INTRODUCTION

The modern stage of development of society is characterized by cardinal changes in all spheres of state and public life. These changes significantly affect the requirements for the education system. General education is designed to provide conditions for the successful socialization of students, the realization by students of their abilities, capabilities, and interests. This indicates the need for changes in the organization and management of the educational process.

The state educational standards of general education, adopted in recent years, set the direction of such changes. The standards are based on the system-activity approach, which implies ensuring the activity of the educational and cognitive activity of students (WOLLACH, KOGAN, 1965).

Summarizing the conclusions obtained by the named researchers, it can be noted that the use of ICT tools in the learning process makes it possible to give the educational process a purposeful, personality-oriented character by providing an interactive dialogue; to form an individual learning trajectory for each student, using the possibility of automated selection of various options for educational tasks and providing operational assistance in conditions of immediate feedback; develop students’ skills of independent work in searching for educational information in global and local networks; automate the control of the assimilation of the material; to intensify the educational activities of students, increasing their motivation in the context of the visual presentation of educational material on the screen, the use of audiovisual capabilities, providing students with the ability to control various objects, etc.

At the same time, there are not enough works devoted to the peculiarities of the purposeful use of ICT tools to enhance the cognitive activity of students. At the same time, our survey of teachers in the Kaluga region showed that most of them either do not use ICT at all in mathematics lessons or use it sporadically (rarely or very rarely). As the reasons for this situation, teachers cite weak ICT skills, ignorance of the possibilities of using ICT, and insufficient teaching material. The overwhelming majority of teachers could not name the possibilities of using ICT to enhance the cognitive activity of students.

The purpose of the article is to identify potential opportunities and conditions, to develop a methodology for using ICT as a means of enhancing the cognitive activity of students in the learning process.
THE INITIAL PRESUPPOSITIONS

In the article, the following research methods were used to solve the set tasks: theoretical (study and analysis of scientific and pedagogical, psychological and pedagogical, reference, specialized literature, regulatory documentation on the topic of research, additional professional advanced training programs; analysis, comparison, classification of the information received and generalization); empirical (pedagogical experiment, observation, questionnaire survey, survey, conversation, testing); mathematical (statistical data processing).

METHODS

The hypothesis of the article is the assumption that the level of cognitive activity of students will increase if:

- enhancing the cognitive activity of students is accepted as a special goal of the educational process as a whole;
- in the learning process, ICT is used as a means of enhancing cognitive activity;
- the following organizational and pedagogical conditions for the use of ICT in the learning process have been created and are being implemented:
  - on the basis of ICT, visualization and illustration of the studied mathematical content is systematically and purposefully provided, which contributes to the formation of cognitive motivation, arousing interest in studying the subject, the development of visual-figurative thinking, the formation of the ability to create, apply and transform models and schemes for solving educational and cognitive problems;
  - on the basis of computer modeling, observations, measurements, constructions carried out using digital resources, an animated experiment, virtual laboratories, the search cognitive activity of students is organized, carried out both under the guidance of a teacher and independently;
  - stage-by-stage and element-by-element differentiated control, self-control and correction of students’ knowledge and skills, implemented with the help of control software, is carried out;
  - independent activity of students on the use of ICT for the search and assimilation of educational information, for the implementation of educational and creative projects is organized.

RESULTS AND DISCUSSION

Activity as a quality of activity and a personal property is formed in the learning process, primarily as a cognitive activity. Moreover, it manifests itself not so much in external activity as in internal activity. Depending on the nature of the students’ mental activity, three levels of cognitive activity are distinguished.

Reproductive level - characterized by the student’s desire to understand, remember and reproduce knowledge and methods of activity. Interpreting level - the desire to identify the meaning of the studied content, to penetrate into the essence of the phenomenon, to master the ways of applying knowledge in changing conditions.

The creative level is characterized by the desire of students not only to penetrate the essence of the phenomenon, but also to find a new way of solving this, to apply knowledge in a new situation. It is known that cognitive activity develops from the need for new impressions and knowledge that are inherent in every person from birth. The formation of cognitive activity is of a phased nature. Researchers identify three stages in the formation of cognitive activity.

1. Initial cognitive activity - characterized by the presence of cognitive interest, motives and will, with the help and through which the student will receive and acquire new knowledge.

Search cognitive activity - characterized by the presence and formulation of a problem, methods and algorithms for obtaining new knowledge, the process of obtaining this
knowledge. Test cognitive activity - characterized by the result and application of the knowledge gained.

It should be noted that this process is cyclical, that is, with the receipt of a certain result, the need for obtaining new knowledge may again arise (IASECHKO, KHALAMOV, SKRYPCHUK, FADYEYEVA, GONTARENKO, SVIATNAIA, 2021):

Based on our research, we distinguish the following levels of cognitive activity:

- high: the student has a strong, deep and stable cognitive activity, which acts as the core motive of educational activity. He is characterized by enthusiasm, concentration, intellectual activity, positive emotions in the process of educational activity;
- average: students show a selective attitude towards certain subjects, show activity when the teacher’s stimulating actions, prefer a search, less often - a reproductive type of educational activity. Cognitive interest as a motive for learning occupies a middle place in the structure of motivation for learning;
- low: students do not independently engage in activities during the lesson, do not answer the teacher’s questions of their own free will. Unsystematic completion of homework reduces the amount and quality of acquired knowledge. Volitional qualities are not developed: they are often distracted, inattentive when explaining new material, preference is given to the reproductive type of educational activity. Summarizing the approaches of various authors, cognitive activity can be defined by the unity of its four components: motivational, content-operational, emotional-volitional, and personal.

**MOTIVATIONAL COMPONENT**
Positive motivation has a direct correlating effect on the activity of students' cognitive activity. At the same time, the educational activity of schoolchildren is influenced by many unequal motives. The degree of their influence on the personality is different: some of them play a dominant role, others - subordinate, others - subtle. It is personally significant motives that determine the student's attitude to learning, induce, or, conversely, inhibit his cognitive activity. Therefore, only positive motivation ensures the inclusion of the student in active cognitive activity.

Substantially - the operational component includes the schoolchildren's possession of a system of knowledge, skills and abilities, methods and experience of their acquisition, a steady desire to replenish knowledge and master new ways of action (WHITE, FREDERIKSEN, INQUIR, 1998).

Emotionally - strong-willed - characterized by the ability and desire to overcome student difficulties in learning and the presence of a certain emotional mood associated with the success of learning.

Personal - determines the subjective nature of the student's cognitive activity, which is formed under the influence of the individual characteristics of his personality, therefore this activity takes on a personal character.

Different authors refer to the indicators of students' cognitive activity in learning activities: questions of students to the teacher; the desire of students to voluntarily participate in educational activities; active operation by schoolchildren with existing knowledge, skills and abilities; criticality; a tendency to analyze mistakes made in the process of completing an educational task; the desire to understand the cause of the phenomenon being studied; selection of difficult tasks; self-control, introspection and self-assessment of one's own cognitive and practical actions; active participation in the collective work of the class (addition, correction of the answers of classmates, the desire to express their own point of view, etc.). Indicators of volitional manifestations, according to a number of authors, are manifested in the peculiarities of the course of the cognitive activity of students (concentration of attention and weak distraction; the use of various methods to solve a complex problem; the desire for completeness of educational actions; the reaction of students to a call, as well as a free choice of activity).
The indicators of the formation of cognitive activity also include the composition and quality of the operations performed, their awareness, completeness and development, sequence, degree of complexity, degree of generalization, degree of independence, time of execution. Cognitive activity is manifested in a close relationship with such personality traits as independence, initiative, creativity, which allows us to consider it one of the determinants of the creative self-development of the student’s personality.

The importance of cognitive activity, as the most important factor determining the effectiveness of educational and cognitive activity, brings the problem of the formation of such activity to the category of urgent ones (IASECHKO, IASECHKO, SMYRNOVA, 2021). When building and operating such a system, the following didactic conditions should be taken into account:

1. The formation of the motive of activity is provided if:
   - cognitive needs are formed;
   - cognitive interests are brought up;
   - learning combines the rational and the emotional.

2. Successful formation of a knowledge system based on self-management of the learning process is possible if:
   - intellectual skills are formed related to information processing;
   - skills are formed to independently carry out planning, self-organization and self-control in the learning process.

The inclusion of each student in the process of active learning is possible if:

   - individualization and differentiation is carried out in the conditions of collective work;
   - control and self-control over the course and results of educational and cognitive activities of students is carried out (WHITE, FREDERIKSEN, INQUIR, 2021).

On the basis of the theoretical analysis, generalization and integration of various approaches and basic provisions, the definition of the concepts "cognitive activity" and "activation of cognitive activity" adopted in this study can be formulated. By cognitive activity we mean:

   - the quality of the cognitive activity of the individual, which manifests itself in the student’s attitude to the content and process of cognition, in his striving for effective mastery of knowledge and methods of activity in the optimal time, in the mobilization of his moral - volitional, intellectual and physical efforts to achieve the educational - cognitive goal;
   - the state of readiness for independent cognitive activity, characterized by a combination of motivational, content-operational, emotional-volitional and personal components, manifested in the focus on the individual’s assimilation of social experience, knowledge gained by humanity and methods of activity and is implemented in stages, starting with the statement of the problem and ending with its solution and using the knowledge gained.

By "activation of cognitive activity" we mean the improvement of methods, forms and means of teaching that provide active and independent theoretical and practical cognitive activity of students, manifested in the mobilization of moral, volitional, intellectual and physical forces aimed at achieving the goal of cognitive activity.

The construction of a system of means of enhancing learning should be focused on fulfilling the formulated conditions. This indicates the need to select the content, methods, techniques and forms of organizing training for each stage of educational cognition (ZIMMERMAN, 2021).

**CONCLUSION**

1. One of the main types of human activity is cognitive activity. This is a special kind of activity, and it is interconnected with any other activity. Cognitive activity underlies any educational and
cognitive activity of a student at all age stages of his development. Effective organization of the educational process is impossible without a sufficiently high level of this activity.

Cognitive activity is understood, on the one hand, the quality of the cognitive activity of the individual, which manifests itself in the student's attitude to the content and process of cognition, in his striving for effective mastery of knowledge and methods of activity in the optimal time, in the mobilization of his moral - volitional, intellectual and physical efforts to achieve educational and cognitive goals.

On the other hand, it is a state of readiness for independent cognitive activity, characterized by a combination of motivational, content-operational, emotional-volitional and personal components, which manifests itself in an orientation towards the individual's assimilation of social experience, knowledge and methods of activity acquired by humanity, and which is implemented in stages, starting with the formulation of the problem, and ending with its solution and use of the knowledge gained.

3. There are three levels of cognitive activity. A high (creative) level, characterized by the desire and willingness of students to independently find a way to solve new problems for them, to apply knowledge in a new situation, such students are characterized by enthusiasm, concentration, intellectual activity, positive emotions in the process of learning. The middle (interpretive) level is manifested in the desire and readiness, with some help from the teacher, to identify the meaning of the studied content, to penetrate the essence of the phenomenon, to master the ways of applying knowledge in changing conditions. The low (reproducing) level is characterized by the student's orientation towards understanding, memorizing, and reproducing the knowledge and methods of activity offered in a “ready-made form”.

Means of enhancing the cognitive activity of students imply, taking into account the specific goal of each stage of educational cognition and, in their unity, affect each component of cognitive activity: on the formation of cognitive motives; on the formation of a system of knowledge and methods of action based on self-management of the learning process; taking into account the characteristics of the personality of students, the inclusion of each of them in the process of active learning.

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Theoretical bases of activization of cognitive activity of applicants of higher education on the basis of use of information and communication technologies

Bases teóricas de activização da atividade cognitiva de candidatos ao ensino superior com base na utilização de tecnologias de informação e comunicação

Bases teóricas de la activación de la actividad cognitiva de los aspirantes a la educación superior en base al uso de las tecnologías de la información y la comunicación.

Resumo
Este artigo discute a essência e o conteúdo do conceito de atividade cognitiva, os níveis de atividade cognitiva no processo de aprendizagem e os meios de potencializar a atividade cognitiva dos alunos. Para identificar os aspectos didáticos e tecnológicos do uso das modernas tecnologias de informação e comunicação no ensino da matemática, utilizou-se de pesquisa exploratória da literatura especializada. Concluiu-se que são muitas as características e possibilidades de utilização das TIC como meio de potenciar a atividade cognitiva dos alunos, desde que haja planejamento e proatividade.

Palavras-chave: Aprendizagem criativa. Ensino inovador. Ensino superior. Tecnologia de ensino.

Abstract
This paper discusses the essence and content of the concept of cognitive activity, the levels of cognitive activity in the learning process and the means of enhancing the cognitive activity of students. To identify the didactic and technological aspects of the use of modern information and communication technologies in teaching mathematics exploratory research from the specialized literature was used. It was concluded that there are many features and possibilities of using ICT as a means of enhancing the cognitive activity of students, as long as there is planning and proactivity.

Keywords: Creative learning. Innovative teaching. Higher education. Teaching technology.

Resumen
Este artículo analiza la esencia y el contenido del concepto de actividad cognitiva, los niveles de actividad cognitiva en el proceso de aprendizaje y los medios para mejorar la actividad cognitiva de los estudiantes. Para identificar los aspectos didácticos y tecnológicos del uso de las tecnologías modernas de la información y la comunicación en la enseñanza de las matemáticas se utilizó investigación exploratoria de la literatura especializada. Se concluyó que existen muchas características y posibilidades de utilizar las TIC como medio para potenciar la actividad cognitiva de los estudiantes, siempre que exista planificación y proactividad.

Palabras-clave: Aprendizaje creativo. Enseñanza innovadora. Educación superior. Enseñanza de la tecnología.