SPECIFIC ASPECTS OF COGNITIVE TECHNOLOGIES, COMPOSITION AND STEPS OF APPLICATION IN THE PROCESS OF FORMING CREATIVITY IN FUTURE TEACHERS

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Abstract*. This article discusses cognitive technologies, their specific aspects, content, possibilities of forming creative thinking in future teachers, stages of cognitive technologies application. The article serves as an important resource for educational scientists, researchers, students and teachers.*

Keywords: *cognitive technologies, creative thinking, future teacher, student, educational process, didactic models, teaching effectiveness, competence, development.*

The development of creative technologies in future teachers with the help of cognitive technologies is of particular importance in raising the process of higher pedagogical education to a new level of quality. Cognitive technologies are described in detail in modern studies. These technologies, first of all, help create creative thinking experience in students. Cognitive educational technologies have a new description and are a pedagogical phenomenon that combines the cognitive directions of education with processual and spiritual-emotional directions. These technologies determine the extent of the expected results according to various parameters. The problem of the connection of this activity with different district plans is realized due to the multi-parameter nature of the expected results. The exact formation of pedagogical conditions is carried out on the basis of pedagogical competence and basic criteria.

Cognitive theories and the analysis of educational technologies are expressed in many studies. The works of R.Safarova, B.Adizov, B.Khodjaev, G.Nafasov, J.Shomurodov, B.O.Mayer revealed the possibilities and directions of using cognitive technologies in the educational process and educational clusters. Based on the opinions of experts, we were able to highlight a number of elements that determine the effectiveness of cognitive technologies. In addition, the educational process is directly related to the coordination of students' attention, and this process is carried out at the branch and cell levels. This process is improved based on the correction of the student's personality. Systematic analysis of educational technologies is organized and implemented on the basis of determining the effectiveness of the pedagogical project.

There are also educational technologies used within narrow specialization. These technologies are primarily aimed at developing the experience of cognitive thinking. V.V.Pak tried to describe various forms of cognitive technologies as a generalized project technology. V.V.Pak among the project skills combined in this is to be able to pose a problem and form a hypothesis corresponding to it; planning one's own research activities and monitoring intermediate results step by step; The experience of reflexive activity included the analysis of work and the determination of prospective ways of project development. It should be clearly imagined that the above

components of cognitive technology from a pedagogical point of view allow to justify its effectiveness. It can be seen that as a result of the use of cognitive technologies, creative thinking develops in students.

In turn, A.J.Jafarov was able to analyze cognitive technologies and their components. However, here, cognition is analyzed in the process of teaching mathematics. A.J.Jafarov made his analysis without taking into account the experience of the students. Taking into account the experience of students is important in the process of person-oriented education, which serves to individualize the activity of learners and develop their creative thinking. Specialists who conducted research on cognitive technologies paid special attention to clarification of formalization processes, implementation of monitoring of ensuring individual success of students. V.M.Monakhov put forward approaches to modeling pedagogical processes. Such an approach is effective in introducing cognitive technologies to the process of higher pedagogical education.

Productivity as an indicator of the quality of education S.S.Antsyferov. It had its pedagogical interpretation in the works of and K.N.Fazilova. They approached this problem from the point of view of creating a certain informational educational environment.

A characteristic feature of cognitive learning technologies is the availability of diagnostic tools. This instrument is convenient for providing didactic educational activities. Because it is presented keeping in mind all the factors and attractive aspects. Cognitive technologies are among the technologies used in the open educational system, taking into account the intellectual development of students. Y.V.Pushkaryov and E.A.Pushkaryova developed principles that ensure the development of students in a rapidly changing information environment. However, pedagogical and technological interpretations of these principles await their researchers.

Organization of a cognitive environment in the educational process allows students to develop creative thinking skills in various directions. In the process of using cognitive technologies, specific forms of self-evaluation, manifestation of actions that express the identity of pedagogues are provided. With the help of cognitive technologies, students are provided with pedagogical values, laws, ethical standards and professional knowledge.

The correlation between creativity and intelligence was analyzed as a research methodology in cognitive psychology. Creativity is the activity of effective application of existing experience in the solution of new problems, which relies on active social communication. This is evident in the following stages of creative activity:

- searching for the evidence necessary to solve the tasks;
- clear identification of the problem;
- acceptance of ideas of decisive importance for a specific problem, in which the content of the idea should be able to present its results in a process way;
- finding ways to solve tasks;
- to determine the most convenient option from the presented methods;
- such as determining the effectiveness of the presented methods of solving the problem and identifying situations that require the use of these methods.

Providing feedback is important for this. This allows to highlight all the effects and relationships that are determined in the process of searching for solutions. This approach has external and internal aspects. If students are able to make certain decisions during the learning process, this is considered external. If the behavior and behavior of the student motivates him to

engage in educational activities, this is an internal view. Based on the analysis of the specific features of cognitive technologies, we will consider below its 6 interrelated stages:

1. Getting to know the general aspects of the studied material.

2. Asking questions arising in the process of getting to know the general aspects of the problem under study.

3. Presentation of well-reasoned, well-thought-out materials based on the answers to the questions.

4. Based on an individual approach, the organization of the educational process corresponding to the educational and cognitive activities of each student, presenting the educational process in one way allows to ensure its effectiveness.

5. Record basic ideas and conceptual cases.

6. Preparation of analytical data on the studied educational material.

In this place, the thematic orientation of memorization is important, as a result of which the educational materials are structured and integrated into the educational module in a comprehensively based case. In this case, the content of the educational process is described using the two-way coding model. The learning materials provided to the students are divided according to their level of understanding and present level of presentation skills.

One important component of cognitive technology is metathinking or reflection. This component encourages the individual to think about the thought process. It manifests itself as an external control mechanism for later parts of cognitive technology. Reflection, on the other hand, is related to the motivation that activates the individual and focuses his attention. Indecisiveness, restlessness in students causes a decrease in their motivation. Such an approach in many ways develops the necessary didactic initiative in students. When future teachers strive to express themselves, motivations to show activity in the educational process are formed. Because success motivation is an important factor that allows to achieve results in educational activities. Highly motivated students try to complete tasks that become progressively more difficult. As a result, they have a valuable approach to the teaching profession. Accordingly, the specific aspects of cognitive technologies that help ensure the effectiveness of training future teachers are revealed. Some of these features include:

- to determine the initial professional aspirations of future teachers;

- the expansion of ideas related to the process and activity showing the effectiveness of cognitive technologies and the development of criteria ensuring the effectiveness of this technology;

- planning of the process of developing the professional competence of future teachers in connection with the pedagogical process and the activities carried out in it;

- designing the content of educational methodical complexes within the cognitive direction;

- development of monitoring that determines the level of formation of professional competence in future teachers and predicting the change of professional competences in future teachers in connection with the development trajectory;

- implementation of a set of educational models based on the criteria for determining efficiency in connection with existing organizational pedagogical conditions and systematic use of cognitive technologies in this process. The model presented in this process embodies aspects of professional competence related to academic subject, interdisciplinary and pedagogical process. In the educational process, teaching methods mutually require each other, and the possibilities of

using cognitive competences expand. Prospective teachers initially acquire experience in the extended use of cognitive technologies. In this process, they have insufficiently formed ideas about cognitive technologies. At the next stage, students understand the provision of the educational process and its essence;

- the provision of feedback between performance indicators and training models is determined as a result of diagnostic observations;

- the presentation of the results achieved at the end of the educational process allows to compare it with cultural units. Discussion of students' achievements is carried out with two goals in mind: students understand and manage to understand the purpose of the studied didactic events and participate in the debates organized on the studied event; Future teachers learn explanatory methods as one of the cognitive methods.

All this serves to ensure the quality and efficiency of the pedagogical process.

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