

SCIENCE TEACHING IN HIGHER EDUCATION INSTITUTIONS AS A PEDAGOGICAL PROBLEM

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Abstract

The main content of this scientific article is the study of the existing problems in the teaching of subjects in higher education institutions and their analysis, as well as the practical application of methods and tools aimed at solving the problems. Detailed information is provided on effective work on the development of modern software tools and organization of the educational process based on today's demands and pedagogical technologies in the teaching of subjects.

Keywords: Pedagogical, methodological, higher education, technology, project, electronic textbook, quality.

Effective organization of the process of educational work on the basis of modern pedagogical and information and communication technologies is a factor of educational efficiency. Although the educational system of our country is carrying out effective work on the development of modern software tools based on today's demands and pedagogical technologies and organizing the educational process, the science-based model of teaching subjects focused on web programming and software based on mobile education we can see that the means are insufficient.

Despite the detailed coverage of the form of educational training organization and the concept of "pedagogical technology" in most sources, the issue of creating methodical projects of the educational process in the subject of introduction to web programming has not been resolved. Therefore, it is worth noting that the effectiveness of the educational process of the stages of continuous education, in particular, the subjects of web programming in the higher education system, needs to be researched as an urgent pedagogical problem[1].

Summarizing and developing the positive results achieved on the basis of foreign educational experiences in our country, forming an innovative information-educational environment, creating information-methodological support of sciences, developing methods of using interactive mobile educational resources in the process of higher education are important tasks. Among the priority directions established in order to "fundamental improvement of the higher education system, based on the priority tasks of social and economic development of the country, to fundamentally review the content of personnel training, to ensure the creation of necessary conditions for the training of highly educated specialists at the level of international

standards"[2] one, special attention is paid to the purposeful and effective organization of the system of using computer and mobile technologies in the educational process. This not only provides a high-quality and fast working method, but also becomes very important in the emergence of new professions. For example, programmers who develop web applications for solving various issues and digitizing society can be given as an example. The confirmation of the above ideas is manifested in our society in the form of practical projects in the field of web programming. The role and importance of the subject "Introduction to Web Programming" taught in higher education institutions (HEIs) today is in the satisfaction of material and spiritual needs in our social life and in the wide range of opportunities for automating the work of all industry specialists. can be seen. That's why, at the same time, in the HEIs of our Republic, we are studying web programming in different fields, creating methodological bases for using its capabilities in a number of fields, Front-end (the external appearance of web applications, design part), Back-end (the internal part of web applications structure, programming, process management part) and the issue of providing qualified specialists such as new fields entering our lives (web designer, web programmer, system automation, field administrator, etc.) led to an increase [3]. Today, in higher education institutions, in the teaching of "Introduction to web programming, web application development, web technologies, web design" subjects, it is necessary to apply the necessary pedagogical and psychological tools in practice, to form students' purposeful actions in relation to the subject and to instill in them the possibility of achieving a specific result. it is important to substantiate them scientifically.

It is known that before entering the higher education institution, students have the necessary basic knowledge and imagination in the subject "Introduction to Web Programming", their creative imagination, which is necessary in the field of web application development, is useful in the field of web programming. Ability to understand used algorithms is formed. This indicates the appropriateness of using interactive electronic educational resources for independent learning of courses in this field. At this point, it is worth saying that thanks to the scientific research of a number of researchers, we can see that their practical application is achieving scientific results that can give a great positive effect to the educational process[4]. Let's talk about the word interactivity here, interactive means to do an activity with a person or equipment.

So, interactive-interaction, conversation, communication with something (for example, with a computer) or with someone (person).

Interactive education is the main feature of the resource, as the name suggests, interactivity, that is, the student can actively interact with the resource, ask questions to the material posted on the relevant platforms and receive an adequate response to the material in a dynamic (changing) mode. is the ability to learn.

In the current period of development of the educational system, the problem of creating interactive mobile educational resources has become one of the main problems in terms of introducing an electronic educational environment into the educational process. Recently, the urgency of this problem has increased due to the beginning of an active period of creating horizontal and vertical educational portals of this infrastructure of the modern education system..

The concept of interactive mobile educational resource includes electronic textbooks, materials on separate sections of relevant fields of knowledge, electronic sets of tasks, methodological materials, electronic educational technologies and other materials, the content and presentation of which are educational. allows use in the process, including in open e-learning systems.

Web programming courses in higher education institutions teach students new web programming technologies (frameworks), use of STL (Standard template library) libraries and special classes for security issues, database hierarchy development, as well as practical application and integration, and so on. teaches the necessary knowledge. As the final stage of this knowledge, it lays the foundation for the development of a larger project proposed by a legal entity or individual.

Formation of programming skills is an integral part of the content of training of bachelors of any IT field in higher education institutions. At the same time, quality training of the future programmer in the higher education system is associated with a number of problems that are the subject of research in the scientific community. [5].

Managing the process of mastering knowledge, forming skills and qualifications is an important link in the development of the educational system of higher education institutions. The information given above shows that web programming is one of the complex fields. Web programming requires the formation of a multi-level abstract professional mindset. Students' activity in mastering the content of web programming is created in the form of solving cognitive tasks in lectures and practical sessions. Therefore, it is important to look for resources to improve the quality of teaching subjects related to web programming. Each student of a higher educational institution must follow the following basic principles of didactics[6].

- the principles of description, opening and systematic analysis of the object and topic provided for in the curriculum;
- forms and methods of learning, including students' cognitive processes;
- stages of development of didactic material and educational tasks for student activities.

The success of students' educational activities largely depends on the formation of motivation for cognitive processes. The motivation of students in their educational activities is closely related to the concepts of "need" and "goal". The goals and tasks of teaching programming, which the teacher implements in accordance with the requirements of the labor program, are

not always the same. It is not possible to monitor and control students for a long time before introducing them to professional activities, therefore, the teacher's task is to form the need of students to learn independently from additional electronic software tools.

Logical and psychological mechanisms of knowledge acquisition are important in ensuring the effectiveness of professional education. For example, if the teacher writes the program code at a certain speed or takes terminal commands and all this with short comments, the students will not be able to understand the didactic material. The student has to write the program code himself, although this takes more time, he has to accompany the writing of the program text by speaking the terminal commands out loud. Also, one of the disadvantages of teaching web programming is that it encourages students to use unknown tools, such as working with the vim editor or directly with the compiler, etc. These and similar situations create an unnecessary cognitive load on students. At the next level, the teacher will be able to teach students more powerful and complex programming tools. The content of subjects for learning web programming is determined by the state educational standard, which specifies the volume of the training load and the requirements for the training of specialists.

Today's web programming is a part of modern information technology. Improving the quality of education by increasing the visibility of educational material (in particular, web programming and mathematics) was considered a natural way to solve problems.

Based on the level of development of the scientific potential of our society, there are very urgent requirements for the qualities of specialist qualifications, such as the ability to creatively apply the knowledge learned at the educational institution in practical activities and to further improve professional skills by using interactive mobile educational resources from the introductory science of web programming. It is possible to achieve high results in the training of logical thinking, creative and enterprising specialists based on the purposeful organization and proper orientation of independent research work of students from the introductory subject of web programming.

In this scientific article, the work of our Republic and the CIS (Commonwealth of Independent States) and foreign scientists on teaching subjects related to web programming in higher education institutions was studied as a pedagogical problem, and the essence of the electronic educational environment, interactive educational resources, the important aspects of using electronic mobile educational tools, interactive educational tools, interactive educational resources, the concepts of teaching and developing the methodical system of teaching such subjects as "Introduction to Web Programming" were studied in detail.

In the course of our research, the main trends in "Access to Web programming" in higher education institutions were studied, the concept of interactive web resources, which combines various elements of traditional and distance education, and is becoming part of the practice of new-look higher education institutions. was analyzed. A set of technologies for creating modern web projects, as well as possibilities and results were thought about. The possibility

of creating web applications using electronic software tools was explained to the students. Possibilities and advantages of using interactive educational resources in the e-learning environment were studied as a pedagogical problem. During the research, the scientific and theoretical literature on the clarification of the pedagogical problems of teaching subjects in higher education institutions was analyzed.

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