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An embodied agent helps anxious students in mathematics learning.

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Summary: Mathematics anxiety is known to be detrimental to mathematics learning. This study explored if an embodied agent could be used to help alleviate student anxiety in classrooms. To examine this potential, agent-guided algebra lessons were developed, in which an animated agent was equipped with prescriptive instructional guidance and anxiety treating messages. The lessons were deployed in regular mathematics classrooms, one lesson per day over a week, with 138 boys and girls in the 9th grade in the United States. After taking the weeklong agent-based lessons, students decreased in their mathematics anxiety ($p = .042$) and increased in mathematics learning ($p = .001$), regardless of the presence or absence of the agents' anxiety messages. The presence of the agents' messages only seemed to make a difference for high-anxiety students. This finding suggests that an embodied agent could provide affective support for students with special needs.

Classification: C20 U50 C30 C90

Keywords: embodied agents; mathematics anxiety; advanced learning technologies; interactive learning environments; pedagogical agents

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