

USING ONLINE TECHNOLOGIES IN STUDENTS' EDUCATION IN THE SPHERE OF AGRICULTURE

Ubaydullaeva Sh. – c.t.s., associate professor, Ubaydullaeva D. – c.t.s., associate professor
Gulyamova Z. – associate professor, Tadjiyeva G. – associate professor
Kadirova N. – associate professor - TIAME National Research University

Abstract

Currently, Uzbekistan is rapidly implementing measures to develop digital technologies in all spheres of the economy, as well as to widely introduce information and communication technologies in public administration, education, healthcare and agriculture and other areas of public life. The country needs specialists with systems thinking, who can make informed decisions, who are able to think outside the box and modern, who are able to search for and use useful information, and learn innovative technologies. Internet technologies play an important role in solving these problems in the educational system. In particular, the implementation of priority projects has begun, which provide for the improvement of the e-government system, the development of the market for software products and information technologies, the organization of IT parks in all regions of the republic, and the provision of this area with qualified personnel. The article presents a model for organizing students' independent work using online technologies. Detailed instructions are given for completing a specific task in computer science using an electronic educational resource developed by the authors of this article

Key words: model, informatization of education, means of information and telecommunication technologies, teaching electronic educational resources, online technologies.



Introduction. The adoption of digital technologies is faster than any other innovation in the history of mankind: in just two decades, digital technologies have managed to reach about 50 percent of the population of developing countries and transform societies with their help. The use of technologies that enhance connectivity and access to financial, commercial and government services can lead to a significant reduction in population inequality.

The population of Uzbekistan as of September 7, 2021, according to the State Statistics Committee of the Republic of Uzbekistan, was 35,270,000 people, of which 17,900,000 urban residents (50.8%) and 17,350,000 rural residents (49.2%). It should be noted that in Uzbekistan the average total age is 28.6 years. The age structure is such that children under 14 years old make up 23.88%, the working-age population - 70.86%, over 65 years old - 5.25%.

In Uzbekistan, more than 60% of the population are young people, the average age of the country's inhabitants is 25 years. Therefore, there is a great need to support young people by modernizing the educational system, creating additional jobs and opportunities to improve the quality of life.

UNICEF international organization within the framework of a joint project with the Youth Union of Uzbekistan and the Yuksalish National Movement for 2018–2020. conducted a study "Youth of Uzbekistan: Challenges and Prospects". The key objectives of this youth survey were: to provide a comprehensive overview of the situation of young people in Uzbekistan, with a focus on the most important areas of their daily lives, and to inform government and public organizations involved in the development of national youth policy, to improve the effectiveness of decisions taken on issues affecting the well-being of youth. This study found the following:

1. Throughout Uzbekistan, students from various educational institutions express overall satisfaction with the existing educational system (created environment, teaching, learning materials). However, they portray the situation in rural areas as less favorable than in urban centers.

2. With regard to the learning environment, students express a desire that it be more motivating, practice-oriented and provide a better education. In particular, students want to improve their language skills, increase business literacy and be better prepared for the transition to professional life. Among young people aged 19-30 years, the share of those who do not continue education, training and work (NEET) after completing compulsory secondary education is 54.6%. For young women, the NEET rate is consistently higher at 74.0%, while for young men in this age group it is 24.8%. With regard to choosing a future place of work, it is important for young people in Uzbekistan that the scope of their professional activity is their "personal choice" (and not the choice of their parents). In addition, the job should provide a "decent income" and allow the person to be surrounded by a positive "collective" of colleagues that support youth and allow continuous learning.

3. Compared to their peers living in urban centres, young people in rural areas have fewer opportunities to continue their education or get a job and are therefore interested in entrepreneurship. In general, young people throughout the country note the importance of existing ties (and nepotism), the economic opportunities of the family in increasing their social mobility.

4. Although young people in Uzbekistan show a very strong interest in learning more about computers (86.9%), there is still a significant group (37.8%), consisting in particular of women and rural youth, who do not have any computer skills. In addition, there is a gap between a large number of young people (53.9%) who "never" use the Internet (mostly young people in rural areas and women) and a smaller number who use it "daily" (25.4%) (mainly city dwellers and young people). The Internet itself is equally seen by young people as a "useful" tool for maintaining social contacts, study or work, and as a potentially dangerous place where they "waste time" or are "badly influenced" (which disproportionately limits women who fear stigmatization) [1].

Present, Uzbekistan is rapidly implementing measures at

the state level to develop digital technologies in all spheres of the economy, as well as the widespread introduction of information and communication technologies in public administration, education, healthcare and agriculture and other areas of public life [2-3].

The country needs specialists with systems thinking, who can make informed decisions, who are able to think outside the box and modern, who are able to search for and use useful information, and learn new technologies. The Internet plays an important role in solving these problems in the educational system.

In particular, the implementation of priority projects has begun, which provide for the improvement of the e-government system, the development of the market for software products and information technologies, the organization of IT parks in all regions of the republic, and the provision of this area with qualified personnel. Therefore, at present, there is a need to develop the Internet and the information space, create a communication and information infrastructure for young people living in rural areas.

In this direction, important tasks can be identified: the formation of basic knowledge, based on online learning; the formation of skills to independently learn and professionally improve. The task of the national policy of Uzbekistan in the field of education is to create a national cultural and information space. This will save our culture for the new generation, which will receive more and more information and knowledge from the Internet.

Materials and methods.

The traditional education system [4], as is known, includes the following participants:

1. The teacher is a source of information and knowledge; the student is the recipient and accumulator of information and knowledge. Online teaching methods offer a new approach that provides an integrated mechanism for interaction between the teacher and students. In this case, the roles of the latter are distributed in a different way:

2. The teacher is the producer and pointer of information; the student is the accumulator of information and the shaper of knowledge.

Here the teacher plays the role of an "organizer", creating motivational factors for studying disciplines and acquiring the necessary knowledge and skills. Thus, from all of the above, the most important methodological aspect of online learning follows, namely, its focus on the widespread use of Internet technologies by students at various levels.

It should be noted that online learning should correspond to the education of a student of a higher educational institution according to the established state educational standards in academic disciplines with a check of the quality of assimilation. Purposeful and strictly controlled initiative individual work of students forms the basis of the educational process in online learning.

To do this, it is necessary to include a certain set of learning tools in the online learning environment [5]. Both traditional (non-digital) and electronic learning materials, as well as computer learning systems and the Internet, serve as teaching aids in higher education institutions.

Model for organizing students' independent work based on online learning. The role and importance of using electronic learning materials (educational resources) for organizing students' independent work is undeniable. Consolidation, expansion and deepening of the acquired knowledge, skills, independent study and assimilation of

new material without the help of a teacher is the main goal of extracurricular independent work [6].

Such characteristic features of extracurricular independent work as: availability of a bank of practical tasks in the discipline under study; the absence of a teacher in the process of completing the task; time specially allotted for the task; teacher's monitoring of the student's cognitive activity with the help of the latest information technologies (Figure 1).

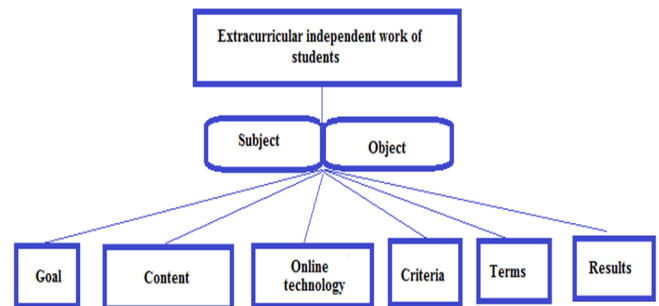


Figure 1. Model of organization of independent work of students.

Using online technologies. We offer a system of independent work of students, implemented with the help of online technologies, which includes the following elements: purpose, content, online technology, object, subject, criteria, conditions and result. Thus, the model of organizing students' independent work based on online learning can be represented as follows.

Here:

The object is a student of a higher educational institution.

The subject is a teacher of a higher educational institution (who knows how to use online technologies).

The purpose of a student's individual work based on online technologies is to acquire knowledge, skills and abilities, which should be formed in accordance with the model of a specialist and the requirements of the employer.

The content (determined by the teacher) includes topics for the student's individual work: a course of lectures, a workshop on problem solving, a glossary of terms, tests.

Online technology is a technique aimed at student independence in the process of cognitive activity. This technology is an educational process that includes the acquisition of new knowledge and skills using Internet technologies, feedback and monitoring [7].

The criteria for the formation of students to use online technologies in the structure of individual work are: motivational and theoretical and practical [8].

The conditions for the effective use of online technologies in the process of teaching students are:

- use of individual tasks as the main forms of learning;
- use of creative tasks built on the principle of increasing complexity;
- dynamic monitoring to track and analysis learning performance;
- use of mechanisms to increase the responsibility of students for self-control and self-analysis of their activities.

The result of the student's individual work using online technologies is, firstly, the development of analytical thinking, and secondly, the development of knowledge, skills and abilities in the discipline under study and the willingness to use them in educational and professional activities.

As mentioned above, one of the elements of online technologies used in independent work of students is the development and use of special teaching aids, in other words, such electronic educational resources, the basic principles of which are the establishment of interactive communication between the student and the teacher (in this case, a computer) and independent development of a certain body of knowledge, the acquisition of skills and abilities in the chosen course and its program.

Below are the methodological recommendations for self-fulfilment of tasks in informatics using the electronic educational resource developed by the authors [9-13].

The organization of independent work using an electronic educational resource includes the following steps:

- development and issuance of assignments for independent work;
- formulation of the purpose of the assignment;
- drawing up a work plan;
- instructions for completing the task;
- management and control over the progress of extracurricular independent work of the student;
- evaluation of the obtained results.

Results of research. We will consider the implementation of the above steps using the example of learning the Delphi programming language.

Task: to study the types of properties of objects of the Delphi programming language.

Purpose: to acquire knowledge, skills and abilities to work with components and their properties in the Delphi environment.

Student's independent work plan:

1. Study of data types assigned to simple properties of components.
2. Definition of enumerated properties.
3. Study of sets and combined values of nested properties.
4. Managing the properties of visual components in the graphical execution mode (run time). Development of the SHAPE DEMO program.

Instructions for completing the task using an electronic educational resource.

1. Since the electronic educational resource is located on the Internet, any user can access it. However, they can view public information. In order to use the capabilities of an electronic educational resource to perform independent work, the user must be registered, in other words, perform authentication, i.e. get a username and password.

2. The student, using an individual login and password, enters the electronic educational resource as a registered user. A list of sections of the discipline intended for study (curriculum) will appear on the computer screen.

3. The section of the discipline necessary for completing the task is selected (in this case, the section "Programming Language Delphi"). The contents of the specified section will appear on the computer screen, from which the topic necessary for studying is selected - "Properties in Delphi."

4. The student studies the theoretical material relevant to the topic.

5. To complete the assigned task, the user prepares the material according to the plan of independent work in the WORD text editor. At the same time, he can copy the necessary parts of the theoretical material.

6. The prepared file is sent by e-mail to the teacher:

6.1 the user enters the mail embedded in the electronic

educational resource;

6.2 selects the address of the teacher or other registered users;

6.3 in the field "subject" writes the name of the task;

6.4 in the field "file" writes the prepared file with theoretical material;

6.5 sends the material to the teacher.

7. The user performs practical work - develops the SHAPE DEMO program in the Delphi environment.

8. The user sends to the teacher by E-mail the composite files of the project, i.e. *.dpr, *.pas, *.dfm, *.res, *.i.e.:

8.1 enters the mail embedded in the electronic educational resource;

8.2 selects the address of the teacher or other registered users;

8.3 in the "subject" field, writes the name of the practical task "Managing the properties of graphical visual components in run time". Development of the SHAPE DEMO program.

8.4 in the "file" field, in order of priority, selects the components of the project *.dpr, *.pas, *.dfm, *.res, *;

8.5 sends the completed task to the teacher by E-mail.

Management and control over the progress of the student's independent work. The completion of tasks by the student is managed by e-mail through various forms of control and training:

- consultations (installation, thematic). During these consultations, students should comprehend the information received, and the teacher should determine the degree of understanding of the topic and provide the necessary assistance;

- follow-up control, during which the teacher conducts an interview with the student, reviews the performance of practical tasks and exercises;

- current control is carried out during the verification and analysis of certain types of independent work of students, performed according to an individual plan;

The final control is carried out through a system of tests and examinations provided for by the curriculum. Forms of control should be adequate to the levels of assimilation: the level of understanding, reproduction, reconstruction, creativity.

We recommend to use test forms of the final control more widely. Test control of students' knowledge and skills differs from other forms of control in its objectivity, saves the time of the student and teacher, has a high degree of differentiation of the subjects in terms of knowledge and skills and is very effective in the implementation of rating systems, makes it possible to greatly individualize the learning process by selecting tasks for independent work, allows you to predict the pace and effectiveness of each student's learning.

Testing helps the teacher to identify the structure of students' knowledge and, on this basis, to reevaluate the methodological approaches to teaching in the discipline, to individualize the learning process. It is very effective to use tests when a student performs independent work.

Our electronic educational resource provides for self-control carried out by the student in the process of studying the discipline "Computer Science". The student tests his knowledge and skills until he receives the maximum score that satisfies him.

Evaluation of the results of the student's independent work.

The teacher evaluates, according to the criterion

developed by him, the work performed by the user (student) and the assessment is sent by e-mail to the student.

The criteria for evaluating the results of extracurricular independent work of a student can be:

- the level of mastering the educational material by the student;
- the student's ability to use theoretical knowledge in the performance of practical tasks;
- the validity and clarity of the presentation of answers.

Conclusions. Online learning has long ceased to be a set of lectures that can be viewed on a computer. Today it is an effective tool for gaining knowledge. Distance learning technologies have reached a new level and

become more accessible. The article proposes a model for organizing extracurricular independent work of students in an agricultural area using online technologies. A form of organizing independent work using electronic educational resources is proposed, including the following stages: development and issuance of assignments for independent work; statement of the purpose of the task; drawing up a work plan; instructions for completing the task; guidance and control over the course of independent work of the student; evaluation of results. Detailed instructions are given for performing a specific task in computer science using an electronic educational resource developed by the authors of this article.

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