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P06 - A systematic mapping review of astronomy education research in Southeast Asia: Trends, innovations, challenges, and research directions

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Astronomy education research has expanded in response to increasing interest in space science, technological innovation, and interdisciplinary STEM learning. However, the landscape of astronomy education research in Southeast Asia remains fragmented, with limited synthesis of prevailing themes, pedagogical approaches, innovations, and research directions. This study maps the landscape of astronomy education research in Southeast Asia by examining research trends, thematic focus areas, instructional innovations, key pedagogical approaches, educational findings, and persistent challenges and gaps. A systematic mapping review of 35 peer-reviewed studies was conducted using a structured screening and thematic coding process. The findings reveal that astronomy education research in the region is strongly oriented toward technology-enhanced learning, space engineering and STEM-based initiatives, and inquiry-oriented approaches. Major astronomy topics investigated include general astronomy concepts and solar system-related phenomena, space systems and engineering applications, and space science outreach. Experiential learning, technology-enhanced learning, inquiry-based learning, and project-based learning emerged as dominant pedagogical approaches. Synthesized findings indicate that most studies report improvements in conceptual understanding, scientific skills, engagement, and interest in STEM. However, persistent challenges include limited infrastructure and accessibility, scalability constraints, technology-related barriers, and gaps in teacher preparedness. The review further highlights research gaps related to long-term impact evaluation, broader empirical validation, improved assessment approaches, curriculum integration, and inclusive astronomy education. Overall, astronomy education in Southeast Asia demonstrates strong innovation potential but requires more sustained, longitudinal, and context-responsive research to support equitable and impactful astronomy learning.

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