



Digital Ubiquitous Learning in the Future Education

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This study addresses the limitations of traditional ubiquitous learning by developing and evaluating a novel platform that integrates multi-agents and metaverse technologies, specifically aiming to enhance students' higher-order thinking skills within a digital ubiquitous learning environment. Implemented in a multicultural learning program with 118 primary and secondary school students, the impact of this digital ubiquitous learning model was assessed through behavioral sequence and cognitive network analysis of learner interaction data. The findings indicate a significant enhancement in students' problem-solving and critical thinking skills. Furthermore, learners who showed improvements in higher-order thinking demonstrated more frequent transitions among key modules. This research offers a novel approach to ubiquitous learning, underscoring the substantial potential of integrating intelligent agents and metaverse technologies to foster higher-order thinking in K-12 students.

