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ABSTRACT

In today's world, STEM (science, technology, engineering, and mathematics) is often seen as challenging by many students, leading to various potential drawbacks. In a technology-driven era, students who do not engage with STEM may struggle to address major global challenges due to a lack of essential knowledge and problem-solving skills. Physics, a branch of science that explores matter, energy, and fundamental forces, is particularly difficult for students, as many find it hard to visualize its concepts and theories. This struggle often diminishes thieir interest in learning science. To enhance comprehension and engagement, 3D printing technology is utilized to provide clearer visual representations, making science more accessible and stimulating for students. This module is designed to create an interactive and engaging learning experience, fostering a deeper understanding of physics concepts. By incorporating real-life applications, it helps maintain students' focus and interest while improving thier ability to visualize physics principles. The module includes a 3D galaxy study kit, specifically focusing on the topic of gravitation. These resources aim to enhance conceptual visualization and assess students' understanding of the subject. The 3-D printed study kits are designed using computer software and produced with a 3D printer, ensuring accessibility and ease of use kinaesthetically. This approach enhances students' enthusiasm for learning, making physics more engaging and comprehensible.

Keywords: 3D printing technology; Kinesthetics; Physics; School students; Visualization