

# Integration Of Electronic Learning Resources in The Educational Process: Stages and Significance

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**Abstract.** This article describes the stages of implementation of the integration of electronic educational resources to increase the efficiency of independent education of students of higher educational institutions and the results of research on determining the practical importance of integrating electronic educational resources

**Keywords.** Electronic learning resources, integration, higher education, stages, effective technology.

**Introduction.** Modern socio-economic processes in the world and the requirements of the rapidly changing information society make the problems of identifying and improving strategies for the development and modernization of higher education more urgent. In the period of current scientific and technical development, the sharp increase in information requires the introduction of effective mechanisms for the assimilation of large amounts of information. This, in turn, creates conditions for improving the content of independent education aimed at the formation of competencies in accordance with the social order of society in the training of future specialists in higher educational institutions. The introduction of new educational standards reflecting this trend determines the need not only to change the content of the training of future specialists, but also to find innovative ways of organizing the educational process. Today, research related to the process of integrating electronic educational resources into the educational process is of great importance.

## Research Methods

In the research work, the information published in modern sources on the integration of electronic educational resources into the educational process was evaluated and summarized by means of a comparative analysis.

## Results And Discussions

The process of increasing the integration of electronic educational resources in teaching creates the need to improve the traditional audience based on network technologies. At the new educational stand, the teacher will have the opportunity to control and coordinate the educational process directly from his workplace on the student's monitor - access the student's computer from the keyboard, exchange visual information with him, project the image from the teacher's computer to the student's monitor or the images from the student's computer to the blackboard through the projector.

Integrating electronic resources into the learning process does not happen instantly. This process can be done step by step and takes a long time even with a fully developed curriculum for the subject [1-5].

The most important and difficult stage is the **first stage**, in which it is necessary to identify teachers who want to acquire professional activity based on information. It is also necessary to determine the organizational and technical capabilities of computer technologies available in this educational institution, the capabilities and desires of the teaching team to create and use certain information and communication technologies, the level of information culture, and the readiness of teachers and students to master this type of material.

**The second stage** should be devoted to the selection of specific academic subjects or topics for the development of electronic resources and analysis of their content, structure and characteristics. Here, the most complex sections are determined, the types of lessons in which the use of electronic resources is appropriate, their consistency with traditional pedagogical tools is determined, and the level of knowledge of students in certain sections and topics is analyzed.

First of all, we should pay attention to the departments of science that significantly contribute to the improvement of teaching efficiency in the use of information and communication technologies. Decision-

making about the use of e-learning resources requires teachers to determine the didactic goals, content, structure, purpose, and types of lessons that will be used from a particular resource.

**The third stage.** Before starting to create your own e-learning resource, it is necessary to study and analyze the resources previously created and used in this field, to determine their advantages and disadvantages. Later, the process of developing the scenario and educational technology begins in the created resource, and the means of its implementation are selected. The order of educational material and its presentation meet didactic, organizational and technical requirements; it should be implemented taking into account information and communication technologies, and at each stage of the lessons it is necessary to determine the functions of the trainee, the teacher and the system, the functions of the teacher and the trainee.

**The fourth stage** is aimed at predicting changes in teaching effectiveness when using ready or planned resources and psychological-pedagogical analysis. Their impact on the main factors of activation of the educational process and personal development of students is evaluated, and possible problems for teachers and students in the use of information and communication technologies are predicted.

**The fifth stage.** When using a ready-made resource, it is directly included in the educational process for control groups of students, and information is collected about its use and the achievement of improving the quality and efficiency of the educational process. In the development of a new resource, at this stage, they go directly to the programming, analysis and correction of the scenario of use of the electronic resource. It is necessary to fully check the implementation of this stage of informatization of the educational process.

**The sixth stage.** If you can improve the quality and effectiveness of resource-based learning in control groups, you can scale it up in an educational institution. The positive experience of teachers in this regard should be an incentive for other teachers to use this type of electronic resources in their professional activities. The final stage of creating an electronic resource is the preparation of methodological documents and instructions for its use for further practical use of the electronic educational resource. Changes will be made to the methodological development of lessons, lectures, laboratory, seminar, group and practical training, instructions will be prepared detailing the resource structure, and organizational issues will be resolved.

As mentioned above, the most difficult part is choosing the teachers. In the context of using electronic educational resources, there is a need to solve the problems of training and retraining of teachers, which implies the implementation of three main directions in the modernization of the content of teacher education:

- teachers' acquisition of modern knowledge in the field of informatics and information technologies in the general course "information technologies" at the level of free guidance;
- formation of experience in the design and application of integrated information pedagogical technology in the course "information technologies in education";
- to strengthen the role of the individual as the moral basis of human existence in the information society.

Systematic research on the use of information technologies in education has been conducted for more than half a century. The educational system has always been very open to the introduction of information technologies based on the most widely relevant software products into the educational process. Various software packages are successfully used in educational institutions - both relatively inexpensive (text and graphic editors, tools for working with tables and preparing computer presentations), and complex, sometimes very specialized (programming and database management systems, symbolic mathematics and statistical processing packages). However, these software tools have never met all the needs of teachers [6].

Didactic requirements for electronic resources as an information technology tool include:

The ability to implement and provide traditional requirements such as scientificity, availability, demonstration, systematicity and consistency of education, efficiency of knowledge acquisition, unity of development and educational tasks.

E-learning resources should meet the requirements of individual, interactive and adaptive learning.

Presentation of educational materials in the electronic education resource in a systematic and structural-functional relationship.

Ensuring the completeness (integrity) and continuity of the didactic cycle in education.

Computer communications are an integral part of all technologies, providing the process of knowledge transfer and feedback when using local, regional and other computer networks. Computer communications determine the possibilities of the information educational environment of a particular educational institution, city, region or country. Since the implementation of any information technology is carried out in the

information educational environment, the tools that provide this educational technology with hardware and software should not be limited to a separate computer with the program installed. In fact, often the opposite is the case, that is, information technologies and software tools of educational technologies are themselves placed in the information educational environment as a subsystem - an electronic educational resource [7-8]. In order to effectively use the e-learning resource, the teacher must first operate in the appropriate software. Developing complete software products for educational purposes is a very expensive task, as it requires the joint work of highly qualified specialists: psychologists, science teachers, computer designers, programmers, etc.

A number of local software developers finance projects to create computer training systems in educational institutions and conduct their own development in this field.

The main requirement that must be fulfilled with software tools aimed at application in the educational process is the convenience and naturalness of the student's interaction with educational materials.

Software used in information and communication technologies can be divided into several categories: training, monitoring and training systems; information retrieval systems; modeling programs; microcosms; instrumental means of cognitive characteristics; instrumental tools of a universal character; instrumental means of communication.

In the 80s and 90s of the 20th century, the mass production of relatively cheap and, at the same time, constantly improving technical characteristics of personal computers led to a sharp increase in the pace of informatization. In the field of education, especially with the advent of the Windows operating system, new opportunities have opened up. The main ones were the presence of interactive communication in interactive programs and the wide use of graphics (drawings, diagrams, maps, photos). The use of graphics in educational computer systems allows the student to transfer information at a new level and improve his understanding. Educational software products that use graphics help develop important qualities such as intuition and imaginative thinking [9, 10].

Advances in computer technology over the past decade have provided technical and software innovations that are very promising for educational purposes. First of all, these are devices for working with optical discs (CD, DVD), which allow you to store large amounts of data (from hundreds of megabytes to tens of gigabytes) in a small and inexpensive environment.

The increase in the performance of personal computers has allowed the widespread use of multimedia technologies and virtual reality systems. In fact, it is difficult to imagine modern education without multimedia technology (text, graphics, video, dialog mode animations).

Hypertext technology is used to create the World Wide Web, electronic dictionaries, electronic encyclopedias and various information systems. Regardless of the scope of the program, hypertext always provides the ability to quickly search for information by direct selection. At the same time, there are many approaches to choosing the principles of presenting the topic and organizing the learning process within the framework of hypertext teaching systems. Thus, hypertext systems should be considered in the context of specific applications, taking into account their specific characteristics.

The use of hypertext technology itself already presents all developments within the framework of a single standard, but for the integrated operation of information and communication technology software, a standard program (shell) is usually developed that ensures the formation of a single information space and is used by students, teachers of educational institutions and used by the administration. In the development of such standard programs (shells), it should be implemented with the direct participation of teachers, that is, teachers study the capabilities of the program during the process of experimentation and make their suggestions to the developers-programmers. However, a single standard for such software has not yet been developed. Educational institutions and centers implementing distance and open education programs (in our country and abroad) taking into account the specific features of their activities

## Conclusion

In the use of traditional educational materials in electronic form, there are problems of a pedagogical nature rather than a technical one (bringing the forms of organization of the educational process in accordance with their capabilities, forming the interest of teachers). Easy transformation of data into various forms (for the

server, computer presentation of lectures in the auditorium, data transfer on electronic media) looks more promising than the development of unique tools for each electronic textbook.

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