



Energy, Matter, and Multidisciplinary Learning: Physics in Global Education

Gautam Shah, Lecturer, Department of Physics, Sant Shri Prannath Parnami P.G. College, Padampur

Abstract

Physics provides a fundamental framework for understanding the natural world, technological advancement, and the scientific principles that govern everyday life. In the context of global education, integrating physics with multiple academic disciplines offers opportunities to develop scientific literacy, critical thinking, analytical reasoning, and problem-solving abilities among learners. This paper explores the significance of incorporating physics into multidisciplinary educational frameworks by establishing connections with mathematics, chemistry, biology, environmental science, engineering, information technology, and social sciences. It examines how fundamental concepts such as energy, matter, motion, electricity, magnetism, thermodynamics, and quantum phenomena can be applied to contemporary global challenges, including climate change, renewable energy development, sustainable transportation, space exploration, and technological innovation. Furthermore, the paper highlights the role of inquiry-based learning, laboratory experiments, digital simulations, interdisciplinary projects, and collaborative research in making physics education more engaging, practical, and accessible. Connecting theoretical concepts with real-world applications enables students to understand the interdependence of scientific disciplines and appreciate the role of physics in addressing societal and environmental concerns. The paper also emphasizes the importance of integrating scientific ethics, sustainability, and technological awareness into physics education to prepare learners for responsible participation in a rapidly changing world. However, challenges such as inadequate laboratory infrastructure, limited access to digital learning resources, and differences in educational opportunities may affect the effective implementation of interdisciplinary approaches. Addressing these challenges requires inclusive teaching strategies, innovative curriculum design, and greater collaboration among educational institutions. The paper argues that integrating physics into global multidisciplinary education can bridge the gap between scientific theory and practical experience, foster innovation, and equip learners with the knowledge and skills necessary to contribute to sustainable development and global scientific progress.