



Enhancing Collaborative Learning in E-Learning: The Role of Artificial Intelligence

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Abstract

With the advancement of technology, e-learning has become one of the most effective methods for adult learners to gain knowledge. Collaborative learning within e-learning provides both challenges and potentials, when compared with traditional educational environments. While utilizing Artificial Intelligence (AI) to these problems offers encouraging solutions, the opportunities remain underexplored. Particularly, a collaborative e-learning environment facilitates learners to communicate with each other, which elevates the level of engagement and interaction. While knowledge exchange and sharing is made available in such an environment, fostering collaboration in e-learning settings is often challenging. Numerous e-learning courses are intended for individual learning, which limits the chances for social and collaborative engagement. Given this context, this study reviews previous research and proposes conceptual solutions for assessing how AI can be leveraged to enhance collaborative learning in e-learning environments. A systematic review of articles examines the role of AI in collaborative learning e-learning, analyzing the various use cases, implementations, methodologies, outcomes, and limitations of each approach. The review finds that AI, including AI-powered techniques such as Natural Language Processing (NLP), Machine Learning (ML), and Intelligent Tutoring Systems (ITS), can enhance collaborative learning in e-learning settings. This study aims to: further understand the current state, benefits, challenges, and future directions of collaborative learning in e-learning for adult learners; propose insights and strategies for improving interaction and collaboration through the implementation of AI-driven educational solutions in e-learning settings.

Keywords: adult learner, collaboration, engagement, systematic review, technology integration