

One-day workshop on Transforming Education through Integrated STEM Teaching

23rd FEB 2026 .

Venue: Army Welfare Education Society,
Delhi Cantonment, New Delhi.

Resource Persons:

Dr. Shanmukh Jagarlapudi,
Professor, Department of Chemistry, KLEF.

Organized by

Academic Staff College, KLEF
in association with the **North India Cell.**



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Report on Transforming Education Through Integrated STEM Teaching

Organized by: Academic Staff College in association with North Indian Cell, KLEF.

Date: 23-02-2026

Venue: Army Welfare Education Society,

Building No: 202, Shankar Vihar

Delhi Cantonment,

New Delhi

Resource Persons:

- 1. Dr. Shanmukh Jagarlapudi**
Professor, Department of Chemistry, KLEF.
- 2. Dr. Arpit Jain**
Professor, Department of CSE, KLEF.

Detailed Report:

The Academic Staff College in association with the North India Cell, KLEF has organized a one-day workshop on “**Transforming Education Through Integrated STEM Teaching**” on 23.02.2026 for the faculty of Army Welfare Education Society at New Delhi. The session was handled by the senior professors Dr. Shanmukh Jagarlapudi and Dr. Arpit Jain from KL University.

A comprehensive and thought-provoking lecture on **STEM Integrated Learning** was delivered by Dr. Shanmukh, centering on the interdisciplinary application of scientific knowledge to address real-world challenges. The session was intellectually enriching and highlighted the transformative potential of integrating **Science, Technology, Engineering, and Mathematics (STEM)** in academic and research contexts.



From the outset, the lecture emphasized that modern global problems—particularly those related to energy, environment, and sustainability—cannot be solved through isolated disciplinary approaches. Instead, they require collaborative thinking, cross-disciplinary understanding, and innovative application of scientific principles.



Dr. Shanmukh, representing the field of Chemistry, vividly illustrated the true spirit of STEM integration by demonstrating how foundational chemical concepts can be extended into engineering applications and sustainable technological innovations. He carefully explained how chemistry serves as the backbone for advancements in clean energy technologies. One of the most engaging and insightful segments of the lecture was his detailed discussion on hydrogen as an alternative and sustainable fuel source. He elaborated on the chemical properties of hydrogen,

its high energy efficiency, and its potential as a clean fuel that produces only water as a by-product when used in fuel cells.



Further, he provided a clear explanation of the working mechanism of hydrogen fuel cells, breaking down complex electrochemical reactions into simple, understandable concepts. By describing how hydrogen reacts with oxygen to generate electricity through controlled chemical processes, he effectively connected theoretical chemistry with practical engineering design.



He also discussed how engineers design fuel cell systems for vehicles, ensuring safety, efficiency, and sustainability. This seamless integration of chemistry, mechanical engineering, materials science, and environmental science demonstrated how STEM disciplines collectively contribute to the development of sustainable transportation solutions.



The lecture also explored the broader implications of hydrogen fuel technology in addressing climate change, reducing carbon emissions, and promoting energy independence. Dr. Shanmukh encouraged participants to think beyond conventional fossil fuels and to consider innovative clean energy alternatives as essential components of future development. His

discussion on sustainable transportation systems expanded the participants' understanding of how interdisciplinary research can accelerate progress toward global sustainability goals.



Another important highlight of the session was the emphasis on innovation, analytical thinking, and collaborative problem-solving. Dr. Shanmukh stressed that STEM education is not merely about mastering individual subjects, but about developing the ability to integrate knowledge, apply critical reasoning, and design practical solutions. He motivated participants to adopt a research-oriented mindset and to engage in interdisciplinary collaboration to address societal challenges effectively.

Dr. Shanmukh's clarity of explanation, depth of subject expertise, and ability to simplify complex scientific concepts made the session highly engaging and impactful. His interactive

approach encouraged participants to reflect, question, and connect theoretical knowledge with practical applications. The lecture successfully demonstrated how chemistry and related STEM disciplines function as powerful instruments for technological advancement and societal transformation.

Overall, the session was an enriching academic experience that deepened the understanding of STEM integration and its vital role in shaping a sustainable and technologically advanced future. It inspired participants to view scientific knowledge not as isolated theories, but as interconnected tools capable of driving meaningful change and innovation in society.



The session was ended with a group photo.

Dr. Radhika Rani Chintala
Principal, Academic Staff College

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