National Consultative Meet

on

Pedagogical Innovation for Science Learning in Higher Education

(5th - 6th March 2024)

DETAILED REPORT

Inter University Centre for Teacher Education

Banaras Hindu University
IUCTE Campus, Sundar Bagiya
Nariya-BLW Road, Varanasi - 221005
Uttar Pradesh

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Chief Guests and Resource Persons

Foreword

Inter University Centre for Teacher Education (IUCTE, BHU, Varanasi, an autonomous establishment under the umbrella of the University Grants Commission (UGC). IUCTE was established in 2014, to create and nurture a robust foundation of capacity building and professional development in the field of teacher education.

A teacher plays an indispensable role in shaping the future of a country. Also, quality teachers can promote quality education across the globe. Therefore, our goal is to ensure that the teachers are passionate, motivated, highly qualified, and well-equipped. To do so, IUCTE intends to nurture a culture of professional excellence specifically in the field of teacher education and also in the whole gamut of higher education in general.

Our focus is to create and implement short and long-term goals and action plans to achieve those goals. In doing so, we look forward to building strategic relationships with Indian and International institutions and experts to brainstorm ideas and design processes for improvements in teacher education.

We aim to take a leadership role to drive policies that promote excellence, innovation, and interoperability between different levels of education, focusing on teacher education. Furthermore, we aim to leverage technology to digitize and digitalize teaching and learning processes in the best possible ways that conform to India's tech infrastructure.

In our pursuit of building and promoting collaboration, growth mindset, and thought leadership processes, we value your input and thus encourage you to provide valuable ideas on improving and enhancing the education.

Prof. Prem Narayan Singh
Director, IUCTE

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About the National Consultative Meet

Inter University Centre for Teacher Education (IUCTE) stands at the cusp of a significant milestone. Established by the UGC, IUCTE embarked on its mission nine years ago with a visionary goal: to nurture a sustainable ecosystem for the capacity building of teachers, thereby transforming higher education in India. Foundation of the Institution was done by the Honorable Prime Minister Shri Narendra Modi Ji, on 25 December 2014 at BHU. Our organization works for the mission to become a centre of excellence in higher education through research and innovation in pedagogical and technological interventions, advisory and policy making, global collaboration and networking for developing quality teachers. As we step into our 10th year, we reflect on a journey marked by unwavering dedication to becoming a centre of excellence in higher education.

To commemorate this journey and to usher in our 10th year, IUCTE organized a two-day National Consultative Meet scheduled 5th – 6th March 2024 on topic titled "Pedagogical Innovation for Science Learning in Higher Education". This theme reflects our ongoing commitment to adapting and evolving teaching methodologies and educational policies in harmony with the groundbreaking National Education Policy (NEP) 2020.

Organizing a two-day National Consultative Meet on the topic of science for higher education in India, with a focus on Vision 2047, presents a significant opportunity to shape the future of education, innovation, and sustainable development in the country. This concept note outlines the objectives, themes, participants, and expected outcomes of the meet, ensuring alignment with the broader goals of Vision 2047, which envisions India as a global leader in science and technology, with a strong emphasis on education, research, and innovation.

Objectives of the Consultative Meet

The primary objective of organizing a two-day National Consultative Meet is to strategically enhance and innovate science teaching methodologies and curricula in higher education institutions across India to align with the futuristic goals set forth in Vision 2047 and the comprehensive guidelines of NEP 2020. This meet aims to bring together leading academicians, policymakers, industry experts, and stakeholders in a collaborative forum to discuss, deliberate, and devise actionable strategies that will significantly improve the quality, inclusivity, and global competitiveness of science education in India. The focus will be on identifying current challenges, leveraging technological advancements, promoting research and innovation, and ensuring equitable access to quality science education for all. By doing so, the meet seeks to contribute to the creation of a robust, dynamic, and sustainable ecosystem for science education that not only meets the immediate needs of the country's youth but also anticipates the demands of the future, thereby empowering India to achieve its long-term goals of becoming a global leader in science and technology.

This objective encapsulates the event's commitment to future-oriented, inclusive, and innovative approaches to science teaching in higher education, emphasizing the critical role of education in achieving national development goals and addressing the societal challenges of the 21st century and beyond.

- **To Assess Current Science Education Landscape:** Evaluate the current state of science education in higher education institutions across India, identifying strengths, weaknesses, opportunities, and threats.

- **To Foster Dialogue Among Stakeholders:** Create a platform for meaningful dialogue between academia, industry, government, and non-governmental organizations to discuss the future of science education in India.
- **To Align Science Education with Future Needs:** Discuss and formulate strategies to align Science education with the technological, economic, and societal needs of India by 2047.
- **To Promote Research and Innovation:** Encourage policies and practices that support research, innovation, and entrepreneurship within the Science fields.
- **To Enhance Access and Inclusion:** Address challenges related to the access and inclusion of underrepresented groups in science education and careers.

Theme of the National Consultative Meet

The Indian higher education landscape, boasting over 1,000 universities and more than 42,000 colleges, has experienced remarkable expansion since independence, positioning it as the third largest globally, with comprehensive offerings across nearly every discipline. The challenge and opportunity now lie in evolving this vast system into a dynamic, student-focused international centre of learning. To transition towards becoming a global education hub, India must adopt a phased approach, breaking down its long-term ambitions into manageable, measurable plans.

The introduction of the National Education Policy (NEP) 2020 marks a significant step towards this transformation, aiming to revitalize the quality, accessibility, and international standing of Indian higher education. Despite these advancements, there remains a pressing need for strategic actions to establish India as a top choice for higher education, known for its excellence and cost-effectiveness relative to institutions in developed nations.

At the heart of realizing the aspirations for India's Higher Education Institutions (HEIs) by 2047 is the reimagining of HEI frameworks to create a resilient, learner- centred environment. This new direction necessitates policies that not only bridge the educational divide for the average Indian, moving away from conventional degree structures, but also emphasize skill development as a core component of the educational experience, empowering students to learn at their own pace and direct their educational journeys.

The responsibility rests with every stakeholder to place students at the forefront of higher education redesign. By leveraging the strengths and addressing the reform needs of its higher education system, India is poised to not only fulfil the aspirations of its own students but also to attract international learners, thereby realizing its vision of becoming a global hub for quality education. Following are the themes which we are going to cover for the pedagogical innovation for science learning for higher education in the meet:

- **Curriculum for the Future:** Innovating Science curriculum and pedagogy to meet future challenges.
- **Technology in Education:** Leveraging technology to enhance teaching, learning, and research in science.
- **Bridging the Industry-Academia Gap:** Strengthening collaborations between industry and academia to ensure students are prepared for future careers.

- **Research, Innovation, and Entrepreneurship:** Creating ecosystems that foster research, innovation, and entrepreneurship among students and faculty.
- **Access, Equity, and Inclusion:** Developing strategies to ensure equitable access to science education for all, including women and other underrepresented groups.

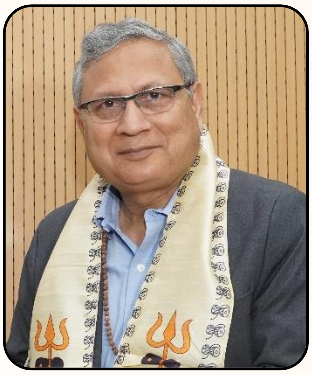
Profile of Resource Persons

Chief Guest: Dr. Shiv Kumar Ji, National Organizing Secretary, Vijnana Bharati

Dr. Shiv Kumar from Vidya Bharti Akhil Bhartiya Shiksha Sansthan is a preacher of Rashtriya Swayam sevak Sangh currently working as the **National Organizing Secretary, Vijnana Bharati**. He is a gold medalist in B.Sc. and M.Sc. from the country's famous college, St. Xaviers college and had Ph.D in Organic chemistry for Calcutta University. He is making every effort to provide new directions and new dimensions of education, research, and accessible education to all.

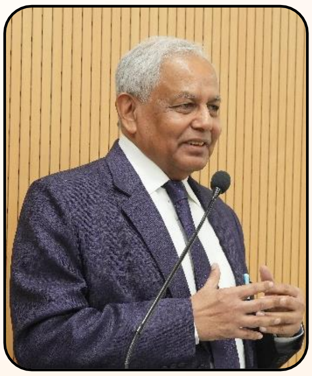
Prof. V. K. Singh, Chair Professor IIT Kanpur

Professor Vinod Kumar Singh, a distinguished chemist and educator, played a pivotal role as the founding director of IISER Bhopal and currently serves as Chair Professor at IIT Kanpur. His prestigious positions include Chairperson of the Governing Council at IACS Kolkata, the Research Council of CSIR-AMPRI Bhopal, and the CSIR's Recruitment and Assessment Board. Dr. Singh postdoctoral pursuits took him to Harvard University with Nobel Laureate E. J. Corey, before joining IIT Kanpur in 1990. His research in Synthetic Organic Chemistry has earned him numerous accolades including the Shanti Swarup Bhatnagar Prize and Padma Shri, fourth-highest civilian award of the Republic of India. Dr. Singh has significantly contributed to the management of educational institutions, shaping higher education policy, and was instrumental in founding IISER Bhopal. His leadership roles extend to editing prestigious journals and being an active member of scientific councils and societies.

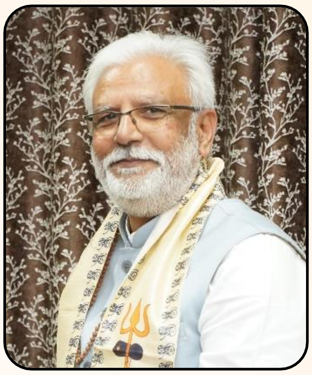


Prof. Prithvish Nag

Prof. Prithvish Nag is an eminent academic currently serving as the Director of SHEPA Institute, Varanasi and administrator, who has made significant contributions to the field of geospatial sciences and mapping. He is the former Vice Chancellor of Mahatma Gandhi Kashi Vidyapeeth (MGKVP), Varanasi. He is also the former Director of National Thematic Mapping Organisation (NTMO) and the former Surveyor General of India. He has published several books and research papers on topics such as climate change, polar studies, river health, and geomorphology. He has been honoured with the India Geospatial Leadership Award in 2015 for his role in developing and framing policies that foster the growth of geospatial technologies and businesses in India. He is a member and leader of various national and international associations related to geography and cartography.



Prof. Akhilesh Kumar Singh, Vice Chancellor, Prof Rajendra Singh (Rajju Bhaiya) University Prayagraj, Uttar Pradesh



Currently Prof. A. K. Singh is serving as the Vice Chancellor of Prof. Rajendra Singh University, Prayagraj. Prior to this, Sir served as the Director of the DAVV, Indore, Educational Multimedia Research Centre. He has over 30 years of extensive professional expertise in a variety of areas related to teaching, training, research, and administration of education in roles such as research officer, course coordinator, and director in charge at EMRC, DAVV, Indore. Through a variety of academic tasks and accomplishments, such as publications in the form of documentaries, e-content, research papers and articles, etc., Prof. Singh has made significant contributions to the domains of media production and broadcast, as well as media education.

Prof. A.C. Pandey, Director IUAC

Prof Avinash Chandra Pandey was Director, Institute of Interdisciplinary Studies, University of Allahabad since 2016 before joining IUAC. He was Vice Chancellor of Bundelkhand University from 2012 to 2015. He has earlier been Professor at University of Allahabad. He is also an Adjunct Professor at Michigan Tech, USA. His research have focused in developing novel nonmaterial for various real-life applications from LED, PDP, biomedical and diagnostics. Prof. Pandey has been an Associate of ICTP, Trieste, Italy (2004- 2009). He has been a member of governing boards and academic councils/courts of many institutes. He is a member of many academic societies such as American Physical Society, Ion Beam Society of India, Indian Meteorological Society, Computer Society of India, IETE, Biotechnology Research Society of India etc.

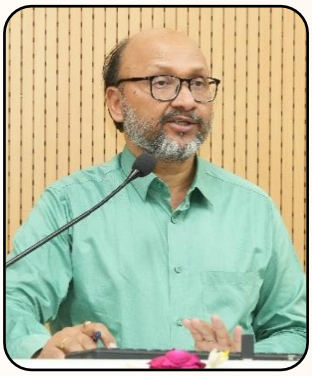
Prof. A.S. Raghubanshi, Director, IESD, BHU, Varanasi

Prof. Akhilesh Singh Ragubanshi is currently providing services as Director of IESD, BHU. Prof. Ragubanshi has authored and co-authored multiple peer-reviewed scientific papers and presented works at many national and international conferences. Sir's contributions have received recognition from honourable subject experts around the world. Sir is actively associated with different societies and academies. Prof. Ragubanshi academic career is decorated with several reputed awards and funding. Sir's research interests include carbon flux from tropical ecosystems, tree ecophysiology, ecology of plant invasion, restoration and conservation of natural ecosystems.

Prof. Sanjay Kumar Sharma IIT BHU

Prof. Sharma, a distinguished Mining Engineering Professor at IIT BHU since 2010, began his academic journey at this institution in 1993. Prior to academia, he served as an Aerodrome Officer with the National Airports Authority of India. A fellow of the Institution of Engineers of India and a member of several professional societies, including ISRM, ISRMTT, and SME (USA), Prof. Sharma has enhanced his educational and leadership insights through MHRD LEAP training at IIT Kanpur and NTU Singapore. Collaborating with India's Principal Scientific Advisor, he focuses on empowering young scientists. His research spans numerical modeling in rock engineering, environmental management, subsidence management, rock reinforcement, and mine safety. Prof. Sharma has led numerous research projects, provided consultancy to prominent clients, and actively contributed to the academic community through symposia, publications, and mentoring Ph.D. students.

Prof. Ravi Shankar Singh, Department of Physics, D.D.U. Gorakhpur University



Dr. Ravi Shankar Singh is a Professor in the Department of Physics at D.D.U. Gorakhpur University, India, since October 2011. With a robust educational background including a D.Phil. from the University of Allahabad and notable research achievements in quantum optics, polarization states of light, and nanomaterials, Dr. Singh has made significant contributions to his field. His career spans several academic positions, from Lecturer to Senior Lecturer and beyond, reflecting a steady ascent in academia. Dr. Singh's work has been recognized internationally, leading to his selection for collaborative research in Germany by INSA New Delhi. He is a life member of prestigious organizations like the Optical Society of India and has supervised numerous Ph.D. students. His research interests include quantum information processing, synthesis of nanomaterials, and the impact of cyber space on the real world, among others.

Prof. Rakesh Singh, Agricultural Economics, BHU

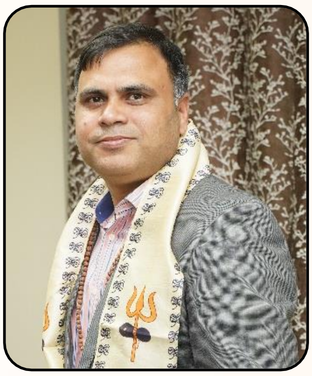
Prof. Rakesh Singh has been educated from GBPUA&T, Pantnagar, VBSPU, Jaunpur. Dr. Singh served as Head, Agril Economics and Coordinator MABM at BHU. Before joining BHU in 2007, he has served IIM, Ahmedabad, VBS Purvanchal University and World Bank aided Project DASP. He has more than 28 years' experience of teaching, research & extension. He has more than 86 publications, 2 Books, 4 Book Chapters and 4 Projects to his credit.

Prof. Satyen Saha, Department of Chemistry, BHU

Prof. Satyen Saha received BSc and MSc in Chemistry from Jadavpur University. He obtained Ph.D. in Photochemistry from Hyderabad Central University. He completed postdoctoral research at the University of Tokyo, Japan, and Georgetown University, Washington DC, USA. He received postdoctoral fellowship and bridge fellowship for foreign researchers from the Japan Society for the Promotion of Science (JSPS). Currently, he is a professor in the Department of Chemistry, Institute of Science, Banaras Hindu University. His research interests include synthesis, structure (solid and liquid phases), Ionic liquids, NIR emitting materials, and photophysical studies (steady-state and time-resolved) of fluorescent molecules in condensed phases.

Prof. Ravi Prakash Singh, Department of Chemistry, IIT Delhi

Prof. Ravi Prakash has an illustrious academic and research career, he did his Ph.D. from IIT Kanpur. His quest for knowledge led them to prestigious postdoctoral fellowships at Harvard University under Prof. E. J. Corey, a Nobel Laureate, from 2005 to 2007, and at Brandeis University with Prof. Li Deng from 2007 to 2011. Transitioning to a role as a Senior Scientist at the National Chemical Laboratory, Pune, from 2011 to 2013, he also served as an Assistant Professor at the Academy of Scientific and Innovative Research, New Delhi, during the same period. Sir's academic journey continued at the Indian Institute of Technology Delhi, where he rose from Assistant Professor (2013-2016) to Associate Professor (2016-2021) and have been a professor since 2021. Specializing in asymmetric catalysis, C-H and C-F activation, and the total synthesis of small molecules, he has numerous publications of repute to his name.



Dr. Gulab Chand Gautam, Department of Geology, BHU

Dr. Gulab Chand Gautam is an Assistant Professor in the Department of Geology at the Institute of Science, Banaras Hindu University, Varanasi, India. With a comprehensive academic background from Banaras Hindu University, his scholarly pursuits culminated in a Ph.D. focusing on the Petrology and Geochemistry of Precambrian Mafic Dykes and Sills from the Southern Bastar. This work provides significant insights into the evolutionary processes of the sub-continental lithosphere of the Central Indian Craton. Dr. Gautam specializes in Igneous Petrology and Geochemistry, contributing valuable research and knowledge to the field.

Dr. Samarendra Kr. Singh School of Biotechnology, BHU

Dr. Samarendra Kr. Singh is a distinguished researcher in the field of cell cycle regulation and cancer biology, with a focus on structural studies of transcription factors, has made significant strides in understanding the mechanisms underlying mammalian cell replication and cancer progression. His work, funded by prestigious organizations like DBT, IoE-BHU, and UGC, includes groundbreaking projects on the regulation of replication and cell cycle in mammalian cells, the role of miRNA in cervical and gallbladder cancers, and developing diagnostic markers for cervical cancer. He has several publications in high-impact journals such as Discover Oncology, bioRxiv, and BMC Cancer highlight the suppression of cancer cell proliferation and invasion by targeting cell cycle regulators with miRNAs, showcasing his contribution to the field.

Dr. Arun Prakash, CCL, IIT Gandhinagar

Dr. Arun Prakash, an astrophysics master's graduate from Savitrabai Phule Pune University, earned his PhD in Nuclear and Particle Physics from Banaras Hindu University. His research focused on high-energy heavy ion collisions, contributing to the Compressed Baryonic Matter experiment at Germany's FAIR. He completed his postdoc at the Nuclear Physics Institute of CAS, Prague. Dr. Prakash has a rich experience in international research labs, has taught physics worldwide, and currently leads science documentation and content creation at Center for Creative Learning, IIT Gandhinagar, alongside facilitating teacher workshops in Physics. He enjoys nature and sports.

Dr. Amit Kumar Mishra School of Environmental Sciences, JNU

Dr. Amit Mishra is an esteemed faculty member at the School of Environmental Sciences, Jawaharlal Nehru University (JNU), New Delhi, since October 2017, he has an impressive academic and research background in Environmental Science. With a Ph.D. from Nagoya University, Japan, and an M.Phil. from JNU, his expertise lies in aerosol properties, aerosol radiative forcing, aerosol-cloud-climate interaction, and the policy implications of air pollution and climate change. His career includes significant stints as a DST Inspire Faculty at CSIR-National Physical Laboratory, New Delhi, and post-doctoral fellowships at IIT Kanpur and the Weizmann Institute of Science, Israel.

Program Proceedings

Day 1: Setting the Stage for Science Education as per Vision 2047

Inaugural Session

The inaugural session of the National Consultative Meet on Pedagogical Innovation for Science Learning in Higher Education marked a pivotal step towards reimagining the trajectory of science education in India. The session commenced with a warm welcome extended by Dr. Gyanendra Singh, followed by a soulful 'Manglacharan' invocation by Dr. Raja Pathak, setting a reflective tone for the day's discussions.

The symbolic lighting of the lamp by the esteemed dignitaries, including Chief Guest Dr. Shiv Kumar Ji, National Organizing Secretary of Vigyan Bharati, Keynote Speaker Prof. V. K. Singh, Founder Director of IISER Bhopal & Chair Professor at IIT Kanpur and Prof. Prem Narayan Singh, Director of IUCTE, BHU, ushered in an aura of enlightenment. About the details of the program was presented by Dr. Raj Singh.

Director IUCTE Address

In his succinct speech, Prof. Prem Narayan Singh extended his gratitude to all the resource persons and the Chief Guest & Keynote Speaker of the. Prof. Singh's address was centred around the cardinal objective of the meet: to explore new and innovative pedagogical strategies in the sciences. He stressed the significance of collaborative dialogue among peers as a catalyst for progress, advocating for this collective exchange to carve a concrete and lucid pathway towards the enhancement of science education at the tertiary level.

He emphasized the need for a communal effort to rejuvenate the current methodologies of teaching and learning within the scientific disciplines. By fostering such an environment of shared innovation, Prof. Singh envisioned a transformative change in the higher education landscape—one that would not only elevate the academic experience but also ensure that educators and students alike are equipped to navigate and contribute to the rapidly advancing scientific world.

In his closing remarks, Prof. Singh reiterated the commitment of IUCTE, BHU to be at the forefront of this educational evolution, shaping a future where science learning is both dynamic and reflective of global pedagogical best practices. His message was a call to action: to embrace change, to harness collective wisdom, and to pave the way for an era of enriched scientific inquiry and understanding.

Chief Guest Address

The Chief Guest address at the National Consultative Meet on Pedagogical Innovation for Science Learning in Higher Education was a profound discourse on the "***Bhartiya Concept of Science"*** delivered by Dr. Shiv Kumar Ji, the National Organizing Secretary of Vijnana Bharati. His address was a tapestry of personal experiences, cultural insights, and a vision for India's scientific heritage and future. Dr. Shiv Kumar Ji commenced his address by honoring the divine embodiment of knowledge, Maa Sharda, and the illustrious educator Pandit Madan Mohan Malviya Ji, setting a reverential tone for his exploration into the Indian philosophy of science. Reflecting on his extensive educational journey spanning 24 years in West Bengal and a cumulative 40 years of experience as an educator, he established a backdrop of deep-rooted wisdom.

His discussion on science as both a boon and bane provided a dichotomous view of science as

an entity whose nature is defined by its application. This energy, he claimed, could manifest positively or negatively, contingent upon the intent with which it is harnessed. Dr. Kumar Ji drew upon the political diary of Pt. Deen Dayal Upadhyaya, referencing the concept of ***'shakti strot'*** (source of energy) and interspersed his narrative with the profound teachings of the Brihadaranyaka Upanishad, delineating the interconnectedness of the internal, external, and the dream state universes.

He narrated the historical influence of European countries during the 17th to 19th centuries in harmonizing the cultural realms of both hemispheres, with the 20th century onwards seeing America at the forefront. His interactions with scientists at NASA provided anecdotes of global leadership in science, contrasting it with the Indian ideology of universal well-being—***'Sarve Bhavantu Sukhinah, Sarve Santu Niramaya'***—which he deemed as India's eternal role. Drawing from his discussions with the Crown Prince during his visit to Saudi Arabia, Dr. Kumar Ji articulated India's vital role in the forthcoming Amrit Kaal—indicating an era of significant transformation requiring the essence of scientific knowledge. He postulated that Indian science transcends the confines of physics, chemistry, biology, and mathematics; it encompasses a holistic dedication towards societal advancement.

In his vision for India, science is posited as a benefactor to society rather than a pursuit marred by negative consequences. He hailed the recent addition of ***'Jai Anusandhan'*** by Prime Minister Modi to the patriotic slogans, foreseeing it as a catalyst in India's golden era. He urged the attendees to imbibe the Bhartiya concept of science in the ensuing discussions on pedagogical innovation, emphasizing that the upliftment of society and collective well-being should drive laboratory research. He reminisced about ancient India's disregard for patents, a testament to a culture that prioritized communal progress over individual gain. Incorporating the ***'das dharma lakshnam'***—tenets of righteous duties—into the scientific domain, he called for a need-based approach in research, tailored to societal requisites. He concluded by advocating for science education that embraces the Bhartiya knowledge system, underscoring the need for a blend of traditional wisdom with modern scientific inquiry as we move into the Amrit Kaal.

Dr. Shiv Kumar Ji's address was not only an invocation of India's glorious past but also a blueprint for a future where science is aligned with the nation's ethos, furthering the cause of humanity. It was a poignant reminder that at the heart of scientific endeavor lies a responsibility to society—a sentiment that resonated deeply with the meet's audience, leaving a lasting impression on the academicians, researchers, and educators present.

Keynote Lecture

Prof. Vinod Kumar Singh's in his Keynote Lecture, entitled ***"The Role of Science in Shaping India's Future: A Vision 2047 Perspective,"*** was not only a reflection on the current state of science in India but also a roadmap for the nation's scientific progression over the next quarter-century.

Opening with expressions of gratitude towards the Director Sir and Dr. Shivkumar Ji, Prof. Singh underscored the critical necessity for a paradigm shift from rhetoric to action in the realm of science. He cited the examples of Japan and South Korea, where a steadfast commitment to national priorities facilitated rapid scientific advancement. Prof. Singh spoke candidly about the core challenges faced by India today, such as the dearth of quality research, educational shortcomings, healthcare and infrastructure gaps, limited energy and manufacturing capabilities, and the scarcity of water. He emphasized the discrepancy between India's resource capability and its execution, pointing out that while Indian research is commendable on paper, it lags in practical experimentation and manufacturing.

The call for high-quality research laboratories was resonant, especially in the context of burgeoning fields like chip manufacturing. Prof. Singh articulated the necessity for science and technology to work hand in hand, adopting a sustainable and holistic approach to address multifaceted problems. He lamented the casual attitude towards wastage in society, urging a collective awakening to the virtues of conservation and efficient resource management as a patriotic duty. Prof. Singh’s vision for sustainable development underscored the indispensable role of strong scientific foundations that could be harnessed for technological progress. He identified the need for robust facilities and infrastructure to bolster research efforts, placing the onus on institutional heads to provide ample opportunities within existing constraints. India's position as the third largest in terms of research publications was brought to attention; however, Prof. Singh advised that these should be evaluated for their quality rather than quantity, indicating the necessity for improvement in line with data from G20 countries.

Efficiency in fund utilization was stressed, with a focus on prioritizing quality, which Prof. Singh associated with excellence—a trait he regarded as rare yet crucial. He eloquently quoted Bob Ingersoll, illustrating the supreme importance of common sense alongside education, a sentiment that he wove into his discussion on governance, leadership, and management. These three pillars were described as vital for ensuring that scientific research is structured, sustainable, accountable, and led in the right direction. Tackling the complexities of teaching and learning, Prof. Singh expressed that education must evolve with time, beginning from the grassroots level in schools and maturing into institutions that encourage problem-solving attitudes and critical thinking.

The proper mindset for quality teaching was highlighted as indispensable, with a call to educators to adapt and equip themselves for the challenges of imparting knowledge in the 21st century. Prof. Singh's conviction that the country must be prioritized above all else resonated through his closing words, instilling a sense of purpose and direction in the audience. The lecture by Prof. V. K. Singh was not merely an academic discourse but an impassioned plea for action—a clarion call to the scientific community to rally for the betterment of the nation. It laid out a clear vision for India's scientific endeavors up to the year 2047, aiming for a future where innovation, sustainability, and excellence are the cornerstones of science education and research. As the session concluded, the attendees were left with a renewed sense of commitment to place the country’s progress at the forefront of their scientific pursuits.

The session drew to a close with a heartfelt vote of thanks, followed by the resonant strains of the National Anthem, leaving the assembly inspired and poised for the transformative dialogues on pedagogical innovation that lay ahead. As the day unfolded, the spirit of the inaugural session's discussions served as a beacon, illuminating the path towards Vision 2047 for Science Education. The deliberations fostered a shared understanding that the future of science learning, deeply rooted in Indian ethos and propelled by innovation, will sculpt the framework for India's scientific renaissance in the coming decades.

Panel Discussion 1: ***"Innovations in Science Education: Bridging the Gap Between Curriculum and Industry Needs"***

Panel Discussion 2: ***"Fostering a Culture of Research and Innovation in Science Education"***

Workshop Sessions on following topics

- *Curriculum Development and Pedagogy Innovations*
- *Integrating Technology in Science Education*
- *Promoting Research and Innovation in Higher Education*

Creating a detailed and comprehensive report based on the wealth of insights from a panel discussion on "Innovations in Science Education: Bridging the Gap Between Curriculum and Industry Needs," along with "Fostering a Culture of Research and Innovation in Science Education," and workshop sessions on *“Curriculum Development and Pedagogy Innovations”, “Integrating Technology in Science Education” & Promoting Research and Innovation in Higher Education.*

The detailed discussions require an in-depth exploration of the various themes, challenges, and innovative solutions proposed by an array of distinguished faculty members. This discourse involved contributions from Prof. A.K. Singh, Prof. A.C. Pandey, Prof. A.S. Raghuvanshi, Prof. Rakesh Singh, Prof. Sanjay Kr. Sharma, Prof. Satyen Saha, Prof. Ravi Prakash, Dr. Gulab Chand Gautam, Dr. Amit Mishra, Dr. Arun Prakash, and Dr. Samrendra Singh, focusing on critical areas of curriculum development, pedagogical innovations, technology integration, and the promotion of research and innovation within higher education.

Identifying the Gaps and Challenges

The dialogue opened with an acknowledgment of the challenges faced in adapting Western educational models to the Indian context, which include a lack of innovation in software, insufficient global reach, and a general absence of novelty in industry-specific innovations. The discussion highlighted several critical areas for improvement:

- The adoption of Western concepts without localization.
- The need for stakeholder consultation in curriculum development.
- The lack of focus on local relevance and solving local problems.
- The need for education reforms to incorporate a future vision.
- The dynamic nature of employment needs and the necessity to generate human resources capable of addressing future challenges.
- The minimal focus on addressing new problems or creating future-oriented policies.
- The pervasive issue of innovation deficiency and the absence of an original thought process.

Proposals for Curriculum Development and Pedagogical Innovations

The sessions on curriculum development and pedagogical innovations shed light on the urgent need for curriculum that is not only dynamic and responsive to the evolving economic sectors but also grounded in real-world problem-solving across disciplines. Prof. AC Pandey emphasized the importance of learning "what to learn" and "how to learn," suggesting that a curriculum flexible enough to incorporate technology, interdisciplinary approaches, and project-based learning could significantly enhance students' ability to solve complex problems.

Integrating Technology in Science Education

The integration of technology into science education was identified as a pivotal strategy for modernizing labs, designing experiments, and facilitating analytics and innovation. This approach not only aids in bridging the gap between theoretical knowledge and practical application but also prepares students for the technological demands of the modern workforce.

Promoting Research and Innovation in Higher Education

A strong emphasis was placed on embedding research within the curriculum as a means to foster a culture of innovation. Prof. Sanjay Kr. Sharma highlighted initiatives like the Manthan portal and the necessity of industry-academia collaboration to ensure that research and teaching are closely aligned with industry innovations and day-to-day solutions.

Fostering a Culture of Research and Innovation

The second panel discussion concentrated on establishing a robust ecosystem that supports research and innovation within science education. The conversations underscored the importance of creating an environment where students and faculty are encouraged to engage in research activities that not only advance academic knowledge but also have practical applications in the industry.

Insights from Faculty Members

The faculty members provided valuable insights into overcoming the highlighted challenges:

Industry-Academia Collaboration: There was a consensus on the need for closer collaboration between industry and academia, facilitated by platforms like the Atal Incubation Centre, to drive innovation and research that is directly relevant to industry needs.

Curriculum Flexibility and Interdisciplinarity: The discussions called for a curriculum that is adaptable, interdisciplinary, and capable of equipping students with the skills needed to tackle real-world problems.

Project-Based and Experiential Learning: Emphasizing the Benjamin Franklin quote, "Involve me and I will learn," Dr. Arun Prakash advocated for an educational approach that prioritizes hands-on experiments and project-based learning.

Breaking the Ice of Autonomy: Prof. Satyen Saha and others argued for breaking away from traditional educational models to embrace more innovative and flexible approaches to teaching and learning.

Day 2: Building Pathways for Implementation

Guest Lecture

The second day of the National Consultative Meet on Pedagogical Innovation for Science Learning in Higher Education featured a highly anticipated guest lecture by Prof. A. C. Pandey, Director of IUAC, New Delhi. The topic, "***Global Trends in Science: Implications for India***," offered a forward-looking perspective on the evolving landscape of science education and research. Prof. Pandey commenced his address by underscoring the necessity of integrating theory, practice, and simulation to achieve tangible end products in science. He highlighted the need for academia and industry collaboration, noting that academic institutions have historically concentrated on basic sciences at the expense of product development. This paradigm, he argued, must shift toward a multidisciplinary and interdisciplinary approach.

He pointed to bioinspired materials as an example of a cutting-edge area of research where fundamental science intersects with practical applications. Prof. Pandey advocated for keeping abreast of current and advanced global research trends, to propel India alongside developed nations. Prof. Pandey stressed the significance of incorporating curriculum and technical innovation into research and education. He called for faculty assessment and evaluation, preceded by professional development to empower educators in their respective fields. Addressing the advent of Industry 4.0, Prof. Pandey recognized the challenge of assimilating this wave of technological transformation into academic curricula. He noted the rapidly diminishing time from lab discovery to market application, underscoring the need for curriculum updates to match this pace.

The lecture then delved into the burgeoning fields of computer science, AI, and data science. Prof. Pandey projected that these disciplines would create a significant imbalance in the demand and supply dynamics compared to other engineering fields, given the shifting learner profile. A significant concern raised by Prof. Pandey was the disconnect between academia and industry. He questioned the ability of institutions like IUCTE to train a vast number of higher education faculty without adequate resources. While MOOCs offer a potential solution, they pose their own set of challenges.

Prof. Pandey emphasized the importance of taking professional development orientation programs seriously, suggesting that such programs be critically examined for their effectiveness. The development of faculty excellence in their domains and leadership qualities were pinpointed as critical to educational advancement. Moving to teaching methods, Prof. Pandey spoke on the use of 21st-century technology in the classroom and innovative student assessment methods. He urged a shift from summative to formative assessments, advocating for technological innovation to address the challenges posed by large class sizes.

India's momentum toward becoming a start-up nation, breaking stereotypes with government support, was also mentioned as a positive trend. Prof. Pandey encouraged making research facilities more widely available and accessible. Highlighting government initiatives like Glue Grant, which aims to bring institutes onto a common platform for collaborative work, Prof. Pandey suggested that AI tools be utilized by both teachers and students to integrate technology into learning and assessment more effectively.

He proposed the introduction of majors and minors in degree courses to alleviate the polarization of academic disciplines. He also touched on the importance of reverse engineering technology to bolster self-sufficiency and reduce dependency on certain companies. Prof. Pandey concluded his lecture with an advocacy for faculty training focused on market needs analysis and product development. He showcased the ExpEYES (Experiment for Young Engineers and Scientists) experiment kit, a four-channel oscilloscope capable of performing numerous higher education-based experiments, demonstrating India's strides toward practical and inclusive scientific education.

The session concluded with an interactive Q&A, where Prof. Pandey provided further insights into practical application in education, emphasizing the importance of agility and adaptability in the ever-evolving global science landscape.

Experimental toys demonstration by Dr. Arun Prakash

Dr. Arun Prakash, from CCL, IIT Gandhi Nagar, has carved a niche for himself by transforming the conventional approach to science education at the Higher Education Institutions (HEI). With a collection of ingeniously simple yet educative toys, he has managed to bridge the gap between theoretical knowledge and tangible understanding. Dr. Arun initiative goes beyond mere lectures; he invites curiosity and interaction through hands-on experiments. He creatively utilizes toys to demonstrate scientific principles, making the learning process engaging and memorable. His experiments, based on fundamental concepts like Faraday’s laws of electromagnetism, principles of electricity and magnetism, as well as the mechanics of motion and sound waves, offer a dynamic learning experience.

These demonstrations serve a dual purpose; they not only elucidate complex scientific theories but also spark creative and innovative instructional strategies among educators. Dr. Arun methods show how toys, often seen only as objects of play, can become powerful educational tools, providing visual and practical contexts to abstract scientific concepts. Moreover, contribution includes sharing valuable information about various applications that facilitate science experiments. These apps are instrumental for students and educators alike, offering a platform for simulating experiments virtually, which is especially beneficial where resources for physical experiments are limited.

His approach reflects a deeper understanding of pedagogy, where motivation and inspiration are as crucial as the content itself. By showcasing the versatility of everyday objects as educational aids, Dr. Arun encourages a more inventive and less intimidating approach to science teaching and learning. His innovative pedagogical methods exemplify the transformative power of teaching that integrates technology with interactive learning, reinforcing the notion that creativity is central to the advancement of science education.

Panel Discussion 3 Topic: *"Creating Synergies Between Education, Industry, and Government for Science Advancement"*

Group Discussions on Key Themes:

- *Sustainable Development Goals (SDGs)*
- *Next-Generation Technologies in Education Science*

Next-Generation Technologies in Education Science

Creating synergies between education, industry, and government for the advancement of science represents a multidimensional challenge that encompasses the need for innovative teaching methods, the integration of next-generation technologies in science education, and the strategic alignment of objectives across these sectors. The Day 2 panel discussion and group discussions provided a fertile ground for deliberating on these themes, focusing on Sustainable Development Goals (SDGs), the implementation of cutting-edge technologies in educational practices, and the establishment of effective collaborations across the educational, industrial, and governmental spheres.

Innovative Teaching Methods in Science Education

Prof. Arun Prakash's presentation served as a quintessential example of innovative teaching methodologies. By demonstrating small experiments to elucidate scientific concepts in more engaging ways, he underscored the significance of making science education more practical and accessible. Furthermore, the mention of various online platforms such as Phyphox, Spectroid, Desmos, Blooer, and Candle, alongside the recommendation of Michel Faraday's experiments book, highlighted the wealth of resources available to educators aiming to modernize their teaching approaches. These tools not only facilitate a deeper understanding of scientific principles but also enable students to conduct experiments in a virtual environment, thereby overcoming the limitations of physical laboratory spaces.

Group Discussions on Key Themes

Sustainable Development Goals (SDGs)

The discussions around SDGs emphasized the critical role of science education in addressing global challenges. Participants highlighted the importance of integrating SDG-focused projects into the curriculum, which would not only raise awareness among students but also encourage them to think critically about the role of science in solving complex problems such as climate change, poverty, and inequality.

Next-Generation Technologies in Education Science

The incorporation of next-generation technologies into science education was identified as a pivotal strategy for enhancing learning outcomes. By leveraging tools like virtual reality (VR), augmented reality (AR), and artificial intelligence (AI), educators can create immersive and interactive learning experiences. These technologies not only make learning more engaging but also provide students with the opportunity to explore complex concepts in a more intuitive and hands-on manner.

Creating Synergies Between Education, Industry, and Government

The panel discussion on "Creating Synergies Between Education, Industry, and Government for Science Advancement" delved into the mechanisms through which these sectors can collaborate more effectively to foster scientific progress. Key points included the need for:

Idea Banks: Establishing repositories of innovative ideas that can be developed further through collaboration between students, researchers, and industry professionals. These idea banks would serve both physical and simulation-based experiments, facilitating the exchange of creative solutions across sectors.

Equipment Modification and Local Manufacturing: Encouraging the local manufacturing of experimental equipment and the modification of existing apparatus to suit the specific needs of educational institutions. This approach not only supports local economies but also promotes the customization of teaching materials.

Faculty Empowerment: Empowering faculty members to design and execute experiments using locally available resources. This initiative would not only foster innovation at the grassroots level but also enhance the practical skills of educators, enabling them to produce new experiments that reflect real-world applications.

Extended Experimentation: The suggestion from IGNOU to extend experimental periods to 14 days, coupled with the provision for 16 unguided experiments, underscores the need for a more flexible and exploratory approach to scientific research within the academic curriculum.

The 5E Instructional Model: Embracing the 5E instructional model (Engage, Explore, Explain, Elaborate, and Evaluate) as a framework for science education can significantly enhance the learning experience. This model promotes a more holistic understanding of scientific concepts by guiding students through a comprehensive journey from initial engagement to the application and evaluation of knowledge.

Funding for Emerging Research Areas: Securing funding for research in new and emerging areas is crucial for advancing scientific knowledge. Participants called for a concerted effort to identify and support research projects that have the potential to make significant contributions to science and society.

The discussions and presentations on Day 2 of the panel underscored the urgent need for innovation in science education, not only in terms of pedagogical practices but also in fostering collaborations between education, industry, and government. By leveraging modern technologies, empowering educators, and creating structured frameworks for collaboration, it is possible to significantly enhance the quality and relevance of science education. This holistic approach not only prepares students to tackle the challenges of the future but also ensures that scientific advancements contribute effectively to societal progress and the achievement of Sustainable Development Goals.

Conclusion

The Two-Day National Consultative Meet underscored the urgency of reforming science education in India. By fostering a culture of innovation, bridging the gap between curriculum and industry needs, and integrating global trends into education, India can enhance its global standing in science education and research. The recommendations laid out during the meet provide a roadmap for educational institutions, industry, and government to collaboratively work towards a more dynamic, inclusive, and forward-looking science education ecosystem.

Valedictory session

The Valedictory session of the National Consultative Meet on Pedagogical Innovation for Science Learning in Higher Education culminated in a series of insightful retrospections and forward-looking proclamations. The session commenced with an innovative and inspiring touch—a short film shared by the Chief Guest Prof. Prithvish Nag, illustrating the potential of films as a pedagogical tool to simplify complex science concepts.

The session's proceedings were set in motion by Dr. Gyanendra Singh, who extended a warm welcome to all the esteemed guests. The traditional 'Manglacharan' was performed by Dr. Raja Pathak, creating an atmosphere of reverence and setting a scholarly tone for the event.

With the ceremonial lighting of the lamp, the event's dignitaries illuminated the path towards wisdom and knowledge, signifying the enlightenment that the meet aspired to bestow upon the pedagogy of science learning. Dr. Gyanendra Singh presented the Consultative Meet Document, encapsulating the discussions, insights, and recommendations from the meet—a vital resource for future reference and action.

Address by Guest of Honor Prof. Ravi Shankar Singh

Prof. Ravi Shankar Singh commenced his address by lauding IUCTE's efforts in advancing teacher education and instilling motivation within the realm of science. He articulated a vision where alumni advance their parent institutes, creating a sustainable legacy of educational excellence. He called for the positive implementation of the National Education Policy (NEP) 2020 in institutions, emphasizing the policy's transformative potential. Prof. Singh stressed the importance of bolstering Research & Development, projecting IUCTE as a pivotal entity in shaping India's Higher Education landscape. Furthering his vision for inclusivity, Prof. Singh proposed that IUCTE should conduct workshops for writing scientific literature in various languages, thereby democratizing science education.

Address by Guest of Honor Prof. A. C. Pandey

Prof. A. C. Pandey praised the consultative meet as a pivotal step in highlighting and addressing the challenges in science teaching and learning. He reflected on the beneficial impact of NEP 2020 on students and urged a pedagogical shift that intertwines scientific advancement with the foundational values of Indian ethics. He highlighted the need for proper documentation of the National Consultative Meet and encouraged IUCTE to engage in policy documentation, underlining the importance of structuring educational reforms through meticulous record-keeping.

Address by Chief Guest Prof. Prithvish Nag

Prof. Prithvish Nag commenced his lecture with commendations for IUCTE's initiative in hosting the consultative meet, recognizing it as a strategic move towards identifying and resolving issues plaguing science education in India. He shared insights into the interplay between technology, research, and education, drawing examples from his experience with the Geological Survey of India. Prof. Nag stressed the integral role of Indian Knowledge Systems (IKS) in teaching science at HEIs and discussed the complexities of translating scientific literature into various languages, considering the nuances of scientific terminology.

Prof. Nag addressed the responsibility authors bear in disseminating their work globally despite language barriers. He emphasized the importance of subject-specific studies and the integration of IKS to enrich science education.

Closing Remarks by Prof. Prem Naryan Singh

The Director, IUCTE, BHU in his closing remarks, expressed gratitude to the resource persons and guests. He likened education to a loan passed down generations, emphasizing the role of educators in paying it forward. Discussing pedagogy, the Director Sir highlighted the timeless value of traditional teaching methods and the dedication of teachers to their students and society. He encouraged a commitment among students towards innovation and a deep-seated sense of responsibility. With an affirmation of building a future step by step, the Director Sir's words were a call to action for continuous improvement and dedication in the field of science education.

Vote of Thanks and Conclusion

Dr. Raj Singh delivered the vote of thanks, extending gratitude to all participants for their contributions and engagement throughout the meet. The session and the meet were drawn to a close with the national anthem, a fitting tribute to the collective spirit and nationalistic fervor that characterized the entire consultative meet. The valedictory session thus concluded not just as an ending but as a beacon for the journey ahead—towards pedagogical innovation in science learning that honors tradition while embracing modernity, for a brighter educational future.

Key findings & Recommendations of Consultative Meet

To bridge the gap between curriculum and industry needs effectively, the participants proposed a multifaceted strategy encompassing:

Strengthened Industry-Academia Partnerships & Collaborations: Encouraging collaborative projects, internships, and research initiatives that provide students with real-world experience. Foster deeper connections between academia and industry to prepare students for future challenges, ensuring that education aligns with real-world applications.

Curriculum Reform & Innovation: Curriculum reform and innovation are paramount in aligning education with the evolving demands of industry and society. It is essential to develop a dynamic curriculum that not only meets current educational standards but also anticipates future trends. Incorporating technology and research into the curriculum fosters a learning environment that encourages critical thinking, problem-solving, and creativity. This approach prepares students for real-world challenges and equips them with the skills necessary for success in a rapidly changing global landscape. Educational institutions should prioritize interdisciplinary studies and partnerships with industry leaders to ensure the curriculum remains relevant and comprehensive. By doing so, they will produce graduates who are not only academically proficient but also highly adaptable and capable of contributing innovatively to their fields.

Focus on Local Relevance: Higher education and research initiatives must be intricately tailored to address local challenges, enhancing their relevance and impact within communities. By focusing curricula and research projects on solving region-specific issues, institutions can foster a strong connection between academic endeavors and real-world applications. This approach not only enriches student learning experiences but also contributes significantly to local development and problem-solving. It encourages students and researchers to engage deeply with their immediate environment, ensuring that education serves as a potent tool for societal advancement and sustainability.

Innovation and Originality: To foster a culture of innovation and originality, educational institutions must create environments that champion original thought and research, moving beyond simply replicating existing knowledge and models. Encouraging an ecosystem where questioning, experimenting, and creative risk-taking are integral parts of the learning process is essential. Incorporating interdisciplinary studies, providing access to cutting-edge resources, and facilitating mentorship and collaboration can nurture the intellectual curiosity and inventiveness of students and faculty alike. By prioritizing these values, institutions can cultivate groundbreaking ideas and solutions that propel society forward.

Research and Innovation: Integrating research as a foundational element of the curriculum is crucial for fostering a culture of innovation and originality within educational institutions. This approach encourages students and faculty to engage deeply with their fields, pushing beyond traditional boundaries to explore new ideas and solutions. By prioritizing research activities, including hands-on projects, collaborative initiatives, and access to cutting-edge resources, institutions can cultivate a vibrant academic environment. This environment not only promotes critical thinking and problem-solving skills but also prepares students to contribute meaningfully to their disciplines and society at large.

Technology Integration: Leverage technology and project-based learning to enhance the learning experience, making science education more engaging and effective.

Assessment methods: It's recommended that educational institutions adopt a variety of modern assessment strategies, including formative assessments like peer reviews and project-based evaluations, to capture students' practical skills and creative problem-solving abilities. Integrating technology through digital portfolios enhances the depth of assessment. Training educators in these diverse techniques ensures assessments are both effective and equitable, enriching the learning experience and accommodating various learning styles for improved engagement and outcomes.

Importance of Pedagogical labs: Pedagogical labs are essential in education, acting as hubs for innovative teaching practice and experiential learning. They provide a collaborative space for educators to trial new tools and methods, offering real-time feedback from peers. These labs facilitate the practical application of educational theory, improving teacher engagement and accommodating various student learning styles. Investing in pedagogical labs signifies a commitment to advancing education quality and faculty development. Hence, the establishment of such labs should be a priority for educational institutions to prepare educators for the dynamic educational environment and to enhance student learning outcomes.

Policy and Infrastructure Support: Encourage policies that support educational reform, focusing on future visions, employment dynamics, and the promotion of basic and applied research.

Annexure 1: List of Resource Persons & Participants

S. N.	Expert Name	Affiliation
1	**Dr. Shiv Kumar Ji**	National Organizing Secretary, Vijnana Bharati
2	**Prof. V. K. Singh**	Chair Professor, IIT Kanpur
3	**Prof. Prithvish Nag**	Director, SHEPA
4	**Prof. Akhilesh Kumar Singh**	VC of Rajendra Singh Rajju Bhaiya University, Prayagraj
5	**Prof. A.C. Pandey**	Director IUAC, Delhi
6	**Prof. A.S. Raghubanshi**	Director IEDS, BHU
7	**Prof. Sanjay Kumar Sharma**	Department of Mining Engineering, BHU
8	**Prof. Ravi Shankar Singh**	Professor & Head, Department of Physics, DDU
9	**Prof. Rakesh Singh**	Department of Agriculture Economics, BHU
10	**Prof. Satyen Saha**	Department of Chemistry, BHU
11	**Prof. Ravi Prakash Singh**	Department of Chemistry, IIT Delhi
12	**Dr. Gulab Chand Gautam**	Department of Geology, BHU
13	**Dr. Samarendra K Singh**	School of Biotechnology, BHU
14	**Dr. Arun Prakash**	CCL, IIT Gandhinagar
15	**Dr. Amit Kumar Mishra**	School of Environmental Sciences, JNU

Annexure 2: Advisory Committee

- **Prof. Prithvish Nag, Director SHEPA**
  Former VC, MG Kashi Vidyapeeth
- **Prof. R Shankar**
  Distinguished Prof., BHU, Raja Ramana Fellow
- **Prof. A. S. Ragubanshi,**
  Director IEDS, BHU
- **Prof. Sunil Kumar Singh,**
  Faculty of Education, BHU
- **Prof. Surya Pratap Singh,**
  Faculty of Biochemistry, BHU

Annexure 3: Organizing Team

Patron: Prof. Prem Narayan Singh, Director, IUCTE, Varanasi

Organizing Committee:

Convenor: Dr. Gyanendra Singh

Co-convenor: Dr. Raj Singh

Co-convenor: Dr. Kushagri Singh

Faculty Members

Dr. Deepty Gupta

Dr. Raja Pathak

Dr. Sunil Kumar Tripathi

Technical Team

1. Mr. Vikas Janu, Webmaster
2. Mr. Rana Pratap Rao, Hardware Engineer
3. Mr. Kuldeep Pandey, System Analyst
4. Mr. Anand Kumar, Technician

Administrative Team

1. Dr. Nand Lal Ji, Senior Administrative Officer
2. Mr. Akash Chauhan, Administrative Officer
3. Mr. K. Ajay Kumar, Personal Secretary to Director
4. Mr. Anand Kumar Yadav, LDC

Accounts Section

1. Mr. M.R. Ramasubramaniam, Administrative Officer (Finance)
2. Mr. Vijay Kumar Rai, Assistant
3. Ms. Pooja Singh, LDC

Special Mention

All the Remaining Staff of IUCTE worked in the background to make the event successful

Annexure 4: Press Releases

दिनांक 05.03.2024

अन्तर विश्वविद्यालय अध्यापक शिक्षा केन्द्र, बी.एच.यू., वाराणसी में उच्च शिक्षा में विज्ञान विषयक शैक्षणिक नवाचार (Pedagogical innovation for Science Learning in Higher Education) पर दो दिवसीय परामर्शी बैठक (National Consultative Meet) 05 से 06 मार्च 2024 तक आयोजित किया जा रहा है।

उद्घाटन सत्र में डा. ज्ञानेन्द्र सिंह तथा राज सिंह ने कार्यक्रम की रुपरेखा रखी तथा अतिथियों का स्वागत किया। मुख्य अतिथि विज्ञान भारती के अखिल भारतीय, संगठन मंत्री माननीय डा. शिव कुमार जी, ने कहा कि समाज मे विभिन्न परिस्थितियों में कार्य करने की क्षमता विकसित करनी चाहिए। विज्ञान के महत्व पर प्रकाश डालते हुए कहा कि यह वरदान है या अभिशाप? उन्होंने आगे जवाब बताया कि यह निर्भर करता है कि विज्ञान को आप किस उद्देश्य के लिए प्रयोग करते है। उनके अनुसार यह ना तो अभिशाप है, ना ही वरदान। यह एक शक्ति है, जिसका उपयोग समाज की सेवा के लिए होना चाहिए। भारत का प्रमुख उद्देश्य सर्वे भवन्तु सुखिनः है। अब भारत एक महत्वपूर्ण भूमिका में है, क्योंकि 2047 तक भारत को एक विकसित राष्ट्र के रुप में स्थापित होना है। इसको मूर्त रुप देने के लिए शक्तियों की आवश्यकता पड़ेगी। जिसके लिए विज्ञान का बहुत महत्वपूर्ण योगदान होगा। विज्ञान का अध्ययन समग्रता के साथ होना चाहिए। विज्ञान की दृष्टि हमेशा समाज के हित के लिए होनी चाहिए और साथ कहा कि हमें आवश्यकता के अनुसार ही संसाधन का प्रयोग करना चाहिए।

विशिष्ट अतिथि के रुप में आई.आई.टी. कानपुर के शान्ति स्वरुप भटनागर पुरस्कार से सम्मानित पद्मश्री प्रो. विनोद कुमार सिंह जी ने कहा कि भारत को दिशा देने में विज्ञान एक महत्वपूर्ण भूमिका निभा सकता है। उन्होंने बताया कि विकसित होने के लिए देशहित सर्वोपरि होना चाहिए तथा विज्ञान के क्षेत्र में गुणवत्तापूर्ण शोध, आधारभूत ढाँचा तथा सतत् विकास आवश्यक है। उन्होंने बताया कि हमारे देश में बहुत सारे संस्थान है लेकिन उनकी गुणवत्ता क्यों अच्छी नहीं है, यह विचारणीय है। देश में यदि आर्थिक संसाधन को सही से उपयोग करें तो हमारी गुणवत्ता बहुत उत्कृष्ट स्तर की हो जायेगी। हमारे यहां नेतृत्व क्षमता एवं योजना/प्रबंधन (Leadership and Management) पर बहुत ध्यान देने की आवश्यकता है। यदि इसका सही अनुपालन हो तो संस्थान और देश अपने आप शिखर पर पहुंच जायेंगे।

केन्द्र के निदेशक तथा कार्यक्रम अध्यक्ष प्रो. प्रेम नारायण सिंह जी ने सभा में उपस्थित अतिथियों का स्वागत एवं अभिनन्दन करते हुए कहा कि विज्ञान के द्वारा हम देश और समाज को एक नई दिशा प्रदान कर सकते है। उन्होंने कहा विज्ञान की तकनीकीयों को हमें बहुत बारीकी से समझने की आवश्यकता है।

कार्यक्रम में प्रो. अविनाश चन्द्र पाण्डेय, निदेशक, आई.यू.ए.सी., नई दिल्ली, प्रो. अखिलेश कुमार सिंह, कुलपति, रज्जू भैया विश्वविद्यालय, प्रयागराज, प्रो. ए.के.एस. रघुवंशी, निदेशक, आई.ई.डी.एस., बी.एच.यू., प्रो. राकेश सिंह, बी.एच.यू., प्रो. संजय शर्मा, IIT, BHU, डॉ. अरुण प्रकाश IIT गांधीनगर, प्रो. रवि प्रकाश सिंह IIT, दिल्ली, प्रो. रवि शंकर सिंह, गोरखपुर विश्वविद्यालय, गोरखपुर (जिनका मार्गदर्शन बैठक के विभिन्न सत्रों में प्राप्त होगा) एवं कई अध्यापक व शोधार्थी तथा केन्द्र के सभी कर्मचारी गण, अन्य मूर्धन्य विद्वान व विभिन्न शैक्षिक संस्थानों के शिक्षक व शोध छात्र उपस्थित रहे।

कार्यक्रम के अतिथियों व निदेशक महोदय ने माँ सरस्वती व महामना पण्डित मदन मोहन मालवीय जी की प्रतिमा पर माल्यार्पण व दीप प्रज्ज्वलन कर कार्यक्रम प्रारंभ किया।

कार्यक्रम का संचालन डा. ज्ञानेन्द्र सिंह ने तथा कृतज्ञता ज्ञापन डा. राज सिंह ने किया।

दिनांक 06.03.2024

अन्तर विश्वविद्यालय अध्यापक शिक्षा केन्द्र, बी.एच.यू., वाराणसी में उच्च शिक्षा में विज्ञान सिखने के शैक्षिक नवाचार पर दो दिवसीय परामर्श बैठक के द्वितीय दिवस पर (05 से 06 मार्च 2024) पर उच्च शिक्षा में नवाचार विषय पर विचार व मंथन हुआ।

आज के प्रथम वक्ता प्रो. ए. सी. पाण्डेय, निदेशक, आई.यू.सी., नई दिल्ली ने कहा कि हमें शिक्षण से सम्बन्धित समस्याओं को सिर्फ चिन्हित ही नहीं करना है, अपितु उसका समाधान भी ढूंढना है। आज शिक्षा जगत का प्रमुख ध्यान शोध पत्र प्रकाशित करने में है,

नाकि शोध के परिणामों के अनुप्रयोग पर। आज शोध को अनुप्रयोग तक पहुँचाने के लिए सिमुलेशन, थ्योरी तथा प्रयोग एक साथ करने की आवश्यकता है। उन्होने इसके लिए दधिकाण्डव का उदाहरण दिया। जिसमें सबसे नीचे मजबूत लोग रहते है तथा जैसे-जैसे ऊपर जाते है उसमें कम वजन के लोग होते है। लेकिन दही-हाँडी सबसे छोटा बच्चा ही उनके ऊपर चढ़कर तोड़ता है। उसी प्रकार नये तकनीकियों के जड़ में प्राथमिक शोध होता है। उन्होंने यह भी बताया कि पाठ्यक्रम में नवाचार तथा तकनीकी के नवाचार को साथ-साथ चलना चाहिए। उन्होंने कई सस्ते उपकरण दिखाये जिससे कि विज्ञान शिक्षण आसानी से आत्मसात हो सके तथा विद्यार्थियों में विज्ञान की समझ बढ़े।

द्वितीय वक्ता के रुप में डा. अरूण प्रकाश, सी.सी.एल., गाँधी नगर ने अनेक खिलौनों के माध्यम से विज्ञान के सिद्धान्तों को समझाया। जिसमें प्रमुख रुप से ध्वनि तथा विद्युत चुम्बकत्व से सम्बन्धित खिलौने थे। खिलौनों से सम्बन्धित व्यवहारिक प्रयोग को करके विज्ञान के सिद्धान्तों दिखाया जिससे उपस्थित शिक्षक काफी प्रभावित हुए। ऐसे खिलौनें से विज्ञान को प्रसारित करने में महत्वपूर्ण भूमिका निभा सकते है।

बैठक में संजय कुमार शर्मा ने प. मदन मोहन मालवीय जी के बारे में एक बहुत ही रोचक तथ्य को उद्धृत किया कि वो कहा करते थे कि अध्यापकों को बुलबुल की तरह उनके नाजों नखरों के साथ रखना चाहिए, तभी वह नवाचार करेंगे।

कार्यक्रम के अतिथियों व निदेशक महोदय ने माँ सरस्वती व महामना पण्डित मदन मोहन मालवीय जी की प्रतिमा पर माल्यार्पण व दीप प्रज्ज्वलन कर कार्यक्रम प्रारंभ किया। कार्यक्रम का संचालन डा. ज्ञानेन्द्र सिंह ने तथा कृतज्ञता ज्ञापन डॉ. राज सिंह ने किया।

कार्यक्रम के सम्पूर्ति सत्र के मुख्य अतिथि प्रो. पृथ्वीश नाग, शेपा, वाराणसी ने अपने भाषण का प्रारम्भ तिब्बत के भौगोलिक मैपिंग पर आधारित चलचित्र दिखा कर तथा शिक्षकों को शैक्षिक नवाचार के लिए प्रोत्साहित किया।

इस कार्यक्रम में प्रो. ए. सी. पाण्डेय, आई.यू.ए.सी., नई दिल्ली, प्रो. रवि शंकर सिंह, विभागाध्यक्ष, डी.डी.यू. विश्वविद्यालय गोरखपुर, प्रो. ए.के.एस. रघुवंशी, निदेशक, आई.ई.डी.एस., बी.एच.यू. प्रो. सत्येन सहा, बी.एच.यू., प्रो. अमित मिश्र, जे.एन.यू., प्रो. अलकेन्द्र सिंह, बी.एच.यू., व केन्द्र के सभी कर्मचारी गण, अन्य मूर्धन्य विद्वान व विभिन्न शैक्षिक संस्थानों के शिक्षक व शोध छात्र उपस्थित रहे साथ ही राष्ट्रगान के साथ कार्यक्रम की सम्पूर्ति हुई।

Annexure 5: Glimpses of the Program





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