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ORGANIZATION OF INDEPENDENT STUDENTS' WORK IN THE ELECTRONIC INFORMATION AND EDUCATIONAL ENVIRONMENT

Shumisat Ismailovna Bulueva (a)*, Aza Rumanovna Dadaeva (b),
Lilia Bernakoevna Gandarova (c)
*Corresponding author

(a) Chechen State University A.A. Kadyrov, 32, Sheripova str., Grozny, Russia, sovdat@list.ru
(b) Chechen State Pedagogical University, 33, Kievskaya str., Grozny, Russia, azalija7@mail.ru
(c) Ingush State University, 7, I.B. Zyazikova str.,,Magas, Russia, gandarova67@mail.ru

Abstract

The article studies the process of organizing students' independent work in the electronic information and educational environment of the university. It is concluded that to improve the quality of independent work, the study of educational and scientific literature and familiarity with audio and video materials should be provided. The reliability of the functioning of electronic educational materials is due to the development of educational and methodological support. The electronic information and educational environment are saturated with modern information resources, containing such components of educational activities as: educational, extracurricular, and research activities, as well as monitoring and evaluation of learning outcomes. The article defines the content basis for the construction of educational material for the formation of professional, general professional, and special (professional) competencies in the process of performing assignments for independent work. The article presents tasks using interactive technologies that involve constant interaction and educational dialogue between the teacher and students, between students in a group, and between students and content. An experimental study was carried out to organize the independent work of students using electronic information and the educational environment. This study has demonstrated that the training program used as part of the experiment is effective for building independent work while increasing motivation for learning and arousing interest among students. The work carried out is aimed at the formation of professional competencies of students in the discipline "Pedagogy". The use of game elements and feedback elements makes the process of independently mastering the discipline more dynamic.

1. Introduction

The traditional educational system is going through a crisis because it is "sharpened" mainly for the transfer of knowledge, and not always relevant, and does not provide practical skills. Today, it is more important for a graduate not to master several subjects but to learn how to search for and process information, think creatively and work in a team, and offer their ideas.

The introduction of federal state educational standards of higher education predetermined the need to change the methods of teaching students, and the need to study new forms of organization of the educational process. New forms of organization of the educational process are characterized by the creation of a space where the student can influence the organization and content of the educational process in higher education, and where the main part is devoted to independent work. The educational process in higher education should be organized in such a way that a significant part of the educational work of students is built on independent activity, and the electronic information and educational environment can become the main tool for the development of independent work of students.

New technologies would not be possible without innovation in education. New technologies have allowed humanity to create smart electric cars with autopilot (for example, Tesla), and virtuoso robots, and made it possible to send the first tourists into orbit for the first time. It is thanks to the modernization of technologies that high-class specialists appear in this area, changing the world for the better and driving scientific and technological progress. The electronic information and educational environment are becoming a bridge between the modern economy and its needs for new specialists and the desire of people to find themselves in a rapidly changing world.

2. Problem Statement

The article deals with the problem of organizing independent work of students in the electronic information and educational environment of the university. Electronic information and the educational environment are necessary for the organization of the educational process in general and the independent work of students. The electronic information and educational environment allow the creation of a single workspace for both teachers and students and the design of learning tasks that meet the new standards of education.

3. Research Questions

The subject of the study is the independent work of students in the electronic information and educational environment.

4. Purpose of the Study

The purpose of the article is to identify the features of the organization of independent work of students in the electronic information and educational environment.

5.   Research Methods

During the study, the following research methods were used: analysis of information and educational resources, analysis of the federal state educational standard of higher education, analysis of recommendations, practices, and experience in the use of distance learning technologies in the modern realities of the university.

6.   Findings

In the Russian Federation, legal acts put forward requirements for the implementation of existing educational programs, where the possibilities of the electronic information and educational environment are considered a tool for implementing the educational program.

Let us turn to the most general properties of the organization and management of independent work, the advantages of the means of the electronic information, and the educational environment. These properties are manifested in the fact that their application makes it possible to partially automate the process of diagnosing the level of knowledge formation in the academic discipline, individualize the pace and mode of the student's independent work, and ensure the interactive nature of learning.

In modern studies, the concept of "independent work" is associated with the quality of independent work of students and the quality of their professional training. Also, independent work is associated with the support of the process of educational work by a tutor, and the use of computer technology. This organization of the educational process notes the need to move from already acquired knowledge to the independent acquisition of knowledge that will be useful in mastering a future profession (Bulueva et al., 2021).

The works of the famous scientist, Serikov (1994) asserts the improvement of self-education and the purposeful preparation of students for self-education. Serikov also considered the possibility of mutual transformation of "independent work and self-education".

To date, many various articles and theses have been published that address issues of effective independent education. But when considering this issue, it should be noted the existing points of view regarding the issues of independent learning, as well as identify the main guidelines for the implementation of independent work. Teachers are focused on the results of the educational process. They constantly ask themselves the question of what independent work should be and in what forms it should be carried out. We note that a huge role in the formation of an independent, active, and purposeful personality is played by the skill of the teacher to convey educational material to the student.

We take as a basis for our research the fact that the independent activity of students can be considered 1) as a type of activity that contributes to the development of cognitive interest, 2) as a set of pedagogical conditions that ensure the management of students' independent work and contribute to the process of self-knowledge and self-development.

Independent learning activities can be implemented by students at different stages of the learning process. Also noteworthy are publications on the issues of activating students' independent learning activities using stimulation. The use of stimulus situations is aimed at creating personality-oriented motives that encourage students to make independent decisions and actions.

In connection with the development of information and communication technologies in recent decades, the features of the subjects of educational activity have changed significantly. In particular, it should be noted that recently, under the influence of a new communication space, a new generation of young people has formed, immersed in the field of constant information choice. This generation, as a rule, uses many information sources, preferring multimedia rather than textual materials. Among the main psychological and pedagogical features of students of the new generation, researchers distinguish the following:

- students prefer to complete complex rather than individual tasks;
- students prefer learning through images, audio, and video rather than text;
- students prefer interactive forms of learning rather than individual and isolated ones (Afanasiev & Kazanskaya, 2021, p. 43).

The paradigm of modern education today justifies the need to use a new educational environment as a multidimensional space, commensurate with the needs of children and adolescents, and corresponding to the trends and dynamics of modern culture.

In the Federal State Educational Standard of Higher Education 3+, electronic information and the educational environment are key elements in ensuring the educational process. Electronic information and educational environment should provide:

- access to curricula, work programs of disciplines (modules), practices, publications of electronic library systems, and electronic educational resources specified in work programs;
- fixing the course of the educational process, the results of intermediate certification, and the results of mastering the program;
- conducting all types of classes and procedures for assessing learning outcomes, the implementation of which is provided for using e-learning, distance learning technologies;
- the formation of an electronic portfolio of the student, including the preservation of the student's work, reviews and assessments of these works by any participants in the educational process;
- interaction between participants in the educational process, including synchronous and (or) asynchronous interaction through the Internet.

In the work of Grigoriev and Grinshkun (2008), the electronic information and educational environment is considered as "a software and telecommunication environment based on the use of computer technology, which implements high-quality information support for students, teachers, parents, the administration of an educational institution and the public with uniform technological means and interconnected content" (p. 75).

According to Andreev (2020), the electronic information and educational environment is a pedagogical system plus its provision, i.e., subsystems financial and economic, material, and technical, legal, and marketing, and management (p. 208).

The electronic information and educational environment is aimed at

- formation of a new level of information to support the educational process,
- formation of a student's personal information space based on interactivity and remoteness,
- activation of independent work,

- individualization of training,
- the creation of a more flexible schedule of educational activities for each student, ensuring knowledge control (Nazarov, 2016, p. 70).

From the definitions of the concept of electronic information and educational environment, it follows that the electronic information and educational environment is interpreted as an environment of the educational process, which includes electronic, information, technical, and educational subsystems, to orient students to receive qualitatively new educational results.

The formation of an interactive IEEE allows the creation of additional tools for analyzing the performance indicators of the educational process, qualitative and quantitative changes, problems and shortcomings, and tools for conducting various monitoring. The formation of IEEE occurs, as a rule, based on one or another e-learning platform that provides the organization and implementation of the learning process from goal setting to final control. These include WebTutor, REDCLASS, INSTRUCTOR, Moodle, Prometheus, etc. The capabilities of these platforms allow real-time learning activities.

The use of electronic information and the educational environment based on the above platforms has the following advantages:

- reducing the time needed to develop training content;
- modern level of informational and functional, educational opportunities are provided;
- easy accessibility of the course interface;
- the process of diagnosing the level of formation of knowledge in the academic discipline becomes partially automated,
- individualize the pace and mode of independent work of the student,
- ensure the interactive nature of training,
- the electronic educational environment takes over part of the teacher's functions.

The key driving force behind the development of modern university education is online learning platforms with courses, training, and webinars. Internet platforms allow interacting with each other in real-time with the ability to customize the interface following user needs. At present, the following technologies are becoming relevant in the system of higher education: knowledge management technologies, intellectual systems, electronic information, educational environment, distance learning, and e-learning systems are being actively introduced, which have become an integral part of the learning process in higher education.

Based on the foregoing, we can conclude that one of the conceptual approaches to the implementation of domestic education at the present stage is the environmental approach. In our time, there is growing interest in the formation of effective electronic information and the educational environment of higher educational institutions as a defining criterion for the functioning and development of a digital university.

The university website provides access to curricula, work programs of disciplines (modules), practices, publications of electronic library systems, and electronic educational resources specified in work programs.

The electronic library system is part of the electronic information and educational environment of the university to provide individuals unlimited access to electronic educational resources for students and provides access to electronic educational publications specified in the work programs of disciplines.

Fulfillment of the requirements of the Federal State Educational Standard of Higher Education, even only in terms of the electronic information and educational environment, already imposes certain additional functions on universities. Without the electronic information and educational environment of the university, the fulfillment of the above functions and the preservation of the high quality of education is impossible.

Electronic courses do not replace traditional forms of education but support and supplement them, increasing the efficiency and quality of the educational process. E-courses provide an opportunity to demonstrate educational content, set tasks remotely, control knowledge, and use multimedia technologies. Modern conditions are the conditions of a complex epidemiological situation. The transfer of classes at all levels and forms of education was carried out in a distance format. Under these conditions, the electronic information and educational environment can become an important resource for maintaining the quality of the educational process and controlling the level of knowledge of students.

In the process of focusing on the future, students determine the ways of professional and personal growth through the development of cognitive processes.

Students often demonstrate variability in thinking, which confirms their mental originality. Ways of acquiring and assimilating information, the ability to combine it, to look for non-standard ways to solve the problem. The ability to solve divergent problems is the most important condition for success in studies: victories in scientific research, and the creation of new methods (Belyaev, 2019). The use of such tasks in the learning process stimulates students' cognitive activity and motivation. The desire to take advantage of instability and ambiguity is one of the main characteristics of the high class. Thinking productivity is seen as the ability to generate many ideas. Intuitive thinking is characteristic of many students. Intuitive thinking underlies forecasting skills and depends on the ability to solve divergent problems, accumulate ideas, and build action strategies. In the future, intuitive thinking is realized in the ability to foresee and is one of the main indicators of their talent. In this case, through the electronic information and educational environment, the teacher can in the learning process:

- add information, keep records, save the work and reports received from students;
- from the block "statistics" you can get information about the need to make changes to the educational process;
- using electronic information and the educational environment, it is possible to see the necessary parts of the work of students and check their independent activities.
- Regardless of the discipline being studied, the process of mastering knowledge and skills has a common logical structure and includes four stages:
- preparation for classes, a collection of primary information about students' knowledge;
- setting the objectives of the lesson, presenting the program for mastering theoretical knowledge and practical skills;
- current work, presentation of the necessary educational and practical material, guidance, and control of training;

- summing up, checking, and understanding the results (Miklashevich & Parfenov, 2020, p. 15).

Each stage corresponds to certain functions of the electronic information and educational environment. Even though the students can master the educational material with minimal help from the teacher, there are sections in the study in which they can make mistakes, then the electronic information and educational environment provide the necessary assistance.

The electronic information and educational environment help in organizing the independent work of students, as they expand the educational opportunities of students and allow all types of training and monitoring of their progress.

If the student has difficulties in mastering the subject, the teacher can change the sequence of the proposed material, add comments and explanations, conduct a consultation via videoconference

So, independent learning activity using electronic information and the educational environment is an activity aimed at solving the problem of teaching students the necessary knowledge, skills, as well as the skills to acquire, systematize and organize independent work. The upbringing of a knowledgeable, thinking, active person, ready for productive professional activity, can be helped by a new approach to organizing the educational process.

Thus, electronic information and the educational environment are key elements in ensuring the modern educational process. The electronic information and educational environment are a set of electronic educational and information resources, telecommunications, and software, based on which the functioning of technologies used in the educational and administrative process is built.

This study is because independent learning activities of students can be considered as a type of activity that contributes to the development of cognitive interest. At the same time, the independent educational activity of students is a system of pedagogical conditions that ensure the management of independent work of students and contribute to the process of self-knowledge and self-development.

Independent learning activity using an electronic educational resource is understood as an activity aimed at solving the problem of teaching students the necessary knowledge, skills, as well as the skills to acquire, systematize and organize independent work through an electronic educational resource. The content base of an electronic educational resource is formed based on a structural-content model of students' independent learning activities.

As part of the study, a study was conducted on the self-organization of students and the features of the presentation of educational material. Based on the goal set, the tasks of empirical research were determined, and the sequence of solving determined the structure and stages of our work.

The study was conducted at the Chechen State University named after A.A. Kadyrov", which was attended by 2nd-year undergraduate students in the training direction – Pedagogical Education. The age of the participants in the experiment was from 19 to 23 years. All respondents were divided into two groups. The number of participants in the control group was 28 people, and the number in the experimental group was 30 people. Both groups underwent an experiment, where the features of the organization of independent work of students and the level of independence of students were revealed. As part of the study, a formative experiment was conducted with the participants of the experimental group, where students completed tasks proposed in the framework of a specially designed curriculum for the subject being studied. The program included interactive exercises, games, and creative tasks. After the

formative stage of the study, the second survey of students was conducted. The obtained materials served as the basis for the subsequent analysis of the effectiveness of the formative experiment and the identification of the most effective methods of work to maintain educational motivation and the desire to study independently.

The conducted experimental study was aimed at organizing the independent work of students using electronic information and an educational environment based on the Chechen State University. A.A. Kadyrov". This study has demonstrated that the training program is effective for building independent work while increasing motivation for learning and arousing interest among students. The work carried out is aimed at the formation of professional competencies of students in the discipline "Pedagogy". The use of game elements and feedback elements makes the process of independently mastering the discipline more alive.

7. Conclusion

The basis for organizing independent work of bachelor students is the use of educational resources in the field under study in their educational activities. In the course of the study, the place of the academic discipline in the system of bachelor's training was determined, which is aimed at forming a student's professional and social culture, the formation of professional competencies, including both theoretical and practical components.

The results of the practical work within the framework of the research topic make it possible to formulate the conditions for the effective organization of independent work in the IEEE:

- the use of interactive methods and technologies will contribute to the active interaction of subjects of educational activity both at the interpersonal level in the process of communication with each other and at the cognitive level;
- the use of gaming methods and technologies can increase interest in the discipline being studied, increase the motivation for doing independent work;
- the fulfillment of creative tasks will help to increase the level of general cultural competencies of students.

An analysis was made of electronic materials on pedagogy and the possibility of their use in the educational process to improve the quality of education. To create a rich information environment, it is necessary to use external Internet resources on pedagogy that correspond to the topics of the modules and have high-quality and up-to-date information that meets the conditions of interactivity and multimedia presentation of the material.

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