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ELECTRONIC TEACHING TOOLS AND THEIR DIDACTIC CAPABILITIES

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A B S T R A C T

Automated education systems represent a complex type of machine teaching, where the learning process is entirely automated. In such an educational system, the learning process—comprising a complete course and lessons for a subject—is developed based on an educational program and carried out according to a specific scenario. Their level of complexity depends on the didactic tools integrated into the system, the tasks performed, and the goals set.

Automated education systems are designed in such a way that they encompass providing new knowledge to students, reinforcing and perfecting that knowledge, forming skills and competencies, monitoring their progress, and evaluating their knowledge, all carried out according to specific programs.

K E Y W O R D S

Machine teaching, machine capabilities, educational programs, educational courses, simulators, skill formation, distance learning, remote communication, automated education, connected tools.

Introduction

When we think of teaching, we usually imagine a teacher instructing students in a classroom. However, with the advancements of today, machines created by humanity have come to assist in even such a demanding and responsible task as education. Nowadays, it would be hard to imagine any lesson proceeding without the help of machines. If a teacher uses machines in teaching—that is, delegates part of their tasks to a machine—it is called machine teaching.

So, how does machine teaching differ from traditional teaching? What tasks can machines perform in education? How can they teach?

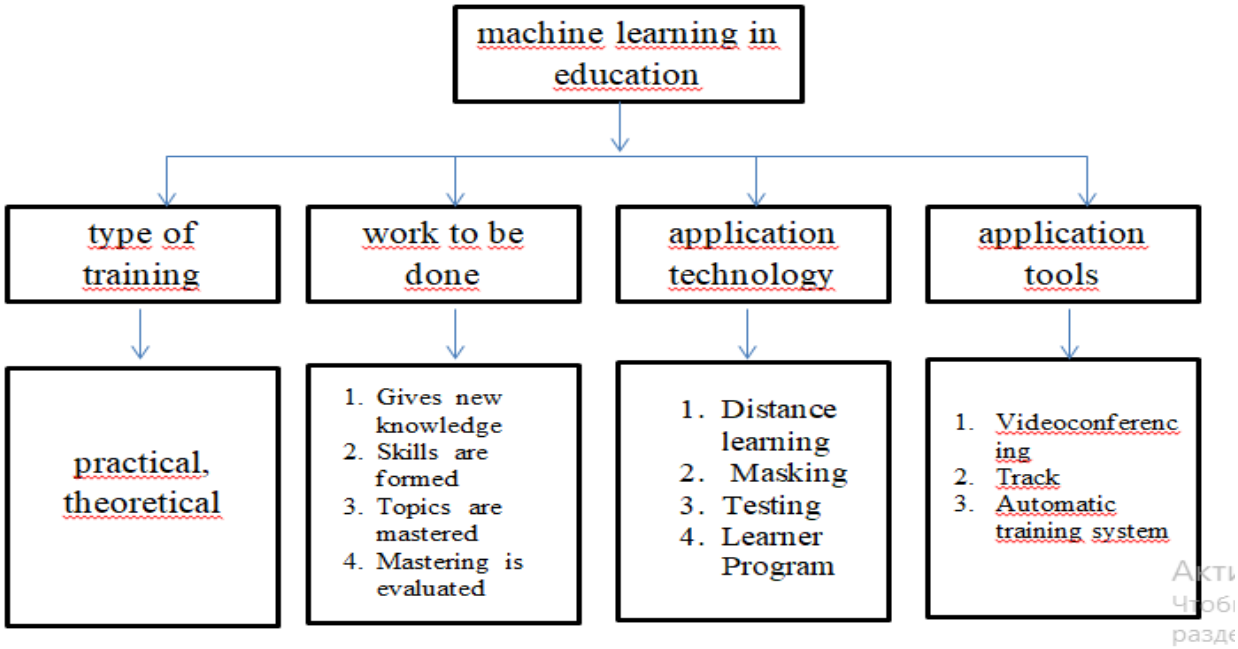
To answer these questions, let’s recall the tasks a teacher performs:

Preparing materials for the lesson; Delivering new knowledge to students; Explaining, demonstrating, and showcasing; Reinforcing and perfecting students’ knowledge; Conducting question-and-answer sessions; Developing skills and forming competencies,

Monitoring students’ progress; Testing and evaluating their knowledge, and so on.

In previous lectures, we discussed how these tasks can be effectively performed using various didactic tools. Therefore, when planning a lesson, we must make efficient use of the capabilities of didactic tools. Many educational tasks can be performed more efficiently and effectively by machines

compared to humans. However, it is impossible to fully entrust teaching to machines. Teachers must assign tasks to machines, oversee their work, and ultimately make the final decisions themselves.
By reviewing the types of machine teaching, we can better understand this point.



It is considered that when we reviewed educational programs, we mentioned that students could partially receive independent education through various audio, video, and electronic educational programs.
The progress of technology has provided such opportunities that not only allow for independent learning but also make it possible to conduct lessons without a teacher physically present. Of course, the absence of a teacher is taken conditionally, as the teacher can still manage education remotely, even if not physically in the classroom. In other words, the teacher teaches from a distance, commonly referred to as distance learning.
Experiments have shown that distance learning can even be conducted using audio tools. However, television and video tools have increasingly become prominent in distance learning. The development of information technologies has made it possible to implement distance learning using computers as well. For instance, using computer networks, one can conduct both regular and video-conference-based lessons.
In such distance education, various educational programs, didactic materials, virtual panels, and other educational resources can be easily integrated without difficulty. Distance learning enables the exchange of information between teachers and students regardless of the physical distance. It also facilitates connecting classrooms to lessons conducted by leading specialists from foreign countries.
Another advantage of distance learning is its flexibility in terms of time and place—it can be conducted anywhere and at any time. Students widely use distance learning to gain additional knowledge, for part-time education, or for independent learning.
In this process, appropriate didactic tools are connected in such a way that they create a system where information exchange is possible. As a result, machines provide students with knowledge, develop their skills, and assess their understanding.

However, such automated learning systems cannot always be used. Their development is complex and expensive. Even though they allow for education without a teacher, they might not always convey the intended goals effectively. Therefore, it is not feasible to use such systems in all educational institutions. They are typically applied in institutions that train specialists working with complex technological processes, expensive machines, and equipment.

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