USE OF INTERACTIVE ELECTRONIC EDUCATIONAL RESOURCES IN PROFESSIONAL TRAINING OF STUDENTS OF VOCATIONAL EDUCATION

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ABSTRACT

The article considers research in the field of development of electronic educational resources. The organizational and pedagogical conditions for creating effective interactive electronic educational resources for preparing students of construction areas of a technical university for professional self-improvement are described. The stages of creating interactive electronic educational resources have been developed. The conclusion is drawn about the need to attract students of construction areas of a technical university to the development of interactive electronic educational resources.

Keywords: E-learning, information space, electronic educational resources, interactive electronic educational resources, stages of creating interactive electronic educational resources.

INTRODUCTION, LITERATURE REVIEW, METHODOLOGY

Modern educational space for the formation of a professionally significant personality requires the creation of conditions under which the processes of obtaining knowledge by the students themselves, their active and productive cognitive activity become possible. The development of forms of e-learning, their organization in an educational institution is actively discussed in the professional community and is implemented in the system of training professional personnel. Creating a modern information space that provides new opportunities, makes life and learning more interesting and exciting, requires the use of innovations in the educational process, such as computer-based learning technologies, interactive multimedia, web-based learning, on-line learning, case-technology and etc., it allows you to improve the level of qualification of a modern teacher, helps to mobilize the learner's independence and improve his professional training. One of the areas that significantly increase students' interest and increase the quality of education at this stage can be considered the widespread introduction of electronic educational resources in the educational process

In the practice of pedagogical activity of university teachers, two main areas of understanding the essence of electronic educational resources can be distinguished. The starting point for the first direction is the concept of "electronic resource", which provides an opportunity for researchers of this problem to draw an equal sign between any type of educational material in electronic form and an electronic resource. Thus, any information product reproduced by a computer can be attributed to an electronic educational resource. The basis of the second direction of the definition of the concept of "electronic educational resource" is its consideration as a complex phenomenon, i.e. This is a comprehensive thematically built training material presented on a computer network. Then, we can assume that an electronic textbook means a whole system of ordered educational material presented in computer format (in the form of texts, graphic images, audio, video, etc.), which involves its active development

by students with the aim of forming their body of knowledge and practical skills in a specific scientific field

An obligatory requirement of state educational standards for vocational education is to use interactive teaching methods and means to achieve educational goals. In particular, interactive electronic learning tools were considered by various authors mainly as devices to increase the feed rate and the amount of information in the classroom. But now there is a need for close attention, classification and monitoring of the quality of such funds. Therefore, different researchers differently consider, classify, produce and evaluate the work of such funds. Currently, more and more often in print publications interactive electronic educational resources are considered and analyzed.

The definition of the concept of "interactive electronic educational resource" and its analysis are devoted to the work of a number of researchers. D. A. Temnikov, N. S. Radevskaya [3, 6] consider the interactivity of presenting information at a qualitatively new level, used to increase the volume of information itself, to increase the variety of methods for presenting information due to new technical capabilities, for presenting information in that order , which logically unfolds knowledge of the subject area by the student.

Electronic educational resource - an educational resource presented in electronic digital form and including the structure, subject content and metadata about them. An electronic educational resource may include data information, software necessary for its use in the learning process [3]. Each approach to the technology of creating an electronic educational resource is justified by the pedagogical conditions for teaching students and the methodological requirements for the educational product. For example, A.I. Bashmakov, I.A. Bashmakov [2] in the process of developing technology for creating an electronic educational resource, distinguish such main stages of work as: the formation of the concept of an electronic resource, the collection of educational material and its editing, the development of control forms and the preparation of tests, tasks and practical tasks for mastering the material; software implementation of an electronic educational resource; development of multimedia components, preparation of graphic materials, animation materials, recording of sound fragments, development of the user interface, button design, arrangement of hyperlinks; preparation of an electronic educational resource for distribution and use in the educational process.

This order of work on the creation of an electronic educational resource gives a clear idea of the delineation of the functions of members of the team creating an electronic educational resource. In addition, the researchers studied in detail the didactic principles of the development of electronic publications for educational purposes and the didactic functions of an electronic educational resource. In the studies of D.A. Temnikova, E.A. Barakhsanova, A.I. Danilova, A.A. Slobodchikova discusses didactic principles that should be taken as a basis when developing an electronic educational resource [1,6].

According to the authors of [1], it is necessary to teach students to develop electronic educational tools in the field of education to assist the teacher in an educational institution in the informatization of various disciplines. We not only completely agree with the opinion of E.A. Barakhsanova, A.I. Danilova, A.A. Slobodchikova, but we also believe that the participation of students in the development of an electronic educational resource is mandatory for the productive use of an electronic educational resource. Only a student, as the main consumer of an electronic educational resource, can help the teacher to see the material being developed from the outside and, possibly, suggest ways [5].

N.S. Radevskaya, L.I. Mironova, D.A. Temnikov argue that the most important requirement for the development technology of electronic educational resources is the selection of educational material for novelty, completeness, significance, visibility and structure [6]. A.Yu. Uvarov pays great attention to the development of pedagogical design, an electronic educational resource, in which he also sees the most important is the direct participation of students in the formation of the content and methods of supplying educational material [7]. And for the teacher in this process, it is important to recognize the responsibility for the quality of student education in the case of using an electronic educational resource. In addition, if a teacher understands the limited capabilities of an electronic educational resource without the use of appropriate special educational technologies, even if there is a means of diagnosing knowledge in an electronic educational resource and monitoring the learning process with elements of student interactivity, the development of such technologies becomes a necessary process that goes along with the creation of an electronic educational resource directly.

Possibilities of application for educational purposes are related to the didactic properties of an electronic educational resource, such as interactivity, communication, the ability to present educational materials (text, graphics, animation, audio, video) using multimedia, the use of computer modeling to study educational objects, as well as automation of various types educational work. At the same time, the interactivity of the created electronic educational resource should be considered according to the structure of the presentation of the material, the logic of the content and the capabilities of the user interface, in the place of students as subjects of the educational process, their perception and types of activities. Interactive electronic educational resources are of particular importance. In our opinion, the identification of organizational and pedagogical conditions for the effective use of interactive electronic teaching aids to improve the quality of professional training of students in construction areas will allow us to develop a technology for creating productive interactive electronic educational resources.

RESULTS, DISCUSSION

Having studied the results of research of the above-mentioned specialists in the field of development of electronic educational resources, we put forward the assumption that the object of training should participate in the creation of interactive electronic teaching aids, i.e. in the manufacture of interactive electronic educational resources, it is necessary to organize the process in such a way that the students themselves take part in it, which can increase the interactivity of the created tool and adapt the electronic training tool even at the stage of its creation.

To analyze this condition, we consider in detail all the stages of creating interactive electronic educational resources.

1. Development of pedagogical goals, objectives, the degree of interactivity of the future, interactive electronic educational resources. At this stage, it is necessary to determine the purpose of interactive electronic educational resources, its future places in the learning process. To do this, it is necessary to study the work program of the discipline, study the materials already used in training and identify precisely those tasks of the educational process that cannot be solved by the available training materials. It is necessary to plan the degree of interactivity of the developed interactive electronic educational resources in order to lay: forms of conducting classes using interactive electronic educational resources, forms of independent work, forms of application of interactive electronic educational resources for advanced training or re-profiling of specialists.

2. Selection of a team of developers interactive electronic educational resources. At this stage, you need to determine the required number of developers and the required specialization for a specific interactive electronic educational resources. In the process of selecting members of the development team, one should take into account the area of their interests, the possibility of joint training in the development process of the necessary skills, mutual compatibility of team members. It is at this stage that the optimal number of students participating in the development of interactive electronic educational resources and their field of study is determined. An important task of this stage is the formation of internal motivation of the student team members to create interactive electronic educational resources. At the end of this stage, a general idea should be formed on the interactive electronic educational resources being developed; with the team members in a paper version the concept of the developed product is agreed.
3. Distribution of duties of team members, designation of the hierarchy of the team, drawing up a work plan. This development stage is implemented in the form of a graphically constructed structure, which is a form of organizing a development team at the time of creation of interactive electronic educational resources. With a branched structure, in the case of a large team of developers, the main stages of the project are prescribed and the deadlines for the completion of the parts are assigned interactive electronic educational resources. Also, at this stage, methods of communication are determined, the time of presentation of the material, and contact information is exchanged.
4. Definition of content and structure of interactive electronic educational resources. It is necessary to plan the structure of the future interactive electronic educational resources to develop the necessary structural components. At this stage, the relationships between structural components, interactive electronic educational resources and the purpose of each component are determined.
5. Selection of software for the development of interactive electronic educational resources. This stage serves to approve software products that will be used to create interactive electronic educational resources. With the help of consultations of professional programmers, software products are determined, their ability to use, availability in terminal classes of the university or the possibility of acquisition. At the same stage, the content and type of building blocks are considered and approved, interactive electronic educational resources, the need for creating animated fragments, 3D models, sound accompaniment, graphic inserts and other content blocks is determined.
6. Prototype preparation of interactive electronic educational resources. This stage allows you to see and, in the process of development, to correct the prototype of the future interactive electronic educational resources, to discuss with the team members the positive aspects and shortcomings of the prototype, to develop and approve the final form of the prototype. The prototype should show all parts of the interactive electronic educational resources in the work on the example of one component (one training unit).
7. Filling the prototype interactive electronic educational resources with theoretical material and practical tasks. At this stage, the collection of text fragments, illustrative material, sound. The material selected and placed in interactive electronic educational resources is reviewed by team members and its completeness and compliance with didactic principles are preliminarily evaluated.
8. Development of a control and evaluation unit for interactive electronic educational resources. At this stage, the types and goals of control, self-control and mutual control are determined, evaluation criteria are developed and the form of presentation of control to the teacher is determined.

9. Design development of interactive electronic educational resources. At this stage, you can involve professional psychology teachers for consultation. When creating animated fragments, you can watch and link them partially with the help of team members involved in other tasks to evaluate visual effects.
10. Testing the pilot version of interactive electronic educational resources by teachers and students. Correction of defects according to the test results. This stage serves to test the alpha version of interactive electronic educational resources, identify shortcomings, and receive recommendations. Testing is carried out both by members of the project team and is offered fragmentary for evaluation by leading teachers of the discipline and students. This stage of development requires reading text fragments, editing texts, diagrams, diagrams, drawings and animations. Also at this stage, preliminary reviews of interactive electronic educational resources are carried out, accounting for the elimination of deficiencies.
11. Preparation of documents for registration of interactive electronic educational resources. This stage serves to present interactive electronic educational resources to the university's methodological department, receive reviews, and prepare documents for copyright recognition.
12. Development of recommendations for the use of interactive electronic educational resources in the educational process, launch in replication and in the learning process. This stage serves to introduce interactive electronic educational resources in the educational process. It is in the learning process that there is a need to adjust and transform the created interactive electronic educational resources and therefore the size of this stage is equal to the entire period of use of the interactive electronic educational resources. We have developed eight interactive electronic educational resources of various degrees of interactivity, serving various educational purposes. In the creative group for the development of interactive electronic educational resources, a working group is being formed, which includes programmers, designers, animators, photographers and videographers, sound authors, and the interactive electronic educational resources of the teacher of discipline under the direct supervision of the author. A working group of students with a teacher carries out work on interactive electronic educational resources in stages, according to the previously described plan. Each of the members of the working group is responsible for its own direction and offers its own ways of submitting material, control and registration, collectively each opinion is discussed by the working group and a general decision is made. The delegation of responsibility and initiative develops among students the qualities necessary for a future specialist. In the process of working on interactive electronic educational resources, students master new software products, graphic packages and databases. There is an exchange of skills, the presentation of copyright fragments of design and animation. We carefully study each proposal for innovations in the field of interactive electronic educational resources from students, and if necessary, we ask for advice from teachers of other disciplines of the university.

CONCLUSIONS

In our opinion, for the effective training of students in the construction areas of a technical university, interactive electronic educational resources are used to not only unify the process of training specialists and bachelors at a higher educational institution, but also to teach students how to use a computer for professional purposes. This process begins with the development of educational software products and databases and prepares students for the free possession of professional electronic resources. Teaching disciplines using interactive electronic educational resources becomes effective only if they are able to evaluate and correctly use interactive electronic educational resources.

In our opinion, it is most important to systematize interactive electronic educational resources according to the degree of interactivity in order to facilitate the selection of resources for various types of classes.

At present, the pedagogical side of the ongoing innovation processes lags far behind the progressive growth of the technical capabilities of computer networks. Obviously, the use of the most advanced computer technologies should be based on a serious theoretical and didactic study of the methodology for their application in the educational process. The unsuccessful experience of unsystematic use of certain elements of computer technology in some universities only confirms the need for deep pedagogical research in the development and use of interactive electronic educational resources in vocational education.

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