


# Chapter 18

## Augmented Reality in Thai Elementary Education: Impacts on Learning Outcomes and Student Perspectives

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### ABSTRACT

*Background and Aims: This study investigates the implementation of Augmented Reality (AR) technology to develop digital competencies among upper elementary students in Khlong Khuean District, aiming to enhance learning achievements and digital technology attitudes. Methodology: The study employed a one-group pretest-posttest design with 100 students, developing a 30-hour AR curriculum and using validated research instruments to assess learning achievement and attitudes. Results: The research revealed significant learning achievement gains and highly positive student attitudes towards the AR technology curriculum, demonstrating its effectiveness in developing digital skills among upper elementary students. Conclusion: The AR curriculum significantly improved students' technological skills and attitudes, offering promising insights for digital education while noting implementation challenges in school settings.*

### INTRODUCTION

In the advanced digital age of the 21st century, technology has become an inseparable part of Thai youth's daily lives. Smartphones, personal computers, and tablets have become essential tools for communication, education, and entertainment for the new generation. However, the patterns of technology

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use differ significantly across age groups and genders, as pointed out by Harfield et al. (2014). This widespread use of technology reflects the urgent need to develop strong digital competencies for the new generation, especially in growing fields such as Augmented Reality (AR) technology.

AR technology has demonstrated remarkable potential in educational contexts by offering interactive and realistic learning experiences. AR helps increase learner engagement and promotes a deeper understanding of complex concepts (Swargiary & Roy, 2023). As Thailand moves towards a digital future, cultivating AR skills among youth is crucial for both academic and professional development. These skills not only prepare students to face challenges in a technology-driven world but also lay the foundation for them to effectively participate in Thailand's growing digital economy and society.

The importance of comprehensive technology education becomes even more evident when considering the concept of digital citizenship. Research by Ruenphongphun et al. (2021) identified ten crucial components of digital citizenship skills for Thai students. AR technology aligns significantly with the goals of digital citizenship, opening up new opportunities for interaction, creation, and problem-solving in the digital world. Integrating AR into educational curricula will promote not only technical skills but also responsible and ethical use of digital technology. Furthermore, using AR in teaching and learning helps develop critical thinking, collaboration, and creativity skills, which are essential for effective digital citizenship.

For these reasons, the research on “A Study of Achievement and Attitudes from AR Technology Transfer for Upper Elementary School Students in Khlong Khuean District, Chachoengsao Province” is highly significant in presenting approaches to applying technology to enhance educational quality. The implementation of AR technology in teaching and learning is considered an educational innovation with high potential to increase student learning efficiency, especially in local contexts like Khlong Khuean District, Chachoengsao Province, which may have limitations in educational resources. This research study not only aims to develop education in specific areas but may also serve as a model for educational development in other similar contexts across Thailand.

Measuring learning achievement and studying the attitudes of students taught using AR technology are crucial components of this research. This valuable data will help evaluate the effectiveness of using AR technology in teaching and learning and provide an important foundation for future development and improvement of teaching methods. Moreover, studying learners' attitudes is a key factor in implementing technology effectively and sustainably, especially in the context of creating responsible digital citizens.

In an era where education is rapidly transitioning to the digital age, this research plays a vital role in preparing both students and teachers to use technology for learning. Promoting 21st-century skills, including creativity, critical thinking, and technological skills, through the use of AR in the classroom will increase learners' capabilities to face challenges in the near future. Additionally, integrating AR into the curriculum helps create a learning environment that fosters engagement, collaboration, and creative problem-solving, which are crucial skills for digital citizens in the current era.

The results of this research will provide valuable insights into the current status of AR competencies among Thai youth. Furthermore, it will serve as an important guideline for educators and policymakers in formulating technology education strategies. Promoting AR skills will prepare the next generation with the necessary tools to thrive in an expanding digital world. This study is therefore a significant step in ensuring that Thai youth are ready for the future, capable of leveraging advanced technologies like AR for effective learning, innovation, and problem-solving in their educational and professional lives while being aware of the responsibilities and ethics in using digital technology.

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