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# P04 - Pre-service science teachers' evaluation and pedagogical integration of augmented reality applications in earth science instruction

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The integration of emerging digital technologies such as augmented reality (AR) presents new possibilities for enhancing science teaching, particularly in representing abstract and dynamic Earth science concepts. However, its instructional value depends on how teachers interpret, adapt, and embed these technologies within classroom practices. Hence, this study examined pre-service science teachers' evaluation and pedagogical integration of AR applications in Earth science instruction using a convergent mixed-methods design. Participants were third-year pre-service science teachers from a public higher education institution in Central Visayas, Philippines. The study utilized AR applications covering comets, meteors, and asteroids; earthquakes and faults; and typhoons. Quantitative data were collected using a researcher-developed Likert-scale questionnaire based on the Technology Acceptance Model, while qualitative data were gathered through semi-structured interviews and analyzed thematically. Results showed that AR applications were highly evaluated in terms of content relevance, usefulness, and usability. However, qualitative findings revealed that AR was primarily positioned as a supplementary visualization tool rather than a transformative instructional approach. Integration was shaped by contextual constraints, pedagogical reasoning, and developing teacher cognition. The findings highlight the need for teacher education programs to move beyond technology exposure toward reflective, design-oriented preparation that supports meaningful AR integration.

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