

The implementation of online training courses in the university's information and educational environment

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Abstract—The problem and purpose of the article. The article discusses the principles of implementation of online training courses in the information and educational environment of a higher educational institution. The purpose of the article is to theoretically substantiate and practically implement the features of using online training courses in the conditions of the information and educational environment of a higher educational institution.

Methodology and research methods. The methodological basis of the study consists of statements about the essence of the personality in the unity of its creative activity; system-activity approach; competence approach; personality-oriented approach; competence of education informatization.

The following research methods were used:

- theoretical: analysis of psychological and pedagogical literature and Internet resources on the research problem, conceptual analysis of the dissertation research carried out earlier on methodological modeling; problems of informatization, mass communication and globalization of education.

- empirical: conversation, questioning, testing, ascertaining and formative experiments;

- statistical: quantitative and qualitative processing of empirical data.

Results. The peculiarity of the implementation of online training courses considered. In order to improve performance, we developed and introduced into the educational process the online training course "Portal technology in pedagogical education", which implies the implementation of the final certification work, passing the final interdisciplinary exam.

Conclusion. According to the analysis of the literature on research problems, it can be concluded that the use of online training courses in the modern information university is ineffective. The implementation of online training course at the university confirmed its

effectiveness by revealing individual abilities, implementing them in a variety of activities, the purpose of which is to educate a high-class creative-minded specialist.

Key words—*information and educational environment, online training course, university*

I. INTRODUCTION

At present, the educational system, including pedagogical, is changing due to changes in society. The introduction of new pedagogical ideas, the development of innovative technologies, the development of qualitatively new personal categories are an integral part of the modern teacher, characterizing his professional competence. These processes and changes in the expected level of efficiency and effectiveness of the educational process necessitate the use of innovative technologies in pedagogy. Network technologies are one such technology in higher education. The scope of the concept of "network technology" is disclosed in the works of E.S.Polat, M.V.Moiseeva. They believe that "...network technologies of various forms can be used for the interaction between teachers and students, as well as to support the information flow between them: e-mail; teleconference by e-mail (off-line) or online (on-line); mail servers; electronic bulletin boards; electronic textbooks; electronic libraries; access to databases through electronic no4Ty (off-line) or online (on-line); television conferences" [1].

This study is aimed at solving the problem: what are the features of the implementation of online training courses in the conditions of the information

educational environment of the higher educational institution.

The purpose of the article is to theoretically substantiate and practically implement the features of using online training courses in the conditions of the information and educational environment of a higher educational institution.

II.METHODOLOGY

Problems of designing an educational process based on computer network technologies are considered in the works of Yu.A. Golovin, A.A. Sukonchikov, S.A. Yakovlev, A. Kashkarov [2]. V.O. Schwartzman discusses the principles of building synchronous data networks with circuit switching, which is one of the modern trends in the development of digital information technology, in the book. Along with this work V.L. Broydo, O. Ilina, V. Leontiev, A. Artemov, A.A. Tsvitun, V.I. Korneichuk is also very useful for specialists associated with modern information technologies and for a wide range of computer users [3].

The term "Network Technologies" is found in a textbook for university students, edited by V.D. Budayev "Mathematics and Computer Science", which deals with the technical side of this issue, it is not connected with the solution of learning problems [4]. M.A. Minakova, speaking of the trends in the development of distance learning technologies, points to the "increasing role of network technologies in education [5].

The Federal Law "On Education of the Russian Federation" notes that the preparation of a person for life and work in the new age of information is among the main goals of the state information policy. This requires the continuous development and improvement of the education system and professional training based on the introduction of new educational technologies and principles of the organization of the educational process, including using network technologies [6].

After analyzing the scientific and pedagogical literature, the network technologies in training imply the following:

Network interaction in training is technology that uses the information and communication capabilities of local, territorial computer networks to organize the process of interactive interaction between teachers and students with learning tools that are invariant to their location in space and time.

A special place in the information-educational environment of the university is occupied by network interactive technologies based on Web 2.0 technology. As the author of [7] notes, these technologies allow to communicate with each other, using the richness of the digital language with its many multimedia formats.

I.V. Robert pays special attention to the description of the unique capabilities of network technologies, the implementation of which creates the prerequisites for unprecedented in the history of pedagogy of growth and strengthening of the educational process, as well as

creating methods aimed at shaping the personality of the student.

I.V. Robert considers the following functions of network technologies as these possibilities: immediate feedback between all subjects of the educational process; computer visualization of educational information; archival storage of sufficiently large amounts of information with the possibility of its transfer; possibility of easy access and user access to the central data bank; automation of computational processes, information retrieval activities, in processing the results of an educational experiment with the possibility of repeating a fragment or experiment; automation of information and methodological support, as well as the organization of educational management and monitoring the results of mastering knowledge [8].

According to T.P. Voronina, network technologies, without "suitable theoretical developments", "often without the required pedagogical understanding and creative help" are being introduced into the learning process [9].

At the same time, the psychological and pedagogical aspects of network technologies are quite diverse. These are issues of human and computer interaction, changes in thinking, memory, imagination, patterns of human conversation and computers, processes of understanding, evaluation and processing of information, the emotional sphere.

As noted by M.L. Kondakova and E.Ya. Podgornaya, network technologies in the educational process, have the following properties [10]:

- flexibility, adaptability (the ability to perform tasks individually);
- interactivity (the possibility of learning interactively to all participants in the educational process);
- asynchrony (the ability to carry out technological training, regardless of time, convenient schedule);
- openness (instructors are given access to many sources of educational information, such as electronic libraries, databases, electronic resources of various organizations and educational institutions, etc.);
- massiveness (the effectiveness of technology education does not depend on the number of students);
- availability (the possibility of equal provision of the job, regardless of location).

The positive properties of network technologies will contribute to the development of independent, search, research activities of graduate students to organize and enhance their cognitive, professional, and creative interest.

B.S. Gershunsky, V.V. Rubtsov, O.K. Tikhomirov notes that computer networking technologies influence the development of theoretical, creative, and modular-reflective thinking of students. Computer visualization

of educational information has a special impact on the development of ideas that occupy the main place in figurative thinking, and images of ideas about certain phenomena and processes in the student's memory enrich the perception of educational material that contributes to its scientific understanding [11].

The use of network technologies in education introduces various changes in human development that relate to both cognitive and emotional-motivational processes that affect a person's character, while at the same time increasing the cognitive motivation of students working on computers. The use of network resources in training contributes to increasing the share of independent educational activities and enhancing the learner, "shaping the personality of the learner through developing his ability to educate, self-learn, self-educate, "actualize, self-realize" [12].

It should be noted that the development of the Internet is extremely intense. Network technologies are the sphere of information technologies, the rate of development of which exceeds the rate of formation of methods for their use in the educational process.

A.A. Andreev considers the possibility of providing interactive pedagogical communication of participants in the educational process as an important methodological feature of network technologies [13]. B. Berinfeld identifies five functional possibilities of using networks in education, which are directly related to independent work:

1. Teleaccess to databases, various libraries and reference books.
2. Electronic publications.
3. Telepresence.
4. Telementor, virtual teacher.
5. Telecollaboration, work on projects [14].

Today, it is recognized that independent activities in network education, compared with full-time education, have a number of new educational characteristics:

- a sudden increase in the volume and diversity of acceptable educational and scientific arrays, a swift and effective approach to world cultural values from any locality where there is access to the Internet, the use of cyber-libraries;
- the passage of barriers in space and time, the adoption of new information and the likelihood of its exchange between teachers and students;
- discussion of psychological and pedagogical issues with people from other cities and regions;
- implementation of joint distance classes;
- professional communication of teachers with colleagues and scientists, regardless of their territorial location;

- strengthening the active role of the learner in education in the choice of means, forms and rates of training in various fields of education;

- to increase the creative component of the educational process through the use of interactive forms of education, multimedia educational programs, individual distance learning;

- to expand the field of communication of students, for example, a competition with a huge number of peers located in different cities and countries, through participation in remote projects, contests, competitions; online publication and electronic distribution of students' work, their examination and assessment;

- education is more comfortable, in comparison with traditional, emotional and psychological conditions for the self-expression of the trainer; the possibility of demonstration of the products of their activities for everyone; exclusion of psychological barriers and problems, elimination of errors in oral communication [15].

According to foreign authors [16], network education is planned education, in which teaching is separated from learning, and, therefore, requires special methods for developing textbooks, special teaching strategies, special communication tools through networking or other technologies, as well as special organizational and administrative decisions.

S.A. Shchennikov believed that the form of education, which is distinguished by the learning texts, which are particularly separated in space and time, by the contact of students and trainees, is network training [17]. Management of training is carried out through the installation lectures and with the help of instructional materials distributed by mail or / and through modern means of communication, as well as during the periodic face-to-face communication of students and trainees".

P.M. Lemech [18] considers that network education is an interactive interaction both between the student and the student, and between them and the interactive origin of the information resource, reflecting all the components inherent in the educational process.

A.N. Bogomolov is studying network education in the context of distance learning and believes that information and communication technologies unleash their potential in distance learning (DL). In this concept, distance learning is understood as a "targeted synchronous or asynchronous process of interaction between subjects of the educational process with each other and with distance learning tools using a specialized educational environment based on the use of information and telecommunication technologies" [19].

A.N. Bogomolov identifies the following components of distance learning [19].

1. Technological component. It is based on the material and technical base: hardware, software,

technical support, software maintenance, system and content updates.

2. The content component. A structured learning content provides various types of electronic learning resources.

3. Organizational component. It is responsible for the organization and conduct of the educational process using various models of distance learning.

These components make it possible to create a unified information and educational space, which includes the educational process, its informational content, management of this process, and modern educational technologies.

III. RESULTS

In order to achieve the goals most effectively, it is necessary to make sure that there are certain prerequisites for their implementation. The point is that the independent work of a specialist with the use of network technologies acquires such objective properties that would form a strong motivation for learning and cognitive activity, develop the creative abilities of students, allow them to be fully implemented.

To achieve the above pedagogical goals, it is necessary to consider the didactic requirements for software for educational purposes. Their description is given in the works of TA Ilina, Yu.A. Pervin, I.V. Robert and others. We can distinguish the following requirements among them:

1. Ensuring scientific.
2. Ensuring accessibility.
3. The requirement of adaptability to the individual capabilities of the student.
4. Ensuring systematic and consistent learning.
5. Providing computer visualization of educational information.
6. Ensuring the consciousness and independence of learning, which implies the provision of means for the program of independent actions with a clear understanding of the specific goals and objectives of the training activities.
7. Ensuring the revitalization of the student.
8. Ensuring the strength of learning (by self-control and self-correction of educational activities).
9. Ensuring an interactive dialogue, involving the organization of the mode of interactive user interaction with the program.
10. The requirement for the development of intellectual potential.
11. The requirement of software closure [8, 20, 21].

The online training course is an integrated e-learning resource focused on the implementation of e-learning complexes through a learning management system developed in accordance with the educational

program, the curriculum work program, as well as other regulatory, technical and methodological documents adopted at the university. This resource involves the mandatory interaction of all participants in the educational process, as well as self-education in the framework of the curriculum [19].

In our opinion, the online training course is an integrated-purpose educational program system that ensures the continuity and completeness of the didactic cycle of the learning process: it provides theoretical material that provides training activities and knowledge level control. In other words, it is a program-methodical complex that provides the opportunity to master the training course or its large section using a computer independently or with the help of a teacher.

The goal of mastering the online training course "Portal technology in pedagogical education" is the formation of future masters in the system of knowledge and skills in creating a federal information space based on the combination of regional and university computer networks, information systems and educational programs.

The study of this discipline takes 2 credits (72 hours), of which:

- 4 hours of lecture;
- 16 hours practical classes;
- 52 hours. Independent work of the student.

The online training course on the subject "Portal technology in teacher education" has the following structure:

1. Instructional block (description of objectives, organization of the educational process, guidelines for self-study of the course);
2. Information block (educational information, structure of the training manual);
3. Communicative block (electronic seminars, consultations, remote workshops, laboratory work);
4. Control block (test and rating control in authorized mode);
5. Networking (webinar, chat, forum, contacts)

When preparing for the course "Portal technology in pedagogical education", the following forms of education are used.

Lectures. The main purpose of the lectures is to study the basic theoretical principles: concepts, algorithms, the basics of portal technology. The lecture is the leading link in the entire educational process, a way of presenting the bulk of theoretical material that ensures the integrity and completeness of the perception of the trainers. The lecture should provide a systematic basis for scientific knowledge in the discipline, disclose the state and prospects of development of the relevant field of science and technology, focus the attention of students on the most complex, core issues, stimulate their active cognitive activity and contribute to the formation of creative

thinking. The lecture should develop an interest in studying the discipline, form the basis for independent work. For the visualization of educational information we have developed presentations, we also selected a demonstration material, which should contribute to the digestibility of the material.

Practical classes. Practical exercises are intended for further understanding of theoretical material, the study of specific practical techniques, the solution of typical problems. Practical exercises are designed to deepen, expand, detail the knowledge gained at the lecture in a generalized form, and promote the development of professional skills. Such classes develop scientific thinking and speech, allow testing students' knowledge and acting as a means of quick feedback.

Online Testing. Online testing is used repeatedly during the training period. During the course, students have access to tests for training and self-control. Periodically, the teacher reports on control tests, the timing of their implementation. Students perform them at a specified time interval at any convenient time. The teacher is available statistics on the test, academic group and individual students.

Networking increases the efficiency of resource use and gives the right to choose educational services, i.e. improve the quality of educational services.

The above objects of the site allow the implementation of an automated educational process with the following functions: effective management of training and cognitive activity of future masters in studying the network course; a rational combination of various technologies for the presentation of course material (text, graphics, audio, video, animation); ensuring the organization of communication of participants in the educational process based on network technologies.

The online training course contains methodological materials, additional illustrative materials, necessary materials on related disciplines, as well as links to useful online resources:

- working curriculum discipline (curriculum thematic);
- guidelines for the study of discipline for students;
- educational materials (full text of lectures, presentations, additional illustrative material, interactive textbook, practical exercises);
- glossary (dictionary);
- material and technical support of the discipline.

Future masters using this network course independently acquire new knowledge, improving the quality of knowledge in a particular discipline. Also, these courses overcome the shortcomings of the traditional methods of working with educational material.

At the preparatory and exploratory stage, the degree of compliance of the educational process at the

university with the goals and objectives of preparing future masters for the use of online training courses in modern conditions was studied; a stating experiment was conducted in order to determine the readiness of graduate students to use online training courses in the conditions of the university's educational environment.

The experimental stage was devoted to the identification of conceptual approaches defined in the theoretical part of the study, based on the results of the ascertaining experiment; an online training course "Portal technology in teacher education" was developed. Also, the effectiveness of the developed web-based training course has been proven.

At the summarizing stage, the interpretation of the data obtained in the experimental work, the systematization and generalization of the research results, the publication, the formulation of conclusions and conclusions were carried out.

The pedagogical experiment was carried out in several stages from 2015 to 2018. The experimental group consisted of graduate students enrolled in the specialty "Pedagogical education".

The implementation of the online training course took place three times. For the objectivity of the experiment, the participating groups of graduate students were selected with approximately the same level of background knowledge and skills using network technologies. There was such a subjective factors as the presence of students who are more motivated to study modern means of network technologies for other reasons and students who have a higher level, acquired through additional self-preparation. One teacher conducted training in all groups.

At the preparatory and exploratory stage of the pedagogical experiment with the help of a questionnaire, purposeful pedagogical observation, conversations with graduate students, their level of interest and awareness in using the online training course was identified. A site was developed, which hosted the course "Portal technology in teacher education." We also identified issues that are the most difficult for graduate students to use network technologies in the study of a particular discipline: a large amount of information (45%), its abstractness (37%), the presentation of educational material outside the system (35%), insufficient practical orientation of the studied questions (17%). It turned out that the majority of graduate students (81%) had never heard of the technology of network interaction, 19% had certain ideas and wanted to use them in teaching special disciplines.

To identify the initial level of formation of knowledge of graduate students, questionnaires and testing were conducted. As criteria, the completeness of assimilation, strength, consistency, independence and awareness were chosen.

Networking tools for monitoring and evaluating results such as tests, re-questioning, observation were used, which showed an increase in the interest of

graduate students by 33%, while 49% of students stated their desire to use online training courses in future professional activities.

According to the results of the preparatory and exploratory stage of the pedagogical experiment, the following conclusions were made:

1. The teacher, as the carrier of the information culture of the modern society of global mass communication, is the head of the educational process, a mentor for the trainee, an intermediary who not only teaches and facilitates obtaining the necessary educational information, but also creates it for use in the educational process. Therefore, the modern teacher should be given the opportunity to create electronic resources and use them when organizing training at distance learning courses. The online training course is developed in a visual instrumental environment and allows to implement the author's techniques in the practice of the teacher. Moreover, to develop such courses, the teacher does not need to delve into the technical aspects of this process and seek the help of specialists in the field of programming.

2. Masters need to study the development of online training courses in a special instrumental environment. This is due to the intensive development of distance learning technologies and the expansion of their use in education systems at all levels.

3. The future master should have an idea about the pedagogical, technical-technological and ergonomic aspects of creating and using online training courses, which will ensure the realization of its scientific and pedagogical potential and educational and methodological potential of network education.

Thus, the necessity of making additions to the content of information training of future masters in the field of network education was justified. The graduate student who will create electronic resources for the development of online training courses, and use them in their professional activities, should know:

- pedagogical expediency of using Internet technologies in the educational process;
- basic concepts and approaches to the classification of information and communication technologies in the field of distance education;
- principles of network education organization and its didactic features;
- stages of designing online training courses;
- conditions for effective organization of network education;
- requirements for the organization of the control of knowledge and skills of trainees in the process of network learning.

The results of the experiment showed that the range of capabilities of network technologies is large; in particular, it is possible with their help:

- to detect the difficulties of the graduate education and identify its causes;
- to develop the creativity of graduate students;
- to accelerate the process of learning special disciplines;
- to form general educational skills related to the perception, processing and exchange of information when preparing reports, writing coursework and essays, etc. ;
- to form skills related to the control of their own intellectual activity.

IV.CONCLUSION

According to the results of the study, it can be concluded that the use of online training courses for students and graduate students forms the following skills and abilities for them:

- to use the knowledge gained to integrate different academic disciplines;
- to determine the individual trajectory of teaching graduate students, showing ingenuity in solving professionally-oriented tasks;
- to reveal individual abilities, realizing them in a variety of activities, including the use of online training courses.

Analysis of the results allows stating the effectiveness of the implementation of the online training course in the discipline "Portal technology in pedagogical education", which is a component means of network technologies.

Experimental work has shown the high efficiency of the developed online training course for students and future masters. In addition, this course contributed to the improvement of all components of students' readiness for this type of activity, the effective development of this personal growth. This made the process under study manageable.

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