

MODEL OF DEVELOPMENT OF COGNITIVE COMPETENCE IN THE LEARNING PROCESS ELEMENTARY MATHEMATICS

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ABSTRACT

The Statute discloses the construction of a model for the development of cognitive competence. In this regard, it is necessary to turn to the study of the concept of "development" and the model.

Keywords: Cognitive competence, learning, development, elementary mathematics.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

In Russian, "development" has different meanings. In the dictionary of S. I. Ozhegov and N. Yu. Shvedova [1, p. 74] two interpretations are given: 1) the process of a regular change, transition from one state to another, more coherent perfect, the transition from the old quality state to the new; from simple to complex, from lower to higher; 2) the degree of consciousness, enlightenment.

In pedagogy, under development, a change is thought of, representing a transition from simple to more and more complex, from lower to higher; the process in which the gradual accumulation of quantitative changes leads to the onset of qualitative changes "[1, p. 284].

The model being built must meet certain criteria on the basis of which development can be judged. The modern educational system is open, and the criteria related to Spencer's idea of development are applicable to such systems as: 1) the complexity of the elemental composition of the subject matter, 2) the differentiation of its structures and functions, 3) the organization of interaction and relations between people.

Understanding the model as a system or structure of elements with certain properties, relationships, relationships is found by V. V. Kraevsky, V. A. Shtoff and others. Systems are characterized by the acquisition of new properties that are not inherent in its structural components. "It is thanks to the structure that the set of components turns into a coherent whole, where each element turns out to be ultimately associated with all other elements and its properties cannot be understood without taking into account this connection," wrote VG Afanasyev.

Thus, the description of the development model of the cognitive competence of future teachers of mathematics requires a systematic description of dynamic changes in its structure.

L. V. Shkerina notes that the given detailed elaboration of competence can serve as the basis of the competence diagnostic toolkit. In the study we take this point of view and characterize the elemental composition of cognitive competence in the above aspects.

According to VV Davydov, educational activity is one of the main types of human activity and is aimed at mastering generalized methods of subject and cognitive actions, generalized

theoretical knowledge. With the introduction of the third-generation federal state educational standard, the activity approach acquired a special significance, since mastering competences implies self-educational activity, characterized by the ability of the subject to build their own educational and cognitive activity. Understanding the relevance of student self-regulation allowed the study to determine the stages of development of cognitive competence: self-prediction, self-projection, self-education. Consider each of the stages.

In psychology, self-prediction is understood as the ability to anticipate the events of external and internal life associated with the solution of the tasks of forthcoming activities and self-development [98]. It allows you to determine the prospects of personal development, to identify a system of requirements to which a person will seek and on which to orient themselves in the near future. L. A. Regush considers the following essential features of forecasting: 1) generic - cognitive activity; 2) species - knowledge of the past; knowledge transformation; 3) the result of the activity is a prediction, knowledge, reflecting the specifics of the future, having a probabilistic character.

At the stage of self-development, the components of cognitive competence are developed using imitational tasks in the process of mastering students' skills to put forward and accept hypotheses on building a plan for finding a solution to a problem based on the primary experience of self-acquiring knowledge:

- motivational - students independently choose one of the multi-level tasks in accordance with the individual needs of the individual in the novelty of knowledge;
- informational - students independently analyze the condition and requirement of the task, turn to the proposed prompts in order to identify key information and build a model of significant conditions for solving the problem;
- operational - the students independently make the choice of a convenient way to solve the problem from the proposed list; educational cards help to make a choice (classifications of methods of the decision, methodical recommendations, advices);
- appraisal - students independently carry out an analysis of activities with the help of an individual card, determine the causes of difficulties, and formulate the goals of the upcoming remedial activities.

At the stage of self-design, the components of cognitive competence are developed in the process of students mastering actions to create a self-project: identifying difficulties in individual mathematical activities, fixing them, analyzing the causes of their appearance, designing a way out of difficulty, building a plan to overcome individual difficulties in activities and the implementation of the self-project with the use of structural-functional tasks and special tools of mathematics (language of logic of statements, language of logic predicates and isomorphism of interpretations):

- motivational - independently reformulate the texts of the tasks using the languages of statement logic, predicate logic or isomorphism of interpretations, compare the texts obtained and determine the goals of the activity in each case;
- informational - independently using the isomorphism of the interpretation transform the texts of the tasks, check the adequacy of the transformation, they choose the most convenient solution;
- operational - independently using the logic languages of statements and predicates, substantiate the possibility of performing actions when solving problems, when changing the language of presentation of mathematical information, build a plan for solving the problem in new conditions;

- evaluative - independently using the languages of the logic of statements and predicates, detect errors in ready-made solutions, establish the causes of their occurrence and correct errors.

At the stage of self-education, the components of the cognitive competence of future mathematics teachers are developed in the process of mastering their skills in building tactics for finding a solution to problems, based on self-determination of the goal of the upcoming activity, self-construction and selection of a convenient way of action, reflection on the search for solving the problem:

- motivational - independently analyze tasks for the possibility of generalization, concretization and non-rationality of an obvious solution, formulate possible requirements of a task with given conditions;

- informational - independently analyze the texts of tasks for the possibility of changing the language of presentation of mathematical information and make a choice of language, analyze methods of solving for their applicability and make a choice of method, find new areas of application of known knowledge;

- operational - independently analyze the feasibility and feasibility of the proposed actions to solve the problem, choose the most convenient method of solution.

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