

# DEVELOPMENT OF KNOWLEDGE LEVELS OF STUDENTS IN THE PROCESS OF INDEPENDENT EDUCATION WITH THE HELP OF SOFTWARE TOOLS

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**Abstract.** *This article refers to the development of students' knowledge levels in the process of independent education with the help of software tools, the organization of the methodology of independent education, its technology, and the development of the educational process. It is also focused on issues of increasing students' motivation and supporting them in organizing their independent work, helping to form independent work skills and qualifications.*

**Keywords:** *natural sciences, knowledge, independent education, software tools, knowledge level, assessment.*

## INTRODUCTION

It has created the necessary conditions for the residents of our country to live a decent life, to get an education at the level of world standards, to acquire a profession, to take a decent civic position in the society, and to realize their creative potential. The main meaning of this lies in creating a healthy generation and educating them properly.

And the formation of knowledge and science directly goes back to the education system. The effectiveness of the educational system is directly ensured by the level of the teacher, the needs of students, the content of educational literature, and the infrastructure aimed at the formation of independent education. Therefore, the training of advanced personnel, increasing their competitiveness in accordance with the requirements of the labor market, training creative thinking specialists is closely related to the educational process established in educational institutions.

Assessment in the educational system is a continuous systematic process. With the help of numbers, it is possible to evaluate not only the personal qualities of the student's work, but also the process and results of their formation. It is very important for the student to understand and correctly evaluate the level of knowledge and skills at the educational stage, and to understand how to improve his situation.

Assessment should be based on categories of knowledge and skills and description of levels of achievement. In order to increase students' motivation, assessment should take different forms, be conducted regularly and give students the opportunity to demonstrate the full range of knowledge and skills. Of course, assessment approaches must be fair to all students.

## LITERATURE REVIEW

Independent education is one of the best ways to improve the creative potential of a student of higher educational institution studying in the field of pedagogy.

This method develops the student's skills such as formulating an existing scientific problem, developing a scientific and practical solution, achieving the optimal result of the solution, and proving it. Self-directed learning plays an important role in developing students' effective professional skills.

Independent learning teaches students to demonstrate the knowledge they have acquired in the training session in life, to make independent decisions without the teacher's participation.

The proper formation of independent education should increase the possibility of mastering any educational subject, in some sense encourage the student to acquire knowledge, skills, and increase his motivation.

Today, the fact that independent study is defined as a burden of the educational process for the student, that the subjects of independent study are directly identical to the subjects of the science program, that the subject of independent work is not directed to a specific problem, but most In some cases, it is covered by prepared materials from various sources and cases such as not implementing independent work in practice are one of the actual problems of the quality of education.

Because today, independent education for students is just an extra job. In most cases, students carry out independent work by copying from previous independent work, copying material related to the topic from the Internet. The most interesting thing is that there are cases of standardization of independent work by some teachers, from its planning to its conclusion.

In shaping the student's personality, we should first of all teach them to creative research, create a ground for engaging in research or methodical activities, develop their speech, and improve their creative potential.

For this purpose, it would be appropriate to define the topics of independent studies based on the following criteria in the development of the curriculum of the academic subject in higher education:

- Independent work topics are created based on problems with a solution based on the information covered in one or more of the main topics of the educational subject.
- Elevation of one or several small-to-small problems, prevention through solutions.
- Of course, based on experience, laboratory testing or other practice.
- Briefly describe the knowledge acquired for oneself in the conclusion part.
- A series of interesting activities, examples, problems, etc., including the introduction of small inventions or discoveries (even if they are not similar).

The student's independent work can be divided into the following groups:

– types of independent work performed by the student directly through the mobile device (preparation for the lesson, searching for information, FAQ (frequently asked questions), forum, taking tests, preparing for supervision work);

- independent work of the student under the guidance of the teacher in the traditional form (problem solving, abstract preparation, colloquium, essay, presentation, case study, course work, course project, calculus-graphic work and others);

– independent work of the student under the guidance of the teacher in electronic form.

Motivation plays an important role in students' independent work. In this case, the teacher should be able to direct the student to perform the tasks while motivating and interesting them, and should be able to form innovative ideas in them. Therefore, even in the credit-module system, it is important for the teacher to be able to guide and motivate the student correctly.

Currently, the development of students' knowledge levels in the process of independent education with the help of software tools has been studied and analyzed by the following researchers: Kukhtin, D. V , Gorlushkina N.N, Qodirov B.G', Begimqulov U.Sh., Abduqodirov A.A., Ishmuxammedov R., Saidaxmedov N. and etc.

### **RESULT AND DISCUSSION**

Software is a didactic tool designed for partial or complete automation of the educational process with the help of computer technologies. They are considered one of the promising forms of increasing the effectiveness of the educational process and are used as teaching tools of modern technologies.

The content of the software includes: a software product (set of programs) aimed at achieving specific didactic goals in the subject, technical and methodical support, additional and auxiliary tools.

Software tools that develop the knowledge levels of students in the process of independent education can be divided into followings:

- educational programs - students' level of knowledge and directs the acquisition of new knowledge based on his interests;
- test programs - acquired knowledge, skills and abilities used for verification or evaluation purposes;
- exercises - previously mastered educational material serves to repeat and strengthen;
- programs that create a virtual learning environment with the participation of the teacher.

Software "application program package (APP)", "hardware pedagogical tool (HPT)", "pedagogical educational program (PEP)", Recording with terms such as "automated learning system (ALS)", "new information technology of education (NITE)", giving different names to the same object has a negative effect on the exchange of ideas between researchers. We will refer to the software tools used in the educational process under the term "pedagogical software tools". After all, the training process is a whole system, which includes the processes of information presentation, demonstration, training, and control. Therefore, it is appropriate to consider all types of software tools that can be used in the training process as a single system and call them PST under the general name. Evaluating the development of pedagogical software, first of all, it is necessary to study the basic concepts, classification and types of pedagogical software.

Principles and requirements should also be taken into account during the development of pedagogical software tools. Gorushkin identifies 4 groups among the principles of N.N.:

- physiological characteristics of students;
- technical capabilities of computer equipment;
- pedagogical recommendations in design;
- system approach to created pedagogical programs;

I. Robert cites the following as the main requirements for the development of pedagogical software tools:

- pedagogical requirements
- technical requirements
- ergonomic requirements
- aesthetic requirements

The process of computerization of education can no longer be stopped or reversed. Computerization of education is unstoppable, the use of computers in education is irreversible. This does not mean that it will happen by itself. - wrote I. Mashbits.

### **CONCLUSION**

In conclusion, organization, management and control of education by means of computerization will move to a new - quality stage. In it, the relationship between the teacher and the student changes radically, the method of pedagogical treatment of the educational content is renewed, the period of complete learning of the educational material begins, education becomes modular, feedback is updated in essence, additions and changes are included in education.

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