ABOUT PROBLEMS OF DEVELOPMENT OF ALGORITHMIC THINKING OF UNIVERSITY STUDENTS IN RELATION TO CREATION OF APPLICATIONS

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Annotation. This article presents the problems of developing students' algorithmic thinking in programming and suggestions and recommendations for their solution.
Keywords: algorithm, programming, logic, algorithmic thinking, logical thinking.
One of the most pressing issues today is the formation and development of students' logical and algorithmic thinking in programming [1-3].
To overcome these problems, it is necessary to improve the forms, methods and tools of teaching programming technologies.
Scientists of our country and the Commonwealth of Independent States, in particular, N.A.Otakhanov, M.R.Fayziyeva, U.M.Mirsanov, O.K.Tikhomirov, M.V.Martinov, N.V.Gorodetskoy, S.I.Maradjabov, R.M.Magamedov have conducted research in this area.
According to the analysis of the research of the above-mentioned scientists, in order to develop students' algorithmic thinking, it is necessary to pay attention to the following:
- to determine the psychological and pedagogical conditions of algorithm development [4];
- development of specific actions and their sequence [5];
- Improving the system of relations between the object of activity and the subject [6].
Based on these requirements, the formation of algorithmic thinking in the process of professional and pedagogical training in higher education institutions forms the basis of the content of professional training of students and provides a special organization of the educational process aimed at the optimal ratio of theoretical and practical materials. Therefore, the development of algorithmic and logical thinking in algorithms and programming is of particular importance in the professional and pedagogical training of students.
In this regard, according to P. Bowie, the development of students' algorithmic thinking will focus on:
- identify important features of programs;
- draw clear conclusions based on the evidence obtained;
- be able to prove the correctness of the conclusions;
- understand the essence of the form of true / false conclusions;

- consistent, clear, rational expression of ideas;
- develop skills to improve mental performance;
- development of rational thinking skills [6].

Based on the above considerations, it is advisable to form the algorithmic thinking of students in the process of professional and pedagogical training at the following stages:

1. Organizational stage. It consists of a series of interrelated components:
- formation of flexibility - adaptation of students' learning environment to individual characteristics;
- formation of skills and abilities in the educational process;
- to form students' inner attitude and positive motivation to change the reality.

2. Practical stage. It consists of the following components:
- be aware of the problematic situation that is the basis for changing educational activities aimed at improving the effectiveness of students' learning;
- Diagnosis of a problem situation: the formation of current, important tasks, monitoring the actual knowledge, skills and abilities of students.

3. The final stage. It is characterized by the transition to independent professional and pedagogical activities. The gradual transition from one stage to another is a pedagogical activity that takes into account the motivational, meaningful and guiding components aimed at identifying the main reasons for students' learning activities, primary education skills and abilities, their readiness for an independent profession.

Based on the above steps, the following series of problems should be addressed in the development of students' algorithmic thinking about programming:
- Improving the stages of development of algorithmic thinking of students [7];
- Development of software for the development of algorithmic thinking of students [8];
- Systematic formation of a set of problems designed to develop students' algorithmic thinking.

The system of formation of algorithmic thinking is based, firstly, on some of the topics of the main part, and secondly, on the students to solve increasingly complex problems, creating a variety of problem situations. In the process of forming algorithmic thinking, it is advisable to engage in independent, creative work, research activities that alternate with each other.

In short, when teaching programming technologies to students, special attention should be paid to the development of algorithmic thinking. Because on the basis of algorithmic thinking it is possible to solve complex problems.

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