

Chapter 3

Exploring the Integration of Technology and AI in ESL Instruction: A Qualitative Study Contrasting Novice and Experienced Teachers

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ABSTRACT

In today's interconnected world, the role of technology and artificial intelligence (AI) in education has become increasingly prominent, with educators exploring innovative ways to enhance teaching and learning experiences (Means et al., 2013; Bower, 2019). Within the realm of ESL (English as a Second Language) instruction, the integration of technology and AI holds significant promise for addressing the diverse needs of language learners and promoting linguistic proficiency in the digital age (Hubbard, 2008; Chun et al., 2021). Grounded in the Technological Pedagogical Content Knowledge (TPACK) framework, this study investigates the experiences, perspectives, and challenges encountered by ESL teachers, both novice and experienced, as they navigate the terrain of technology-enhanced language learning. By contrasting the insights of educators at different stages of their careers, this qualitative study aims to shed light on the evolving landscape of ESL instruction and the transformative potential of digital tools and AI-driven platforms.

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INTRODUCTION

In today's interconnected world, the role of technology and artificial intelligence (AI) in education has become increasingly prominent, with educators exploring innovative ways to enhance teaching and learning experiences (Means et al., 2013; Bower, 2019). Within the realm of ESL (English as a Second Language) instruction, the integration of technology and AI holds significant promise for addressing the diverse needs of language learners and promoting linguistic proficiency in the digital age (Hubbard, 2008; Chun et al., 2021). Additionally, tools like ScratchJr, used for teaching computational thinking (CT) and science, have been shown to significantly improve pre-service teachers' self-efficacy in integrating technology into their educational practices. A study involving pre-service kindergarten teachers found that using ScratchJr not only boosted their confidence but was also perceived as easy to use and effective for both novice and experienced educators (Kalogiannakis & Papadakis, 2019). These findings reflect the broader potential of digital tools in education, providing teachers at various stages of their careers with innovative methods to engage students.

Furthermore, research suggests that early exposure to STEM (Science, Technology, Engineering, and Mathematics) learning opportunities is crucial for developing skills that expand career choices later in life. Smart mobile devices, such as tablets and smartphones, have become ubiquitous in schools, transforming educational practices globally (Zaranis, Kalogiannakis & Papadakis, 2013). These devices are increasingly seen as tools that support individualized learning and interdisciplinary collaboration, especially in STEM education (Daugherty, 2013; Psycharis, 2018). Despite this potential, there is evidence that teacher education departments often lack the knowledge and skills to train pre-service teachers in integrating mobile technologies effectively into their daily teaching practices. The findings highlight the need for teaching processes that not only transmit technical knowledge but also raise awareness about the educational benefits of integrating mobile technologies into formal education (Kalogiannakis, & Papadakis, 2023).

However, while digital tools and AI-driven platforms offer new opportunities, they also introduce challenges, particularly in managing technology-enhanced learning environments. For instance, research has shown that prospective teachers, despite having a positive attitude toward the profession and an eagerness to innovate, often experience significant anxiety related to classroom management when integrating new technologies (Karakose et al., 2023). This anxiety can affect the effective use of AI in instruction, especially for novice teachers who may lack the pedagogical experience necessary to balance technology use with classroom dynamics.

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