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Student Attitudes and Mathematics Achievement in the Uae: a Latent Profile Analysis of Timss 2019

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Abstract

Proficiency in mathematics is fundamental for both individuals and nations, influencing daily life, problem-solving, and societal advancement. As the United Arab Emirates (UAE) transitions toward a knowledge-based economy, the Ministry of Education prioritizes participation in international large-scale assessments (ILSAs) in science, technology, engineering, and mathematics (STEM) to inform policy and enhance educational practices, particularly in curriculum development and evidence-based decision-making. ILSAs also provide valuable insights that indirectly support improvements in teaching and learning methods. The Trends in International Mathematics and Science Study (TIMSS) has consistently shown that UAE eighth-grade students perform below the international average in the mathematics subtest, emphasizing the need to explore factors influencing mathematics achievement. This study applies Latent Profile Analysis (LPA) to identify distinct profiles of students' attitudes toward mathematics among UAE eighth-grade students who participated in TIMSS 2019 and examines how these profiles relate to achievement. Four profiles were identified: Very Positive, Positive, Neutral, and Very Negative. Students with more positive attitudes achieved substantially higher mathematics scores than those with neutral or negative perceptions, even after accounting for teachers' instructional clarity and students' home learning resources. These findings highlight the critical role of students' attitudes in shaping mathematics achievement and provide practical insights for educators and policymakers to design targeted interventions that foster engagement, motivation, and positive learning experiences

Keywords: Attitude Toward Mathematics, International Large-Scale Assessments, Student Grouping, Learning Outcomes, Mathematics Education