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Proceedings

2023 3rd International Conference on Technology Enhanced Learning in Higher Education (TELE)

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Welcome to TELE2023!

Dear conference participants,

it is a great honor and pleasure to welcome all of you to the 3rd International Conference on Technology Enhanced Learning in Higher Education (TELE).

The increasing interest of researchers to the problems discussed at the conference, numerous positive feedbacks – all this led us to the idea to organize in 2023 the next conference, the main objectives of which are the identification and systematization of current issues and current trends in the field of education digitalization, the exchange of results of leading scientists, research schools and representatives of business.

TELE2023 program includes topics of interest that consist of:

I. Computing & IT Education
- Smart classroom, virtual and remote labs, robotics in educational sphere
- Innovative learning spaces
- IEEE Standards in the classroom

II. Workplace and Industry-Based Learning
- Effective learning activities, innovations, methodologies and practice
- Adult, lifelong learning and professional development
- Interdisciplinary, multidisciplinary and transdisciplinary learning experiences

III. Open, Flexible & Distance Learning
- Online/E-learning/M-learning spaces
- Infrastructure and educational technologies
- Open educational resources, courseware

It is noteworthy that researchers from 10 countries take part in the conference. 94 papers were submitted and only around 78 best paper according to the reviewing results were approved and are going to be presented during the conference.

Please have a look at the conference program to find out the most important themes for you. We wish you a productive conference and fruitful collaboration and beneficial cooperation!

Welcome to TELE2023!

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Computing & IT Education

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The Specifics of the Organization of Independent Work of Students in the System of Secondary Vocational Education In Uzbekistan in the Context of the Transition to a Digital Economy

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***Abstract*—The problem of self-education of students of professional colleges is one of the most important in Uzbekistan. With the improvement of the education system, the processes of education and upbringing, new aspects of this problem appear, associated with changing the content and setting new tasks. Social transformations caused by the transition to the information society actualize the problem of the formation of a new paradigm of education, which is characterized by a redistribution of emphasis from educational activities to self-educational ones. The use of electronic educational resources (computer educational and methodological complexes, textbooks, teaching aids, virtual laboratories, stands, posters, etc.) is today one of the conditions for increasing the effectiveness of training - the psychological, theoretical and practical readiness of students of professional colleges for independent work. Uzbekistan's transition to a market economy dictates new requirements for a specialist, one of the main qualities of which is independence. The formation of this quality is determined, among other things, by the organization of independent work as a type of educational activity in educational institutions of secondary vocational education, which have their own specifics and features**

Keywords—information technology, self-education of students, independent work of students, system of secondary vocational education in Uzbekistan, digital economy

I. INTRODUCTION

The problem of self-education of students of vocational colleges is one of the "cross-cutting" in society. With the improvement of the education system, the processes of education and upbringing, new aspects of this problem appear, associated with changing the content and setting new tasks [1].

Social transformations caused by the transition to the information society actualize the problem of the formation of a new paradigm of education, which is characterized by a redistribution of emphasis from educational activities to self-educational ones [2]. In general, the following reasons for increasing the role of self-education can be distinguished:

- the information society is based on the production of new knowledge, its wide dissemination and consumption;
- knowledge is an inexhaustible resource unlike natural and human resources; Changing the way we communicate makes it possible to transform mountains of information into effective knowledge;
- individually - the personal process of converting information into knowledge (self-education) becomes the leading activity in the information age;
- in the information society, the role of education increases sharply, which ensures the acquisition of new knowledge and teaches a person the skills of self-education;
- the leading activity in the information society is the work with information, which by its nature is a kind of self-education.

The transition of society to a new state leads to a significant change in the social roles of education and self-education, their goals, content, functions, and technologies.

Education becomes the fulcrum from which the world is being transformed. To an even greater extent, this statement concerns self-education. Education, as a system and process and its subjects, is the more developed, the more intensive and wider self-education is. Self-education as an integral part of various types of human activity is gaining more and more dominant positions [3-4].

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New information and computer technologies change the principles of organization and functioning of self-education. With their help, it is being introduced as an active component into many activities. Computer technologies not only ensure the availability and diversity of information, but also activate self-educational processes.

The use of electronic educational resources (computer educational and methodological complexes, textbooks, teaching aids, virtual laboratories, stands, posters, etc.) is today one of the conditions for increasing the effectiveness of training - the psychological, theoretical and practical readiness of students of professional colleges for independent work.

The main principles of the use of electronic educational resources for the purpose of self-education are the establishment of interactive communication between the student and the teacher (in this case, a computer), the independent development of a certain array of knowledge and skills in the chosen course and its program with a given information technology [5].

At the same time, among the didactic principles affected by computer technologies for the transmission of information and communication, in the first place, should be attributed: principle of activity; the principle of independence; the principle of combining collective and individual forms of educational work; principle of motivation; the principle of connection between theory and practice; the principle of efficiency.

The main problem in the development of computer self-education is the creation of new teaching methods and technologies that meet the telecommunications communication environment [6]. In this environment, the fact is clearly manifested that students are not just passive consumers of information, but in the process of learning they create their own understanding of the subject content of education.

II. Proposed Methodology

A. The Essence and Types of Organization of Independent Work of Students in the System of Secondary vocational Education.

In modern conditions of modernization of modern education, the focus of the educational process on the preparation of a highly qualified, competitive specialist, independent work of students is considered as one of the important forms of organizing the educational process throughout the entire education in an educational institution.

The problem of organizing independent work of students in the system of secondary vocational education is also in the focus of attention of domestic scientists and teachers [7]. Currently, there are several approaches to the disclosure of the essence of the concept of "independent work". The first approach is that independent work is a form of learning; the second approach is independent work, it is a teaching method; the third approach is independent work, this is a type of educational activity, and, finally, the fourth approach is independent work, this is a means of organizing and managing cognitive activity.

The first three approaches are an attempt to reveal the essence of the concept of "independent work" through the answer to the question: how is cognitive activity organized? Based on this, the form of organization of the student learning process is determined.

The fourth approach is based on the understanding of learning as the organization of the cognitive activity of the student, and the essence of any form of learning is that it is a means of organizing cognitive activity [8]. In this regard, independent work is considered as a means of organizing and managing the student's cognitive activity.

Analyzing various approaches and definitions of the concept of "independent work", we came to the conclusion that, in the general case, it is considered as a form of organizing educational activities of a managerial nature, and its essence lies in solving educational and cognitive problems.

The characteristic features of independent work include: availability of a task; lack of direct participation of the teacher in its implementation; the availability of time specially provided to complete the task; the presence of indirect control of the student's cognitive activity by the teacher.

Comparative and comparative analysis of works devoted to independent work of students shows that the latter: is inextricably linked with mastering the methods of science and provides rational ways of learning activities; deepens knowledge in its various practical applications; develops skills, improves knowledge; puts into action all the emotional, mental and volitional abilities of the student; forms an active independent personality in the process of subjective relations, predetermines the relationship of cooperation between students and teacher; gaining experience in creative activity [9].

Now let's answer the question: what functions are the main functions of independent work?

This is first of all: formation of activity and independence of the individual, motivational function; interest in knowledge and need for self-education; mastery of rational methods of educational activity, development of cognitive abilities; development of skills and abilities of educational activities; formation of outlook; concretization and deepening of subject knowledge.

When performing independent work, the following are carried out: development of individual skills of self-regulation and self-discipline; psychological attitude towards independent systematic replenishment of one's knowledge; involvement in scientific research work, acquisition of skills in conducting scientific research; development of abilities for analysis and synthesis; development and consolidation of individual rational methods for performing independent work; acquisition and consolidation of knowledge; acquisition of skills in working with literature and independent search for the necessary information.

It should be noted that the transition of Uzbekistan to a market economy dictates new requirements for a specialist, one of the main qualities of which is independence. The formation of this quality is determined, among other things, by the organization of independent work as a type of educational

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activity in educational institutions of secondary vocational education, which have their own specifics and features.

B. *Organization of Independent Educational and Cognitive Activity of College Students with the Help of New Information Technologies.*

The current stage of development of the educational space is characterized by the use of information and computer technologies, which are one of the ways to enhance the educational and cognitive activity of students.

The introduction of electronic information and educational resources into the educational process, for example, electronic textbooks and teaching aids, will contribute to the development of independent, search, research and development activities of college students, increasing their cognitive and professional interest.

The In general, an electronic textbook includes the following mandatory components (blocks): means of studying the theoretical foundations of the discipline (information component); means of supporting practical exercises; laboratory workshop; means of support for course projects and settlement assignments; means of knowledge control in the study of the discipline; means of interaction between the teacher and students in the process of studying the discipline; guidelines for the study of both the entire discipline and individual objects in its composition; means of managing the process of studying the discipline.

The above components are interconnected as follows: the manual is divided into sections that contain subsections; each subsection contains theoretical information and a block of self-control; in addition, the electronic textbook includes a self-education block, an information block and an external control block.

The structure of the manual is determined by the fact that the latter are mainly used to organize independent work of students and must clearly define which sections and in what sequence should be studied, as well as interconnected.

An electronic textbook is not only a complex, but also a holistic didactic and interactive software system that allows you to present complex moments of educational material using a rich arsenal of various forms of information presentation, as well as to give an idea of the methods of scientific research by simulating the latter by means of multimedia. At the same time, the availability of training increases due to a more understandable, vivid and visual presentation of the material.

The use of color computer animation, high-quality graphics, video sequences, schematic, formulaic, reference presentations makes it possible to present the course being studied in the form of a sequential or branching chain of dynamic pictures with the possibility of transition (return) to information blocks that implement certain structures or processes.

Multimedia systems make it possible to make the presentation of didactic material as convenient and visual as possible, which stimulates interest in learning and eliminates gaps in knowledge.

Multimedia - textbooks, as already noted, play an extremely important role in the education system, since the learning process takes place at a fundamentally new, higher level.

An electronic textbook makes it possible to work at the most appropriate pace for the student, provides the possibility of multiple repetitions and dialogue between the student and the teacher, in this case a computer. The methodological strength of multimedia lies precisely in the fact that it is easier to interest and teach a student when he perceives a coordinated stream of sound and visual images, and not only informational, but also emotional action is exerted on him.

III. Results of Research

Independent work of students of a professional college is divided into classroom and extracurricular. A generalization of the experience of organizing independent work in colleges allows us to conclude that it is performed by the student as a personally significant activity. If this work is performed in the classroom, directly under the guidance of a teacher, then it is an independent classroom work. If this work is done outside the classroom, without any guidance from the teacher, then it, of course, is an extracurricular independent work [10].

And here it is especially significant that within the framework of its implementation, the student is free to choose a topic, a subject of study, the time for mastering one or another new knowledge or performing a creative, research and any other project. In other words, extracurricular independent work complements what students learn in the main educational activities in the process of classroom work under the guidance of a teacher.

The modern computer revolution has significantly increased the efficiency of independent work. In conditions when the intensity of the process of cognition is constantly increasing, and the limit of free time remains the same, the purposeful independent activity of students, which is formed on the basis of the synthesis of information technical systems with the creative potential of a person, is the most important factor in activating learning. Computer technologies affect the change in the education process, while affecting the image of pedagogical mentoring.

The wide search capabilities of temporary automated systems devalue the monopoly right of even the most qualified teacher to exhaustive up-to-date information in their professional field of knowledge. Analytical materials show that the most competent specialists are currently able to master no more than 15% of the ever-increasing array of information in their area of scientific knowledge.

Computer systems are able to provide access to a cross-cultural space, which significantly expands the range and methods of scientific communication on the scale of planetary culture. The introduction of computers and innovative computer technologies makes it possible not only to organize students' independent work in the most rational way, but also to diversify the forms of its implementation.

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The introduction of computers and innovative computer technologies makes it possible not only to organize students' independent work in the most rational way, but also to diversify the forms of its implementation.

In accordance with one of the approaches to the classification of teaching methods according to the nature of the student's activity in the educational process, the use of new generation electronic educational resources in the self-education of college students belongs to the research groups of teaching methods. In these groups of teaching methods, new generation electronic educational resources are used in organizing students' independent activities, taking into account their individual educational needs: to select the necessary information; to study new educational material; to perform laboratory and practical work; for analysis and building models in virtual laboratories; to create "own" products of educational activities: abstracts, abstracts, projects; for processing skills and abilities; to prepare speeches and presentations; to prepare for competitions, olympiads, intellectual tournaments; to perform educational and research work; for testing as a form of control and self-control.

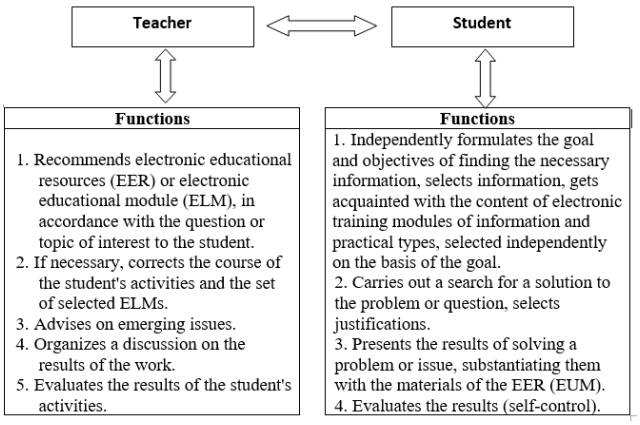

Fig. 1. The model for organizing independent work of a college student based on the use of new generation electronic educational resources

The model for organizing independent work of a college student based on the use of new generation electronic educational resources is shown below in Figure 1.

IV. Conclusions

This paper describes the essence and types of organization of independent work of students of professional colleges. Specific features of the organization of independent work of students in college, as well as methodological recommendations based on the use of modern information and telecommunication technologies are given [11].

The rapid development of telecommunication technologies, in particular, the Internet, and multimedia in recent years not only contributed to the emergence of increased interest in the use of computers in the educational process, but also led to the emergence of a new generation education system - computer distance education.

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