

FORMING STUDENTS' KNOWLEDGE AND SKILLS BY CREATING PRACTICAL PROGRAMS IN THE PYTHON PROGRAMMING LANGUAGE

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Abstract:

This article talks about the methods of forming and using students' knowledge and skills using the Python programming language, the use of practical programs in the educational process, and the types of practical programs.

Keywords: components, skill, layout, exhibition, technical means, components, competence.

Introduction

Improving the system of personnel training in the field of information technologies is one of the important conditions for the successful implementation of the "Digital Uzbekistan - 2030" strategy, the development of digital technologies and the wide introduction of them into the everyday life of the population.

Measures taken to improve the efficiency of the system of vocational training and retraining in the field of information technologies create a solid foundation for providing state bodies and network organizations with qualified IT specialists.

In particular, a school specialized in in-depth teaching of information and communication technologies named after Muhammad al-Khorazmi and branches of a number of foreign universities have been launched, and digital technology training centers are being gradually established in districts and cities. .

At the same time, the lack of qualified personnel in the labor market of the republic requires the improvement of educational programs and methods in the field of information technologies, and the strengthening of cooperation between educational institutions and IT companies.

The main goal of higher education is to train highly qualified personnel, although different professional competencies are formed in different specialties, active life position, independence, initiative, flexibility and creative thinking are considered as important components of the professional competence of a modern specialist in any specialty.

This article describes the methodology of creating and using educational and didactic materials for students using the Python programming language and their use in the educational process.

Didactic tools are one of the main components of proper organization of education. Didactic tools and handouts are equipment, computer tools, models and layouts, exhibitions and technical tools, equipment and products necessary for teaching this science. They are also



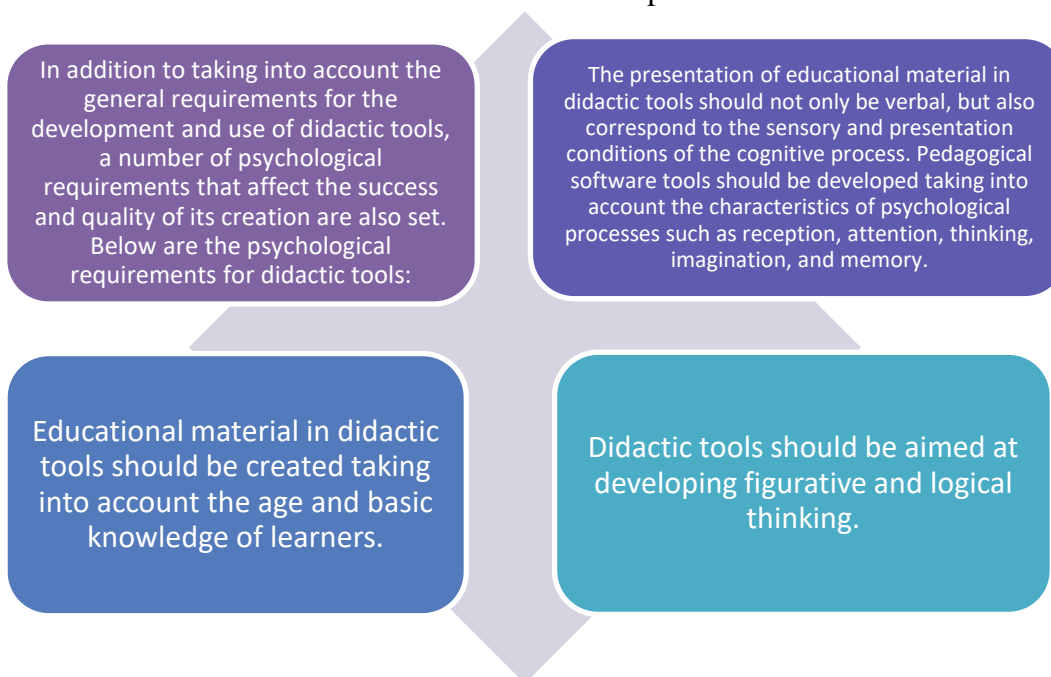
handouts used by the teacher during the teaching process. They are: flashcards, questionnaires, instructions, interesting questions and tasks, technological maps on the organization of practical work and hakozas

Types of didactic tools:

- educational didactic tools - guides students to learn new knowledge based on their level of knowledge and interests;
- test didactic tools - used for checking or evaluating acquired knowledge, skills and abilities;
- exercises - serve to repeat and strengthen previously mastered educational material;
- didactic tools that form a virtual learning environment with the participation of the teacher

Requirements for didactic tools created from subjects:

1. Didactic tools - construction based on the interdependence of conceptual, figurative and moving components of presentation of educational material.
2. Didactic tools provide learning material in the form of a higher-order structure. Consideration of interdisciplinarity.
3. Creation of opportunities to determine whether the learner has gradually mastered the educational material in didactic tools based on the implementation of various controls.



Taking into account that the Python programming language is taught in Informatics and Information Technologies in general secondary schools, we present the following simple examples, taking into account their age, in order to improve the literacy of students.

1) Create a program that converts a given quantity in the Celsius unit to the Fahrenheit unit.

Given $C=37.5$. $F=?$

To solve this problem, the student needs to know the formula $F=(C*1.8)+32$.

Program code:

$C = 37.5$



```
F = (C * 1.8) + 32
```

```
print("%0.1f Celsius = %0.1f Fahrenheit ' %(C,F))
```

37.5 Seltsiv = 99.5 Farengeltga teng

2) Create a program that converts the quantity entered in kilometers to meters.

In order to solve this problem, the student needs to have knowledge of the length units of kilometers and meters in mathematics.

1km=1000 meters

Program code:

```
kilometer = float(input("Enter in kilometer: "))
```

```
meter = 1000
```

```
print("Kilometers in meters = ", kilometer*meter, equal to meters" )
```

Program Result:

3) Write a program that performs four arithmetic operations on numbers A and B by inputting them.

In order to create this program, it is enough for the student to know the operations "+", "-", "*", "/" in mathematics.

Program code:

```
print("Enter number A: ")
```

```
one = int(input())
```

```
print("Enter number B: ")
```

```
two = int(input())
```

```
sum = one+two
```

```
print("A+B = ", sum)
```

```
difference = one-two
```

```
print("AB = ", difference)
```

```
multiplication = one*two
```

```
print("A*B = ", multiplication)
```

```
divisor = one/two
```

```
print("A/B = ", division)
```



Program Result:

```
A sonni kiriting:
8
B sonni kiriting:
80
A+B = 88
A-B = -72
A*B = 640
A/B = 0.1
```

In conclusion, due to the high demand for informatics and information technology specialists, learning programming languages and conducting individual and interesting activities with students in general secondary schools is one of the most important tasks. . The creation and use of educational and didactic materials for students in classes requires high knowledge and diligence from teachers of informatics and information technologies.

The Python programming language was developed in 1991 by Guido van Rossum. The first version, Python 0.9.0, was released to the public in February 1991. The main goal of the program was to create a programming language with a simple and easy syntax.

Python software is frequently updated and new versions are released and are warmly welcomed by developers with full features and a simple user interface. Today, Python is very popular and used for programming on many platforms. Its efficient libraries that have expanded its widespread use, as well as extended programs such as TensorFlow, PyTorch, Django, Flask, provide convenience for developers.

Programs written in Python are used in many fields. The types and functions of these programs vary, and examples include:

1. Data analysis and data visualization programs: Data analysis and data visualization programs are created using Pandas, NumPy, Matplotlib, Seaborn and Plotly libraries.
2. Web programming programs: using frameworks such as Django, Flask, and Pyramid, programs are created to create, store, and connect web pages.
3. Core learning (Machine Learning) programs: with the help of libraries such as TensorFlow, PyTorch, Scikit-learn, prediction models from data, tests and programs for learning on data are created.
4. Games and graphics programs: games and graphics are created using libraries such as Pygame, Panda3D, UnityML.
5. Systems Programming Software: Python programming language is also used with systems. These programs are used to perform many tasks such as operating system management, file automation, site scanning and automatic order creation.
6. Self-explanatory programs: Programs created for large amounts of data or automatic diagnosis, such as automatic driving of a car, are used to collect and connect data.

Python programs are open-sourced on many platforms, such as GitHub, GitLab, and Bitbucket. These platforms have programs spread over them that can be accessed, downloaded, modified,



and reviewed. These sources may also contain some of the simplest and most common programs.

"Webquests" or "webquests", a type of online tutorials or tutorials, are interactive programs designed to guide students or users in learning about a topic or topic. These learning tools are used to help students learn on their own, support their information, and identify information. Webquests lead students to masterful tasks by finding, analyzing, and solving questions about a part of society. They are essential tools that make complex information simple and transferable for the learning process to take place on platforms that students understand. Each webquest contains its own collection of information, tasks and assignments, site-specific tasks for interactive users, questions, animations, videos, websites, software and other information related to its topic. includes

There are many technologies for creating web quests using the Python programming language, for example, you can use the Flask or Django frameworks. These frameworks make it easy to create websites and applications.

Nowadays, informatization covers all spheres of human activity, and this phenomenon requires high information culture from everyone. Therefore, it is necessary to supplement the science curriculum of the school with subjects that ensure the development of knowledge, skills and abilities of students. Today's task of education is to teach students to be able to work independently in the conditions of an informational educational environment that is increasing day by day, to effectively use modern information technologies in various fields, and to use the flow of information wisely. For this purpose, creating opportunities and conditions for continuous independent work for students and teaching them to think creatively and make independent decisions leads to an increase in the quality of education.

Nowadays, several programming languages have been developed, such as Pascal, Delphi, C++, C#, Python, Java, etc. These programming languages are designed to solve problems in a certain direction, and they can be called object-oriented programming languages. Before talking about programming languages, we found it necessary to dwell on the essence of the concepts "program", "programming", "programming environment". A program is a clear and complete expression of a formal (conditional) algorithmic language, taking into account the conditions, purpose and task of the work performed based on pre-prepared algorithm and computing tools [2; p. 46]. A program is a plan of work or an activity. A program is a consistent sequence of actions to be performed by a computer when solving a problem [4; p. 17]. A programming language is an official language in which programs (a set of instructions) are written for computers, forcing it to perform one or another action [4; p. 53]. We believe that programming is the process of creating, testing, and debugging programs for computers and other microprocessor-based electronic machines. In other words, the process of creating a program for a computer is programming, and a person who creates a program is called a programmer. A language that a computer understands is called a programming language.



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