

ADVANCING CONCEPTUAL UNDERSTANDING IN ABSTRACT ALGEBRA THROUGH MODERN EDUCATIONAL PERSPECTIVES

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Abstract

This study aims to comprehensively examine how modern educational perspectives can strengthen students' conceptual understanding in abstract algebra learning by synthesizing recent research findings. The study employs a literature review method, analyzing scholarly articles published in reputable national and international journals over the past few years. The results indicate that integrating student-centered learning approaches, interactive digital technologies, diverse mathematical representations, collaborative learning, and gradual scaffolding can enhance conceptual understanding, mathematical proof skills, abstract reasoning, and student engagement in the learning process. Furthermore, applying modern educational perspectives fosters a learning environment that is more adaptive, reflective, and meaningful, thereby mitigating the conceptual difficulties that have historically hindered abstract algebra learning. Consequently, implementing these modern educational approaches serves as a relevant strategy to support the development of abstract algebra instruction that is more effective, innovative, and focused on strengthening students' conceptual understanding.

Keywords: Abstract Algebra, Conceptual Understanding, Modern Educational Perspectives, Mathematics Learning

INTRODUCTION

Advancements in science and technology have driven a transformation across various aspects of education, including mathematics instruction at the university level. The paradigm shift from lecturer-centered to student-centered learning necessitates innovation in the instructional process to produce graduates capable of critical, analytical, and creative thinking, as well as systematic problem-solving. In the context of mathematics education, this shift is particularly crucial given the nature of the discipline, which emphasizes reasoning skills, the construction of logical arguments, and a deep understanding of the relationships between concepts. Abstract algebra is one of the most complex courses in mathematics education. It not only introduces abstract mathematical objects but also requires students to grasp axiomatic