

## Learning Mathematics Using Chatbots

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**Abstract.** AI-based applications named Chatbots could be used in education to arrange personalized learning activities and provide time-saving teaching supports (e.g., [ 1]). Their users interact with them in the following way: the user asks a Chatbot questions and clarifications and receives from it human-like answers and suggestions. Focusing on specific aspects of mathematical, statistical, and computational thinking [ 2, 3, 4], this contribution examined how Chatbots could be used to support the learning of mathematics. It was found that when prompted with clear and specific instructions, the applied Chatbot could solve a variety of tasks (e.g., analyze given graphs in statistical terms, solve a geometry task that connects the elements of an isosceles triangle, explain how to calculate the square root of a number using approximations). The examination showed that, in general, Chatbots can solve problems in steps (demonstrate decomposition & algorithmization), derive a common pattern from concrete examples (act as if abstracting & generalizing), or explain how to outsource certain computations to computer programs (give algorithmization & automation). However, some solutions may be too general, just partial, or even wrong, requiring the submission of carefully crafted additional prompts – a challenging task for most students. It is thus important to examine the influence of this novel kind of learning on students' achievement in mathematics and their self-confidence in learning it (e.g., [ 5]).

**Keywords:** Chatbot; learning; mathematics.

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