

The Use of Visualization Tools in Teaching Mathematics in College of Education: A Systematic Review

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visualization tools, teaching mathematics, college of education, educational technology, pedagogical techniques. Paper Type: Research	The integration of visualization tools in mathematics education has gained substantial attention within higher education, particularly in college education settings. This systematic review aims to comprehensively analyze the existing body of literature on using visualization tools in teaching mathematics at the college of education level. By examining 25 published papers, this review synthesizes findings to explore the effectiveness of visualization tools, their impact on students' learning outcomes, and the potential challenges associated with their implementation. The systematic review employs a rigorous methodology, including comprehensive search strategies, article selection criteria, and quality assessment procedures. This review categorizes visualization tools through meticulous analysis into various types, such as digital simulations, interactive software, and physical manipulatives. It evaluates their contributions to enhancing students' understanding of mathematical concepts and problem-solving skills. Key findings from the reviewed literature shed light on the positive effects of visualization tools in promoting active engagement, conceptual understanding, and motivation among college of education students. Additionally, the review uncovers potential challenges, including technological barriers, instructional strategies, and varying learning preferences, that educators and curriculum designers need to consider when integrating visualization tools into the mathematics classroom.