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AI-Assisted Scaffolding for Accessibility in EFL/ESL Classrooms: A Focus on Visually Impaired Learners

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Abstract

This paper investigates show artificial intelligence (AI) can enhance accessibility, inclusion, and participation for blind and visually impaired (BVI) learners in ESL/EFL classrooms within project-based learning (PBL) contexts. Despite the growing emphasis on inclusive education, BVI learners continue to face barriers such as limited access to visual materials, increased cognitive load, and reliance on teacher mediation, all of which can restrict learner autonomy and peer interaction. Grounded in Second Language Acquisition (SLA) theory, Universal Design for Learning (UDL), and sociocultural perspectives on scaffolding, this study conceptualizes AI as an adaptive pedagogical mediator rather than a replacement for teacher instruction. It proposes a framework for AI-enhanced inclusive PBL they integrate tools such as screen readers, alt-text-supported materials, text-to-speech systems, speech recognition, pronunciation support, adjustable speech rates, and AI-driven language simplification to support both comprehension and language production. The study draws on classroom-based practice involving BVI adolescents and young adult learners engaged in project preparation and oral presentation. Data were collected through classroom observations, case studies, and learner autonomy, participation and oral production, while also improving self-esteem and reducing language-learning anxiety. The results further highlight the importance of designing accessible PBL tasks to ensure equitable participation for all learners. The paper concludes with implications for teacher professional development and present scalable strategies for integrating AI in low-proficiency ESL/EFL contexts, with a focus on inclusivity.

Keywords: Assistive Technology; Inclusive Education; Project-Based Learning (PBL); Second Language Acquisition (SLA)