Proceedings

2022 2nd International Conference on Technology Enhanced Learning in Higher Education (TELE)

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Welcome to TELE2022!

Dear conference participants,

it is a great honor and pleasure to welcome all of you to the 2nd International Conference on Technology Enhanced Learning in Higher Education (TELE).

The first TELE2021 conference brought together over 180 participants from 11 countries. Due to the COVID-19 pandemic, the conference was held in a mixed format. More than 80 reports were presented during two days of the conference.

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 2022 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.

TELE2022 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. 97 papers were submitted and only around 80 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 TELE2022!

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Computing & IT Education

Model of Organizing Online Learning for Students in Agricultural Area

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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

Keywords—model, informatization of education, means of information and telecommunication technologies, teaching electronic educational resources, online technologies.

I. INTRODUCTION

Today's reality is such that there is an intensive penetration of digital technologies and the Internet into all spheres of life, including education. The Internet is becoming an integral part of culture, education, science and economy. The World Wide Web has opened up access to vast amounts of information and online learning.

At 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 [1-3].

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.

II. PROPOSED METHODOLOGY

Features of online learning

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

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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.
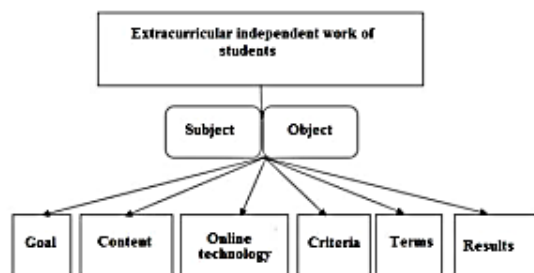

Fig.1 Model of organization of independent work of students using online technologies

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 (Fig. 1).

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 [8-11].

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 [12-16].

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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.

III. 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.

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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.

IV. CONCLUSIONS

The article presents a model for organizing extracurricular independent work of students using online technologies. A form of organizing independent work using electronic educational resources is proposed, which includes the following steps: development and issuance of tasks 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 the student's independent work; evaluation of the results. Detailed instructions are given for completing a specific task in computer science using an electronic educational resource developed by the authors of this article.

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CERTIFICATE OF PARTICIPANCE

This is to confirm that the presentation

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was made by

Shakhnoza Ubaydullaeva

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