EDUCATIONAL CHATBOTS AS A MEANS OF SUPPORTING STUDENTS' INDEPENDENT LEARNING

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Abstract. The thesis examines educational chatbots as a means of supporting the independent learning of students in higher education. The main types of chatbots are classified according to the principle of dialogue construction, their didactic functions are identified, and the risks of their spontaneous use are analyzed. It is concluded that the educational effect of a chatbot depends primarily on the pedagogical organization of its use rather than on its technical characteristics.

Keywords: educational chatbot, independent learning, generative artificial intelligence, didactic functions, feedback, higher education.

The digitalization of education has turned chatbots based on large language models into an everyday learning tool for students. In the Republic of Uzbekistan, the expansion of digital technologies in education is defined as one of the priority directions of the Development Strategy of New Uzbekistan for 2022–2026 [1]. Students of exact and technical disciplines use chatbots to explain theoretical material, check solutions, and write and debug program code. At the same time, independent work, which makes up a significant share of the academic load in higher education, is the area where students most need timely support and where the teacher is least able to provide it.

By the principle of dialogue construction, educational chatbots can be divided into three groups. Rule-based chatbots operate according to a predetermined scenario and are suitable for consultations on organizational issues and for simple tests. Retrieval-based chatbots select an answer from a prepared knowledge base and are effective as reference assistants for a specific course. Generative chatbots based on large language models create an answer anew for each request; they are capable of conducting a flexible dialogue, explaining material in different ways, and adapting to the learner's level, but they may also produce inaccurate information [2; 3].

An analysis of systematic reviews [2; 3] makes it possible to distinguish the main didactic functions of chatbots in supporting independent learning: the informational function (explanation of concepts and answers to questions at any time); the training function (generation of exercises and step-by-step guidance when solving them); the control function (self-check with immediate feedback); and the motivational function (maintaining the regularity of independent work through reminders and dialogue). Immediate and specific feedback is one of the most powerful factors influencing learning outcomes [6], and the chatbot makes it available to every student regardless of group size.

At the same time, the spontaneous use of chatbots carries a number of risks. First, the student may receive a ready-made solution instead of an explanation, which leads to the formal completion of tasks without the formation of knowledge and skills. Second, generative models sometimes give plausible but incorrect answers, which a student without sufficient preparation cannot recognize. Third, the content of the chatbot's answers may not correspond to the course working program, terminology, and requirements.

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Researchers emphasize that the benefits of large language models in education can only be realized if teachers master new methodological competencies and students develop critical thinking skills [5].

These risks can be reduced if the use of the chatbot is organized by the teacher. In practice, this means: tying the chatbot to the materials of the specific course; setting rules under which the chatbot first asks guiding questions rather than giving the final answer; openly informing students in which tasks and to what extent the chatbot may be used; and combining work with the chatbot with tasks that require the student to verify and justify the answer. The UNESCO guidance on generative artificial intelligence in education also calls for a human-centered approach and pedagogical validation of such tools before their use in the classroom [4].

Thus, the educational chatbot is a promising means of supporting students' independent learning, primarily because of its availability, individual pace, and immediate feedback. However, its educational effect is determined not so much by its technical capabilities as by the pedagogically sound organization of its use. The development of such a methodology, integrating the chatbot into all stages of the learning process, is a priority direction of further research.

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