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BASIC PRINCIPLES OF USING COGNITIVE TECHNOLOGIES IN THE EDUCATIONAL PROCESS

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Abstract
The article discusses the directions and principles of expanding the cognitive capabilities of future teachers in higher education institutions, increasing their cognitive activity, as well as the importance of cognitive technologies in developing intellectual activity and methodological skills of students as future teachers, with the aim of forming their methodological skills based on cognitive technologies. The article serves as a source of information for researchers. Because it offers new methods for improving the level of students' knowledge in the process of training future teachers.

Keywords: Education, process, cognitive, technology, skill, development, ability to know, cognitive activity, direction, student, intellectual activity.

Introduction

The rapid development of innovations and technologies in the field of education causes a number of serious changes that affect pedagogy and the educational process. In particular, cognitive technologies - technologies that involve the study of the human mind and thought processes and their effective application in the learning process - take the educational process to a new level.

Cognitive technologies are usually understood as technological tools based on modeling human cognitive processes. These technologies serve to improve the processes of knowledge acquisition, memory, analysis, problem solving and decision making. The introduction of cognitive technologies into the process of higher education develops critical thinking, analytical abilities and independent learning skills in students.

The article analyzes the basic principles, methodological aspects of using cognitive technologies in the educational process, as well as their impact on education. Pedagogical studies indicate different views on the development of cognitive learning activities of students (future teachers) and the use of cognitive technologies in this process. Its existing aspects and significance are revealed. At the same time, priority attention is given to a critical study of the formation and development of cognitive qualities of the future teacher, the social and professional activities of the teacher, and the pedagogical skills of the future teacher. Cognitive ability is the ability to know. This means that a person cognizes the material world and being through his intellectual activity. The development of methodological skills of a future teacher based on knowledge means the application of methodological knowledge in his daily professional activities in such a way that it is connected with the development of his intellectual spheres [1].

Materials and Methods

When developing the methodological skills of future teachers, special attention should be paid to the formation of subject-subject relations in students. This requires a special approach to the process of training future teachers. It should be emphasized that the formation of methodological skills of future teachers should be carried out taking into account the connection of higher pedagogical education with state educational standards of general secondary education, as well as special attention to students when implementing the national program. Ensuring the cognitive activity of students based on the development of their independence is also one of the pedagogical problems waiting to be solved [2]. In our opinion, cognitive technologies are important for modern teachers. Because in a rapidly changing society, a teacher is required to be able to see objective reality and its contradictions, find ways to effectively resolve them, adapt the content and directions of their methodological activities to the educational environment, independently master the necessary knowledge and use them in the pedagogical process, apply cognitive technologies with non-standard solutions in new situations. In modern scientific research, the main attention of the methodology is paid to the classification of cognitive technologies and teaching them to students. G.V. Burmenskaya on the issues of formation, targeted training of future teachers for this process., A.G. Asmolov, I.A.Voldarsky The research is conducted by modern researchers such as, A.T. Nurmanov, as well as foreign scientists such as John Carthy, Herbert Simon, Marvin Minsky, Ray Kurzweil. In particular, cognitive technologies were classified by John McCarthy as follows and have received wide recognition: cognitive technologies help to understand the irrational aspects of human thinking. Marvin Minsky suggested that “Cognitive technologies can expand our imagination and include the process of generating new knowledge” [3].

A.B. Khutorskoy suggests developing cognitive (knowledge), creative (creative), organizational (methodological), communicative and value (ideological) universal educational activities based on cognitive technologies [4]. Cognitive technologies are tools designed to improve human cognitive processes, including:

• Computer modeling: tools that provide students with greater interactivity in learning a subject;
• Interactive learning platforms: online courses and training programs that engage students;
• Virtual and augmented reality technologies: tools that help students visualize complex information;
• Data analysis and visualization tools: charts, graphs and animation to simplify cognitive processes.

Analysis and Results

These technologies help improve human cognitive abilities and develop students' memory, information processing skills, and analytical abilities. For example, through virtual groups and simulations, students learn to solve various problems, which develops their thinking and problem-solving skills. Cognitive technologies are systems designed to simulate and apply human thought processes.

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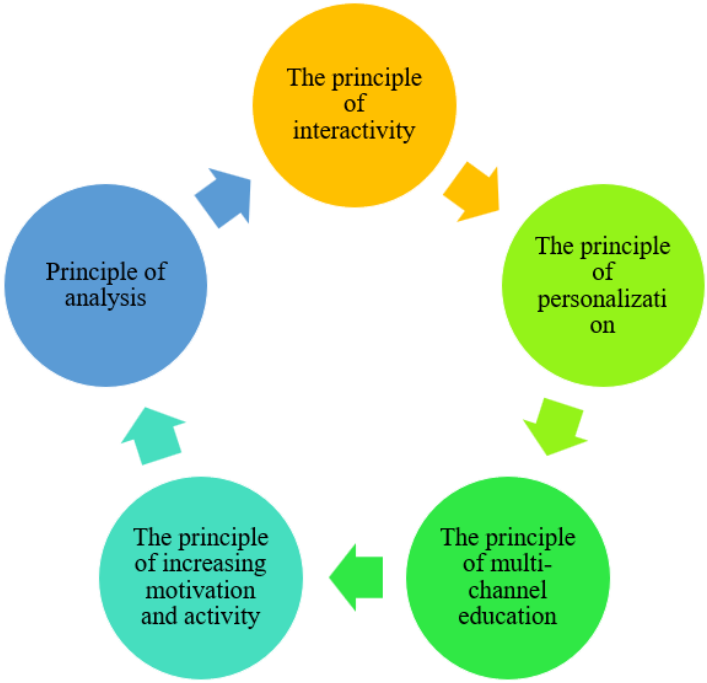

Figure 1. Basic principles of using cognitive technologies in education.

The principle of interactivity – cognitive technologies help to increase the activity between the student and the teacher in the educational process. Students are not limited to passively receiving information, but become active participants in the learning process. Using interactive technologies, students are given the opportunity to complete various tasks, solve problems and test their knowledge.

For example, with the help of virtual laboratories, students studying chemistry or biology will have the opportunity to conduct experiments on these subjects and consolidate their knowledge.

The principle of personalization – cognitive technologies organize the learning process taking into account the individual characteristics of students. Educational programs and platforms encourage students to study at their own pace. This methodology develops students' independent learning skills and adapts to the needs of each student.

Adaptive learning platforms provide students with tests and tasks adapted to their abilities, which allows each student to learn at their own pace.

The principle of multichannel learning – cognitive technologies allow the use of various sensory and communication channels. This allows students to receive information in various formats, such as visual, auditory and kinesthetic. This principle makes the learning process much complete and effective.

Students are given the opportunity to study materials using programs that combine videos, texts, audio files and interactive exercises.

The principle of increasing motivation and engagement - cognitive technologies play an important role in increasing student motivation. Motivating students through interactive and game exercises ensures their active participation in the learning process. Motivation is increased by providing students with tasks and tests of different levels, assessing and rewarding

their success. Using gaming technologies, students can create an interesting and competitive environment for learning topics, which increases motivation.

The principle of analysis and feedback - cognitive technologies allow students to test their knowledge and receive instant feedback (answers). This encourages students to analyze mistakes and learn from them. This principle helps students self-assessment and self-improvement.

With the help of online tests and quizzes on a given topic, students can quickly see their results and identify mistakes.

To effectively use cognitive technologies, teachers need to adhere to the following methodological approaches:

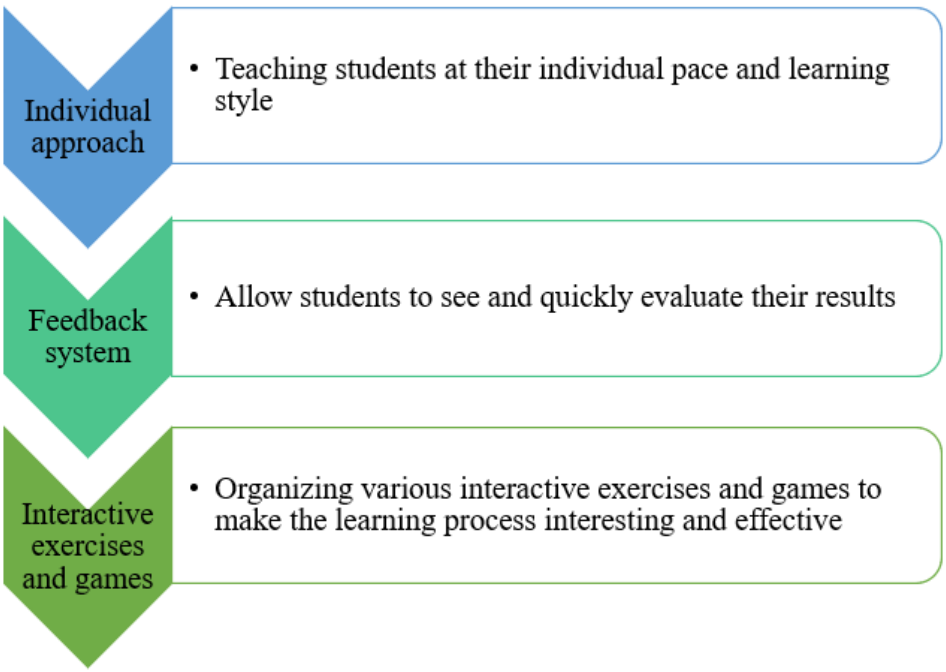

Figure 2. Methodological approaches to the effective use of cognitive technologies

Conclusion

The introduction of cognitive technologies into the educational process significantly increases the effectiveness of learning, determines how a person perceives and processes the information received, what forms he or she can create. They create opportunities to improve the learning processes of students, increase their motivation and implement an individual approach. The main principles of using cognitive technologies - interactivity, personalization, multichannel, increased motivation and activity, analysis and feedback - ensure the active participation of students in the learning process and effective acquisition of knowledge. These technologies also allow teachers to monitor the level of development of students and organize lessons more effectively.

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