NETWORK MODEL OF DISTANCE LEARNING IN THE SYSTEM OF PROFESSIONAL DEVELOPMENT OF PEDAGOGICAL PERSONNEL

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Abstract. *The article covers the models of designing the methodological system of distance learning of advanced training. The author also commented on the process of designing an electronic textbook, the didactic component of the creation and use of an electronic textbook.*

Keywords: *network model of distance learning, information and communication environment, feature, technology, feature, improvement.*

It is known that the independence of our country created the ground for the implementation of fundamental reforms in the field of national education. Taking into account the modern requirements, the organization of regular improvement of educational programs of retraining and professional development of educational institutions is one of the urgent tasks of today.

Professional development of pedagogic personnel in the form of distance education provides for the pedagogue to pass intermediate and final certification through independent mastering of professional development programs at a state-certified professional development institution.

The choice of one or another model of distance education implementation depends on various circumstances of great importance. First of all, the insufficient level of development of the information and communication environment can be a limiting factor in improving the qualifications of pedagogic personnel.

Connecting to the Internet through low-speed telephone channels allows for limited access to the Web environment, making it difficult to use interactive Web technologies.

Nevertheless, even if access to any information technology is considered open, it is very important to determine the rational ratio of traditional educational technologies and modern network technologies.

Distance learning models can be a product of the information and communication environment in which the educational process takes place. However, the opposite can also be the case: the listed features of distance learning can lead to the creation of an information and communication environment that satisfies these features.

In order to generalize and systematize our views on distance learning in the professional development system, we will try to provide a basis for the types of distance education models.

Such foundations can be compared with the characteristics of distance education:

1) synchronicity of cooperation;
2) category of education received;
3) form of education according to the number of students;
4) types of educational materials used in the educational process;
5) use of additional communication channels;

6) types of communication;

7) the existence of traditional forms of cooperation in direct face-to-face form;

8) periodicity (speed) of cooperation between subjects in the educational process;

9) the level of compatibility of the system with the individual characteristics of educational subjects.

According to the first basis, the following models of distance education can be indicated:

Education:

1. The educational process is characterized by an almost complete lack of interaction between subjects.

2. The educational process is based on the cooperation of subjects in a completely asynchronous manner.

3. The educational process is based on synchronous individual counseling of the subjects.

4. The educational process is partially synchronously organized.

5. It is based on cooperation in a completely synchronous manner.

The educational process involves the use of various forms and methods in teaching, training and additional training on the basis of completely asynchronous cooperation of the subjects, and no real-time cooperation is envisaged. Mastering of educational materials is mainly done independently by the students themselves. Discussion of problematic issues, debates are organized asynchronously. In addition, it is possible to organize seminars or conferences, give advice on questions that arise in the process of mastering the educational material.

The second and third models can be called integrated type of cooperation models.

The second model envisages the organization of education in a synchronous manner only for conducting individual consultations. All other training is carried out in the same way as in the first model.

Synchronous instructional instruction involves real-time, instructor-led instruction that does not require the students to work as a team. In this order, only individual consultations are organized, in which the participation of the listeners can be defined as mandatory or optional according to the wishes of the listener.

The third model envisages conducting part of the training sessions in real time, in which mutual cooperation between the subjects of the educational process takes place. In this case, part of training sessions and consultations will be organized in real-time order, and part will be in asynchronous order. The ratio of these exercises may vary. However, the more synchronous training is planned, the more difficult it is to organize the educational process.

Separation of models is carried out at the stage of designing network resources, and then at the expense of the possibility of choosing educational tools and the cooperation of subjects of the educational process, individual and joint educational methods and forms of activity organization.

Thus, to design a methodical system of distance education of professional development.

We will explain the models taken as a basis.

Model 1. Completely distance learning in an information-communication environment with two-way communication, asynchronous cooperation, based on a resource in a specially created network, which provides the possibility of adaptation.

Model 2. Completely distance learning in an information and communication environment with two-way communication, on the basis of a specially created network resource, on the basis

of one-on-one synchronous consultations, which is intended to provide the possibility of customization.

Model 3. Full distance education in an information and communication environment with two-way communication, in the order of joint synchronous-asynchronous cooperation, based on the resources of a specially created network, which provides the possibility of adaptation.

Model 4. Completely distance learning in an information-communication environment with two-way communication, asynchronous cooperation, with the provision of customization, the use of additional educational materials along with network resources.

The following are the important features of the distance learning models under consideration:

- two-way type of communication;
- cooperation through networked information and communication environment;
- lack of face-to-face meetings of subjects of the educational process;
- use of the network resource as an educational basis.

The difference of the considered models is the synchronicity of cooperation; use of network resources as well as other educational materials: Internet resources, paper materials, digital resources, etc.; The means of cooperation between all subjects of the educational process are determined by the services of the information and communication environment.

The last difference is related to the organization of the educational process: choosing the forms of conducting training sessions, consultations; significantly affects the determination of the most effective teaching methods and the like.

Thus, the model of distance education includes an integrated information and communication environment with the role of various technological, pedagogical and organizational-methodical factors defined.

For the organization of distance education, a hypertext environment or Web-environment, which provides integration and delivery of all types of information, is effective. Such an environment also has the potential to provide a universal interface. The specified advantages of the Web make it possible to implement a number of tasks of distance education based on it, including creation of didactic tools, storage and delivery of educational materials mixed with text, graphics, audio and video materials.

The use of Web-technologies in the distance education environment becomes more effective as the level of interactivity, which is implemented through special mechanisms, is high.

The standard tools of the HTML language with the added capabilities of CGI applications are the most reliable and well-proven means of providing specified properties to web documents.

Based on the analysis of modern distance education technologies, it is possible to determine the limits of their organizational and methodical application in the distance education process. For this purpose, it is possible to consider didactic tools and organizational forms of distance education as elements of a whole pedagogical system.

Didactic tools of distance education manifest themselves as a tool for delivering, controlling and managing the content of students' cognitive activities. The same material can be presented with several educational tools (prints, audio, video, etc.), each of which has its own didactic capabilities.

Didactic tools are developed for the implementation of specific pedagogical goals and practical tasks. The need to effectively achieve these goals directs the formation of general principles that are implemented on the basis of further specific requirements.

Some of these principles are known from traditional teaching experience, while others have emerged from the active use of information and communication technologies in the educational process.

Didactic tools must meet the requirements for the correct and uniform use of terms and conventional signs. Standardized symbols must be followed for units of study introduced earlier or used in subsequent courses.

Electronic textbook is the main didactic tool of distance learning. Despite the widespread use of the term "electronic textbook", different authors have discovered different meanings for it. For example, some authors consider electronic textbooks to be related to the family of computer software: "Electronic textbooks are those that ensure the continuity and completeness of the educational process: provide control of training activities and the level of knowledge, mathematical and simulation modeling of computer display and service functions.

Educational software system designed for complex use, which provides access and interactive feedback.

It is quite common to look at the electronic textbook as an educational-methodical complex that allows students to learn the educational material independently.

If most of the rules of the concept of "electronic textbook" are summarized, then the electronic textbook remains, first of all, a software information system. Secondly, it is the programmatic implementation of the organizational and didactic system of educational activities that ensures the continuity and completeness of the educational process.

Thus, the difference in the rules concerns only the features of the electronic textbook, which are classified by the authors as "basic, first-class, important".

In our opinion, the didactic component of creating and using an electronic textbook is superior in distance learning.

The problems of methodological support of the process of creating an electronic textbook arise from the fact that the authors have to face the difficulties of turning their knowledge and professional experience into the knowledge of students. Conceptualization of the author's experience in the content of the textbook being created is one of the means of solving the problem, the logic of the presentation of the educational material.

The core of the electronic textbook, like many other types of didactic tools, consists on the one hand of the educational text, which provides a complex synthetic product of intellectual-linguistic activity, and on the other hand, of modern methods of recording and transmitting information.

An important role is played by the selection of logically acceptable options for the formation of certain textual information. These issues should be resolved on the basis of normative principles (laws, regulations, recommendations) that are being developed and constantly improved.

An electronic textbook is a teaching tool that contains educational content like any other didactic material.

The structure of the electronic textbook can be represented in the form of a scheme as a form of the content of the educational material.

To create an electronic textbook on the web, the teacher who develops it is required to have the same knowledge in the field of science in which the textbook is being created, as well as in the field of information technology. In practice, in most cases, the cooperation of science teacher, pedagogue and information technology specialists, including a psychologist, a training control specialist (testologist), a form designer (webmaster), and a coder (programmer) is envisaged. These circumstances greatly increase the labor of creating an electronic textbook and slow down the process of distance education development to a certain extent.

Currently, there are two main approaches to the design of electronic textbooks: empirical and theoretical.

Empirical design moves from subject content to instructional effects and culminates in program implementation. The result of such development is, as a rule, the low didactic efficiency of electronic textbooks, which can destroy the idea of using information technologies in education.

The design of the electronic textbook is carried out from the design of the educational process considered in the unit of educational activity in a theoretical approach, depending on the educational methodology and technology, only after that the software is implemented.

The process of designing an e-textbook is a component of a general research strategy, which involves solving the design theory and technology issues together with the theory and technology of distance education.

The e-textbook project has a phased structure: conceptual, technological, operational and implementation phase.

At the conceptual level, the following procedures are performed:

- the goals of educational activities are determined;
- educational model is given;
- technological mechanisms and psychological mechanisms and principles of distance education, which should be expressed in the form of clear instructions, are described;
- it is determined what types of students' cognitive activity are planned to be used;
- the management method, the type of feedback, and the degree of independence of the trainees are determined.

Tools for creating electronic textbooks can be divided into groups using a complex criterion consisting of indicators such as tasks and functions, requirements for technical support, and features of use. Based on the indicated criteria, it can be classified as follows:

- traditional algorithmic languages;
- commonly used tools;
- multimedia tools;
- hypertext and hypermedia tools;
- criteria for selecting tools.

When choosing tools, it is necessary to have the following:

- hardware in a certain configuration;
- certified software systems;
- in-demand specialists.

An important period in the preparation of the electronic textbook is the preparation of the scenario of interaction of individual parts of the electronic textbook and audio and video plots, during which the powerful audio and video capabilities of the computer can be specially involved.

Summary, in other words, it is the main technological component of the network information-communication environment of training in the distance education model, and the individual training program serves as a structural program of the pedagogue's actions in the network information-communication environment of training.

Taking into account the characteristics of the use of information and communication technologies as a means of independent education in the system of professional development, the implementation of the model of independent education of pedagogues based on andragogic and personal activity approaches ensures the development of the professional competence of pedagogues.

The use of ICT tools in the independent education of pedagogues in the qualification improvement system not only accelerates, but also activates the independent education of pedagogues. In this case, the level of the information and communication environment for the participants of the independent education process is determined by the level of their ICT readiness: the higher the ability and readiness of the pedagogue to use ICT in his work, the wider the scope of opportunities provided by modern technologies.

The use of educational technologies using ICT, which activates the independent educational activities of teachers and is directed to their professional and personal development, can be implemented both in the process of preparing the final theses of students of advanced training courses and in the organization of special educational events.

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