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PROBLEMS OF TEACHING GRAPHIC CAPABILITIES OF PYTHON PROGRAMMING LANGUAGE IN GENERAL SECONDARY SCHOOLS

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Annotation. *This article presents the problems of teaching graphical capabilities of the Python programming language in general secondary schools, as well as suggestions and recommendations for their solutions.*

Key words: *Python, graphics, algorithmic programming, computer science and information technologies, creativity.*

Today, in the continual education system, improving and modernizing the teaching methodology of subjects belonging to the category of informatics, on the basis of modern teaching technologies, students' working with practical, instrumental programs and media, graphic tools, as well as the use of cloudy, blocking, web technologies, special attention is paid to the issues of increasing creativity, cognitive thinking, forming and developing programming competencie.

In this regard, that is, the methodology of teaching "Informatics and information technologies" in general secondary schools, increasing students' creative abilities related to information technologies, theory of forming their practical skills and competencies and researches related to practice were conducted in our country by A.A.Karshiyev, D.B.Sulaymonova, U.N.Taylakov and a number of other researchers.

Also, studies on the methodology of teaching informatics and information technologies in general secondary schools in Commonwealth of independent states, and the formation of students' competencies in information security and working with information were conducted by scientists such as E.V.Tanova, S.V.Charikova, O.M.Osokina, M.Y.Novikova, D.V.Gulyakin, I.N.Bejina, O.A.Tumanova, T.V.Yasyuk, D.D.Yashin.

In the studies of the above-mentioned scientists, the theoretical and practical aspects of the use of advanced pedagogical technologies, electronic learning resources and the creative ability of students regarding information technologies in improving the effectiveness of teaching "Informatics and information technologies" in general secondary schools, researches were conducted on the methodology of formation of practical skills and competencies.

However, their research did not pay attention to the methodology of improving the effectiveness of teaching programming languages.

Computer science and information technologies are one of the areas in high demand today.

Therefore, in order to train specialists in the field of informatics and information technologies, it is necessary to first improve the solid knowledge, skills and qualifications of general secondary school students regarding information technologies.

The task of the teacher is not only to give the graduate a set of knowledge, but also to prepare a person who can independently solve the problems and be responsible for his own well-being and the whole society.

For this, it is needed to create the necessary conditions for training a responsible, independent and active person with basic competencies.

One of the main competencies is the ability of students to create algorithms and programs for given problems and to prepare various practical projects.

According to Ye.F.Rodigin's opinion, in order to train specialists in the field of information technologies, it is necessary to form the creative abilities and competencies of schoolchildren

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related to "Algorithmization and programming".[1].

Therefore, it is necessary to pay particular attention to the issue of teaching "Basics of Algorithms" and "Basics of Programming" in "Informatics and Information Technologies" in general secondary schools.

The "Fundamentals of Algorithm" and "Fundamentals of Programming" sections are considered one of the most complex subjects of learning "Informatics and Information Technologies".

Currently, there are many unsolved problems in the education system related to the issues of teaching algorithms and programming.

Therefore, in the continual education system, including general secondary schools, it is necessary to develop a methodology aimed at increasing the motivation of students regarding algorithms and programming, developing their creative thinking, and forming their competencies.

This, first of all, requires studying the work of scientists in the field. [2].

In this regard, the problems of formation of logical and creative thinking of schoolchildren regarding algorithmization, researches on the methodology of their elimination were studied by scientists such as T.N. Lebedeva, I.N. Slinkina, I.V. Gavrilova, A.I. Gazeykina in the Commonwealth of Independent States.

At the same time, research on the theory and practice of teaching programming in general secondary schools, the methodology of teaching programming to high school students based on the systematic-activity approach, has been researched by scientists such as N.N.Zaripov, Y.N.Nilova, I.N. Slinkina, M.N.Misin, D.G.Jemchujnikov, Pardan'ats mr Marjana in our country and the Commonwealth of Independent States.

Such researches are also presented in A.N.Bobrov, Ye.F.Rodigin, A.A. Ilyupova, V.Y.Pirogov, Ye.I.Popova, M.Saeli, J.Perrenet, Jochems, V.M.G.m, B.Zvaneard, S.Zvaned. Simon, M.Hamilton, J.Lonnberg, K.Sloan and C.Lin's articles and their works provide suggestions and recommendations for teaching programming languages in general secondary schools.

From the analysis of the research, it can be seen that the scientific research work carried out in general secondary schools mainly focuses on the formation of students' thinking about algorithmic examples and problems, as well as various teaching technologies in teaching programming languages such as Pascal, Delphi, CSS, C++, Python, electronic the method of using educational tools, network technologies and method of using computer games, as well as the development of students' practical skills, creative abilities and competences related to programming.

Despite the fact that some approaches to teaching the Python programming language have been advanced in the cited research works, teaching the graphical capabilities of the Python programming language in these scientific sources cannot be considered sufficient.

Therefore, the proposed research that is, improving the methodology of teaching the graphical capabilities of the Python programming language in general secondary schools is one of the urgent problems.

Since the previous research was focused on these issues, we first conducted observations in order to determine the attitude of general secondary school students to programming, the level of knowledge of programming technology.

The observation process is related to the Python programming language, which is taught in the 9th grade of general secondary schools.

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We were sure that in the schools where observations were made, teachers effectively organize each lesson, approach it creatively, and use new pedagogical technologies.

According to the results of observation and analysis, it was found that there are some difficulties in teaching programming technologies in these schools.

It was found that the main reason for this is that the students struggle to create an algorithm of the given problems and analyze them from a mathematical point of view, and they cannot use the given operators correctly.

In the classes we observed, we were sure that the students could not prepare enough examples and tasks of in the lessons.

During the observation, we talked with the students.

During the interviews, we witnessed that the students told us, "It is not necessary to learn the Python programming language, although it was not possible recently, why should everyone be taught programming?" if it is needed for several students, isn't it enough for these students to learn?", "Most users who use computers do not write their own programs, and they do not need to know programming at all, the user should know how to work only with the necessary practical programs, they expressed their opinions and asked questions that "informatics and information technologies" should be taught to work only with practical programs.

According to the above interview results and the analysis of scientific and methodical resourses related to the research problem, according to the situations in the school where the observation work was carried out, it was necessary to explain the nature of the graphical capabilities of the Python programming language to students in general secondary schools, to interest them and to introduce new approaches to programming technologies, research was found to be one of the current problems today.

To eliminate these problems, it is necessary to pay attention to the following:

- To fully convey to the students what success can be achieved using the graphical capabilities of the Python programming language;

- Using real-life examples to explain the programming language taught in general secondary schools, i.e., the graphic capabilities of the Python programming language;

Based on the given analytical data, it can be said that the graphical capabilities of the Python programming language for students in general secondary schools are one of the important issues today to increase the effectiveness of teaching and increase the motivation, creativity and competence of students can be noted.

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