yogesh Kumar K), Department of Chemistry, Jain University, Bangalore.
12. Thakur, Rekha. **Transition metal-catalyzed C-H functionalization for the synthesis of bioactive heterocycles**. (Dr. Kamaldeep Paul), Department of Chemistry & Biochemistry, Thapar Institute of Engineering and Technology, Patiala.

Physics

1. Priyanka. **Ab-initio study of transition metal dichalcogenide monolayers**. (Dr. Fakir Chand and Dr. Ramesh Kumar), Department of Physics, Kurukshetra University, Kurukshetra.
2. Sarkar, Joy. **Fabrication and characterization of perovskite solar cells and performance analysis using theoretical study**. (Prof. S Chatterjee), Department of Physics, University of North Bengal, Darjeeling. ❑

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

WANTED

Applications are invited from eligible candidates for the following post:

Sr. No.	Name of College	Name of Post	Vacant Post	Reservation
1.	Matoshri Bayabai Shripatrao Kadam Mahavidyalaya, Kadegaon, Tal.: Kadegaon, Dist.: Sangli (Permanently Granted) (Affiliated to Shivaji University, Kolhapur)	Principal	01	Open to All-01

Place :
Date :

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

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

The Cochin College

(Affiliated to Mahatma Gandhi University, Kottayam, Kerala)
Cochin College Road, Koovapadam, Kochi - 682 002

Renotification

Applications are invited from eligible candidates for the post of Assistant Professors in the following permanent vacancies;

Sr. No.	Subject	No. of Post-PWD
1	Physics	1- (Blind/Low Vision)
2	Botany	1- (Deaf/Hard Heard)

Age, Qualification & Scale of pay as per UGC/ University/ Govt. of Kerala rules. Application Forms can be had from the College Office. Candidates in PWD category need not pay any application fee. In the absence of candidates with benchmark disability specified in the notification, the provisions contained in *G.O.(Ms).242/2022/HEdn. dt.18.05.2022* will be made applicable and vacancy will be filled by other PWD's. if there are no eligible candidates as per notification further process will be regular as per Government/ University norms. Duly filled application form with copies of all required documents should reach the office of Principal, The Cochin College, Koovapadam, Kochi-2, **before 5 p.m on 22.04.2025.**

Date : 24.03.2025 **MANAGER**

CMS COLLEGE
KOTTAYAM
(AUTONOMOUS) KERALA-686001
Ph: 94463 91943
(A Christian Minority Institution)

No.CMS/Estt/PRN/01/2025 19.03.2025

Applications are invited from eligible candidates for the post of **PRINCIPAL (open)**. Scale of pay, Qualification, Age, Experience etc. will be as per the norms of UGC/MG University/Govt. of Kerala. Appli cations can be collected from the college office on payment of Rs.5,000/-(Rs.5,100-by speed post). Application and copy of certificates should reach the Manager within 30 days of the date of advertisement, for more details www.cmscollege.ac.in

Kottayam Manager

Maharana Pratapsinh Shikshan Sanstha's
ANANDIBAI RAORANE ARTS, COMMERCE & SCIENCE COLLEGE
At./Post./Tal. Vaibhavwadi, Dist. Sindhudurg, Pin- 416810

APPLICATIONS ARE INVITED FOR THE POST OF PRINCIPAL
FROM THE ACADEMIC YEAR 2025-26 (AIDED)

The advertisement is approved subject to the final decision in the Writ Petition No. 12051/2015.

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

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 requirements 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 CHAIRMAN, Maharana Pratapsinh Shikshan Sanstha's Anandibai Raorane Arts, Commerce & Science College, At. Post. Tal.-Vaibhavwadi, Dist. Sindhudurg, Pin- 416 810 **within 15 days** from the date of publication of this advertisement. This is University approved advertisement.

Sd/-
CHAIRMAN

GCH&CE

GOA COLLEGE OF HOSPITALITY AND CULINARY EDUCATION

The Goa College of Hospitality and Culinary Education, affiliated to the Goa University, AICTE and to the Human Resource Development Foundation of Goa, is reputed for creating professionals for the Hospitality industry who are excelling in India and internationally, in the world's most renowned hotel chains. Applications are invited from the eligible candidates for the following posts on a Regular basis for BBA Hospitality & Culinary Management degree program:

Sr. No.	Designation of Posts	Total Vacant Posts
1	**Principal**	1
2	**Associate Professor in Food and Beverage**	1
3	**Assistant Professor in Food Production**	1
4	**Librarian**	1

If a candidate is not eligible for the associate professor position, the institution may choose to recruit an assistant professor instead.

Requisites for the position: In keeping with Statute SC – 16 of Goa University. All the above posts will be filled as per the recruitment rules of the Government of Goa/Department of Higher Education and the Goa University statute.

Applications with a detailed resume may please be sent to **principal@gchce.com**

In addition hard copies of the resume, 2 recent passport size photographs, copies of certificates, mark sheets and duly completed Appendix II of Statute SC-16 with documentary evidence should be sent in an envelope superscribed with the post applied for, **within 20 days** from the date of this advertisement to: **Goa College of Hospitality and Culinary Education, Taj – Cidade de Goa, Vainguinim Beach, Dona Paula Goa 403 004.**

Tel: 0832 2454560 **Website: www.goahospitalitycollege.com**

PONDA EDUCATION SOCIETY's

RAJARAM AND TARABAI BANDEKAR COLLEGE OF PHARMACY

Farmagudi, Ponda, Goa 403401

VACANCY

Applications along with full bio-data is invited by The Secretary, Ponda Education Society for its **P.E.S's Rajaram and Tarabai Bandekar College of Pharmacy (Self-Financed)** from eligible candidates for the following post to reach the undersigned **within 21 days** from the date of publication of this advertisement. Application containing recent photograph, mobile no, email-id, certified copies of mark sheets of all examinations from S.S.C. onwards, teaching / research experience, etc. including certificate of registered Pharmacist, change in name, if any, addressed to **The Secretary, Ponda Education Society, Farmagudi, Ponda, Goa 403401.** Applicants already employed must send their applications through proper channel. Incomplete applications will not be accepted.

Sr. No	Post	No.
1	**Assistant Professor in Pharmacology**	01

Qualifications as per Goa University Statute SC-16 and Guidelines of PCI.

Salary as per Ponda Education Society norms.

Desirable: Five years experience with two publications in Scopus/Web of Science indexed approved journals.

S/d
(Shri Ritesh R. Naik)
Secretary
Ponda Education Society

BHAVNA TRUST

JUNIOR AND DEGREE COLLEGE OF COMMERCE AND SCIENCE

Plot No. 5, Sunder Baug, V.N Purav Marg, Deonar-Mumbai - 400088

(MINORITY)

APPLICATIONS ARE INVITED FOR THE FOLLOWING POSTS FROM THE ACADEMIC YEAR 2024-2025:

(UN-AIDED)

Sr. No	Carde	Subject	Total No. of Post	Category
1.	**Assistant Professor**	**Commerce**	**01**	**01-OPEN**
2.	**Assistant Professor**	**Accountancy**	**01**	**01-OPEN**
3.	**Librarian**		**01**	**01-OPEN**

The above post is 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 person with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 5th July, 2019.**

Candidate having knowledge of Marathi will be preferred.

Qualification Pay-Scales and other requirements are prescribed by the UGC Notification dated 18th July, 2018 Government of Maharashtra Resolution No.Misc2018/C.R.56/18/UNI-1 dated 8th March, 2019 and University Circular No. TAAS/(CT)/ICD/2018-19/1241dated 26th March, 2019 and revised from time to time. The Government Resolution & Circular are on the **website: mu.ac.in**.

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

Application with full details should reach the **MANAGING TRUSTEE**, **BHAVNA TRUST JUNIOR AND DEGREE COLLEGE OF COMMERCE AND SCIENCE. Plot No.5, Sunder Baug, Raje Shivaji Chowk, V.N. Purav Marg Opp. Eastern Freeway, Deonar Mumbai-400088 within 15 days** from the date of publication of this advertisement. This is **University approved advertisement**.

Sd/-
MANAGING TRUSTEE

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Chennai – 600 036

Admission to M.Tech Programme 2025-26

Applications are invited for admission to the M.Tech programme for the Academic Year 2025-26 commencing from July 2025, as per the following schedule:

Programme	Mode of Application	M.Tech Admission portal opens	Portal closes on the given last date	Website
M.Tech (Regular)	Online	**27th March 2025**	**25th April 2025 (at 23:59 hrs.)**	http://mtechadm.iitm.ac.in
M.Tech (Sponsored)				

Seats are reserved for SC/ST/OBC(Non-creamy layer)/ PwD /EWS (Economically Weaker Section) as per Government of India rules. Please visit the above websites for online applications, information brochures and further details.

Sd/-

Date: 20.03.2025

Deputy Registrar (Courses)

ST. JOSEPH VAZ EDUCATIONAL SOCIETY

Instituto Nossa Senhora de Piedade, D. B. Marg, Panjim Goa. 403 001. INDIA

Applications with full Biodata are invited from Indian citizens

FOR THE POST OF PRINCIPAL

(Fulltime Regular basis-Grant-in-Aid)

FOR ST. JOSEPH VAZ COLLEGE, CORTALIM, MORMUGAO – GOA

[Affiliated to Goa University & Recognized by the UGC]

A) Eligibility:

i) Ph.D. degree

ii) Professor/Associate Professor with a total service/experience of at least 15 years of teaching/research in universities, colleges and other institutions of higher education.

iii) 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.

iv) A minimum of 110 Research Score as per Appendix II, Table 2 of Goa University Statute SC-16

v) Minimum qualifications and other requirements as prescribed by Goa University Statutes SC-16.4

B) Tenure:

A College Principal shall be appointed for a period of five years, extendable for another term of five years on the basis of performance assessment by a Committee appointed by the University, constituted as per the Statutes of Goa University.

C) Essential Requirements:

a) Knowledge of Konkani language. Additionally, knowledge of Marathi shall be desirable.

b) 15 years of residence certificate in Goa issued by competent authority

Scale of pay: As prescribed by UGC, Goa University and Directorate of Higher Education, Government of Goa from time to time.

Service Conditions: As prescribed by the UGC, Goa University, Directorate of Higher Education, Government of Goa, St. Joseph Vaz Educational Society and other competent authorities from time to time.

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

Application completed in all respects along with self-certified photocopies of statements of marks of all public examinations from S.S.C. onwards, API score sheet and other certificates should reach **the Secretary, St. Joseph Vaz Educational Society, Instituto de Nossa Senhora de Piedade, D.B. Marg, opp. to Virani, Panjim, Goa, 403 001**, within 20 days from the date of publication of advertisement by super scribing on the envelope "Application for the post of Principal". Late submission or incomplete applications in any manner will not be accepted.

Secretary
St. Joseph Vaz Educational Society,
Panjim, Goa.

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