

Concept Note

Capacity Building Workshop on Science Communication for STEM Faculty

Background and Rationale:

Research and innovation lie at the heart of any nation's growth, and India is no exception. India's higher education landscape is poised for a transformative shift, with research emerging as a key driver of growth and innovation. While significant strides have been made, the nation's research output and impact still lag behind global leaders.

India's research output has indeed seen impressive growth, ranking fourth globally in terms of published papers, with a notable surge in patents, particularly in sectors like technology, healthcare, and renewable energy. However, while the quantity of research has increased over the years, the quality remains a critical concern. Indicators such as the H-index and citations per paper continue to lag behind global peers, underscoring the need for enhanced quality in research. To address these issues, the government has set up Anusandhan National Research Foundation (ANRF) in line with NEP 2020, along with increased funding and grants, aiming to create a more robust and impactful research culture. While the ANRF is a crucial step forward, sustained efforts and reforms are necessary to fully realize India's research potential and its role in global innovation.

Introduction

National Education Policy (NEP 2020) envisions positioning India as a global leader in knowledge and innovation by placing a strong emphasis on the promotion of STEM (Science, Technology, Engineering, and Mathematics) education and research initiatives. The policy aims to cultivate a culture of innovation and critical thinking, empowering researchers to contribute to the growth and strengthening India's research ecosystem. By prioritizing research, NEP 2020 not only seeks to enhance the quality of education but also address global challenges, drive technological advancements, and contribute to nation-building, ensuring that India's higher education institutions are globally competitive and contribute significantly to the nation's growth.

Accordingly, Capacity Building Workshop on Science Communication for young faculty in science, technology, engineering, and mathematics (STEM) has been conceptualized under the aegis of Malaviya Mission Teacher Training Programme (MMTTP) to address the key elements of NEP 2020. The workshop is initially targeted at young faculty members from National Institutes of Technology (NITs) in STEM disciplines, with plans to extend participation to faculty from Centrally Funded Technical Institutes (CFTIs) in the future. The workshop is designed to equip young STEM faculty with the necessary skills to effectively communicate their research to diverse audiences and design a 1-credit Science Communication course at their home institutions. This addresses the critical need for effective science

communication in academia and beyond, ensuring that research reaches a broader public and engages audiences in meaningful ways.

Capacity Building Workshop on Science Communication

Science communication is critical for bridging the gap between researchers and the public, making scientific knowledge accessible, and ensuring that research reaches a broader audience. It plays an essential role in fostering scientific literacy and improving public understanding of complex scientific issues. However, the lack of proper training and resources has been identified as a significant barrier in this area.

This initiative aligns with the Ministry of Education's vision to support the professional development of educators, enhance the quality of science communication, and foster interdisciplinary collaboration in scientific research.

Objectives of Capacity Building Workshop on Science Communication:

- **Enhance Science Communication Skills:** Equip participants with the tools and skills needed to communicate complex scientific concepts to a variety of audiences, including the public, students, and policymakers.
- **Course Development:** Assist participants in designing a 1-credit science communication course at their home institutions, enabling them to pass on these skills to their students.
- **Promote the Use of Modern Tools and Techniques:** Introduce participants to the latest tools in science communication, including AI technologies for content generation, data visualization, and audience analysis.
- **Build a Network of Science Communicators:** Foster collaboration and knowledge-sharing among faculty from various institutions, creating a network of trained science communicators across India.

Expected Outputs & Outcomes of Capacity Building Workshop on Science Communication:

- **Enhanced Science Communication Skills:** Participants will learn to effectively communicate complex scientific concepts to diverse audiences, making research more accessible and engaging.
- **Development of Science Communication Courses:** Faculty will be equipped to design and implement 1-credit Science Communication courses, fostering a new generation of students skilled in scientific communication.
- **Adoption of Modern Communication Tools:** Participants will gain proficiency in cutting-edge tools like AI-driven content creation and data visualization, enhancing their ability to communicate effectively across platforms.

- **Creation of a Collaborative Network:** The workshop will build a network of science communicators, encouraging ongoing peer support, mentorship, and knowledge sharing across institutions.
- **Improved Science Communication & National Development:** Enhanced communication skills will lead to better research dissemination, interdisciplinary collaboration, and contribute to India's goals for global STEM leadership and innovation by 2047.

Host Institutions/ Implementing agency for Capacity Building Workshop

Based on the proposal received, IIT Hyderabad has been identified for conducting Capacity Building Workshop on Science Communication based on institutional core strength and proposal to conduct workshop that specifically target young faculty in science, technology, engineering, and mathematics (STEM).

Other eminent Institutions may also be identified for conducting these Capacity Building Workshop, if required, subject to approval of PAB.

A strong emphasis has been placed on research in the Union Cabinet decision on One Nation One Subscription (ONOS) approved on 25th November, 2024 and proposal from IIT Hyderabad aligns with the vision of "Viksit Bharat 2047" and the National Education Policy (NEP) 2020, which emphasizes the crucial role of research in national development.

Implementation Framework for Capacity Building Workshop on Science Communication

A host institute can exercise autonomy in assigning facilitators, setting syllabi, and developing pedagogical approaches in accordance with the following standardised programme modalities:

- a. Participants - Young Faculty Members** from NITs, particularly from any science/engineering department.
- b. Eligibility for Nomination/ Selection** -Regular faculty with 3 year experience.
- c. Batch size** - Up to **40 participants**, with a preference for gender diversity (1 male and 1 female from each institution).
- d. No. of programs** - Minimum 2 in a year
- e. Mode of delivery & duration** - 5 Days (residential)
- f. Modules** - Host institutions will have full autonomy to design curriculum and pedagogy of the programme
- g. Assessment and certificate of participation** - The host institution shall assess the learning outcomes of the participants. Upon successful completion of the programme, Host Institution shall award a certificate of completion under the aegis

of Malaviya Mission Teacher Training Programme (MMTTP). Assessment is primarily to see effectiveness of the delivery and feedback to the participants.

h. Feedback Mechanism - Participants are required to fill in the feedback form after each programme.

Financial Norms

The cost for conducting this workshop along with number of programmes and beneficiaries may be seen below.

Component	Unit Cost	Physical (2 years)		Financial (2 years)	Number of Institutions	Host Institution
		No. of training programs	No. of beneficiaries/ faculty to be trained	(Amount in Rs.)		
Capacity Building Program on Science Communication for STEM Faculty	13,28,250	3#	120	39,84,750	1	IIT Hyderabad

* cost includes all expenses and taxes, if any

since the program approved in December, 2024.

Impact:

The proposed workshop offers a unique opportunity for young faculty to build crucial skills in science communication and play an active role in shaping the next generation of scientists and communicators. This initiative will contribute to increasing public engagement with science, improving the quality of scientific discourse, and promoting interdisciplinary collaboration in research and policy-making.