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Teacher support and student motivation to learn with Artificial Intelligence (AI) based chatbot

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ABSTRACT

As Artificial Intelligence (AI) advances technologically, it will inevitably bring many changes to classroom practices. However, research on AI in education reflects a weak connection to pedagogical perspectives or instructional approaches, particularly in K-12 education. AI technologies may benefit motivated and advanced students. Understanding the teacher's role of student motivation in mediating and supporting learning with AI technologies in the classroom is needed. This study used self-determination theory as the undergirding framework to investigate how teacher support moderates the effects of student expertise on needs satisfactions and intrinsic motivation to learn with AI technologies. This experimental study involved 123 Grade 10 students, and used chatbots as AI-based technologies in the experiment. The analyses revealed that intrinsic motivation and competence to learn with the chatbot depended on both teacher support and student expertise (i.e. self-regulated learning and digital literacy), and the teacher support better satisfied the need for relatedness, and it less satisfied the need for autonomy. The findings refined our understanding about the application of self-determination theory and expand the pedagogical and design considerations of AI application and instructional practices.

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KEYWORDS
AI in education; motivation; self-determination theory; teacher support; student expertise; chatbots

AI in education (AIEd) refers to the application of AI technologies, such as chatbots, automatic marking systems, intelligent tutoring systems, and student performance prediction platforms that support and enhance education (Chiu et al., 2023). Most AIEd studies have focused on the development of Artificial Intelligence (AI) tools and systems involving the effectiveness of the learning algorithms, as well as the ethics of AI and the fundamental rights of learners using AI (Berendt et al., 2020; Chiu et al., 2022; Cope et al., 2020; McStay, 2020; Luckin & Cukurova, 2019). A systematic review of AIEd suggests that AI technologies have been integrated into four key educational domains – teaching, learning, assessment, and administration (Chiu et al., 2023). For example, intelligent tutoring systems could recommend subject content and tasks, and teaching strategies; chatbots could offer; chatbots could give feedback to foster student self-regulated learning, and answer students' inquiry on administration; automatic marking systems could offer more effective grading. These studies have highlighted that current AIEd research reflects a weak connection to pedagogical perspectives or instructional approaches, and neglects the complex multi-faceted challenges and risks

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