Algorithmic Thinking of Students in Program using Electronic Learning Resources Principles in Development

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Today, the development of students' programming algorithmic thinking remains one of the most pressing issues in the field of computer science and information technology, especially due to the improvement of programming languages. [1-4].

To overcome these problems, it is necessary to identify the basic rules that determine the nature of the study of "Programming Languages", new approaches to the use of teaching methods, and the principles underlying the development of students' programming algorithmic thinking.

In this regard, in our country and the Commonwealth of Independent States on the principles of increasing the effectiveness of teaching science using e-learning resources and virtual learning technologies and the use of information and communication technologies and distance learning in the development of algorithmic thinking of students in programming. in particular, A.A.Abdukadirov, F.M.Zakirova, UMMirsanov, UBBakhodirova, N.N.Xakhonova, G.A.Rasulova, N.M.Babakhodjayeva, K.R.Mamadaliyev, V.T.Jurayev, J.K.Nurbekova, F.V.Shkarban, I.V.Morozova, T.V.Atyaskina, Scientific research has been conducted by scientists such as Belova, Y.V Chernobay.

1. The research of the above-mentioned scholars has developed principles based on the teaching of various sciences. By analyzing the work of these scientists, we have developed guidelines for developing students' algorithmic thinking about programming:
2. The principle of science. The principle of "Programming Languages" is to acquaint students with the scientific facts, laws, basic theories, concepts of a particular topic in the classroom and outside the classroom, to realize its latest achievements and prospects for development.
3. The principle of system and consistency. This principle is intended to provide a systematic and consistent approach to the development of students' programming algorithmic thinking.
4. The principle of interest in the educational process. This principle is effective in increasing students 'interest in programming. It involves the interest of students in programming on the basis of various didactic teaching aids.
5. The principle of presentation teaching. This principle allows students to form their cognitive thinking about programming on the basis of visual aids.
6. The principle of connection between theory and practice. This requires the application of theoretical knowledge in the field of "Programming Languages" in practical and laboratory classes, as well as in independent study.
7. The principle of enhancing the democratic nature of education. This principle involves the use of global Internet networks, information and educational environments in the development of students' algorithmic thinking. This allows the student to radically change his attitude to education, constantly improving the level of knowledge, skills and abilities.
8. The principle of self-assessment and control. Students will have the opportunity to analyze and synthesize programmatic learning information using e-learning resources, generalize results, and improve their algorithmic and cognitive thinking.
9. The principle of flexibility to manage student learning. This principle involves the development of students' algorithmic thinking in programming, the use of information-educational environment in the management of activities and the adaptation of students to this environment.

10. The principle of learning by independently finding programming learning information. This principle is aimed at learning the subject "Programming Languages" through the use of e-learning resources on the Internet.

11. The principle of conformity. This principle defines the methodology of teaching technologies using didactic, psychological and sociological, on the one hand, algorithmic theory, informatics and information-educational environments based on a number of theories, on the other hand.

12. The principle of individual learning. This principle implies that students receive individual training in the development of algorithmic thinking about programming.

In short, the proposed principles are important for students to spend their free time meaningfully, to acquire knowledge independently, to increase their programming competence, and to develop algorithmic thinking.

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