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Pedagogical Requirements For The Creation Of Electronic Educational Resources In The Development Of Information And Communicative Competence

Sherzod Anorboyevich Egamkulov
Jizzakh regional pedagogical skills center, Uzbekistan

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Abstract: This article describes the theoretical and practical foundations of creating and using electronic educational resources for use in classes.

Keywords: Electronic educational resources, textbooks and manuals, modern information technologies, computer science, programming, presentation, design, illustration, on-line and off-line.

Introduction: Electronic learning resources entered the education system very quickly. It is currently impossible to say exactly how many of them there are. At the same time, a number of factors are influencing the fact that their position in the educational process, along with ordinary textbooks and books, has become much higher. Nowadays, electronic educational resources have found their real place among students and learners in general and are bringing about unique evolutionary changes in this area.

Electronic educational resources? How do they differ from ordinary textbooks and manuals? What are the reasons for their rapid spread in the field of education? Along with the state nationwide program to strengthen the material and technical base of schools and develop school education, the creation of electronic educational resources based on modern information technologies and their implementation in the educational process is being put on the agenda as an urgent problem. Therefore, what is the purpose of creating electronic educational resources, what are the requirements for them? It is necessary to find scientifically based answers to questions such as what types and variants of them exist.

of the topic. Electronic educational resources open up a wide range of opportunities for improving the quality of the educational process, facilitating the work of teachers, increasing the level of knowledge of students, and using information technologies in the educational process. Taking this into account, the creation of electronic educational resources in computer science for secondary schools was initiated. This process involves the participation of a teacher, psychologist, a specialist in controlling the results of the analysis (testologist), a designer or webmaster, and a coder (programmer). So, what criteria do creators of electronic educational resources follow when creating software? What are the general requirements for them?

The scientific and presentation quality of the created electronic educational resources should meet criteria such as relevance to the curriculum, topic description, language level, resource structure, presentation and design, and responsiveness to problems such as illustrations. [2]

Scientific innovation. Electronic educational resources are created by an author or group of authors using a specific programming language. Electronic educational resources can be created in two ways - online and offline. When using electronic educational resources in the online version, computer technology must be connected to a global or local network. In the offline version, access to the network is limited to certain cases. Electronic educational resources can also be placed on a specific site on the Internet. In this case, the user can make a copy of it for future use.

Electronic educational resources should be consistent with the curriculum. Electronic educational resources should be completely new, that is, they should have sufficient material and volume to fully reveal the

content of the topics and illustrative materials that support the achievement of educational and methodological goals. [3]

above criteria are the main requirements for the creation of electronic educational resources, which directly serve to increase the effectiveness of education. Electronic educational resources are an electronic version of a regular book created using special programming codes and graphic, animation, sound and video elements. Its difference from regular textbooks and manuals has both positive and negative sides, and with the development of information technologies, the number of existing negative aspects is decreasing. [1]

Electronic educational resources are educational resources designed for comprehensive and in-depth mastery of educational materials and scientific information using effective methods of independent learning using modern information technologies, that is, they are digital representations of topics in textbooks and manuals. Electronic educational resources differ from topics in ordinary textbooks and manuals in that they are compiled and generalized based on modern scientific knowledge, are rich in exhibits, take into account the age and psychological characteristics of learners, have the ability to control knowledge, and provide texts of basic concepts and conclusions, definitions, rules and regulations in attractive forms and different colors.

Scientific results. Electronic educational resources are the basis of teaching, which is a new form of education. They are a product of a subject, one of its directions or components, described in accordance with the state educational standard and curriculum. Electronic educational resources are electronic educational products created at a high scientific and methodological level on the basis of information technologies. Electronic educational resources are products that partially or completely replace or supplement the textbook. Electronic educational resources are texts that fully use the capabilities of information technologies to clarify the purpose, content and essence of the topic intended for each lesson of the textbook. Electronic educational resources cannot and do not have to replace the book. Just as creating a film of a work of art is a new genre, electronic educational resources are another genre of the textbook.

Electronic educational resources should fully utilize the potential of information technologies, which serve to maximize the processes of understanding and memorizing basic concepts, rules, and examples by engaging the receptive pathways of the student's mind, i.e., sounds and emotional memories, rather than a simple textbook, in the learning process. [4]

Electronic learning resources are divided into the following categories:

Type 1. The learning materials are mainly presented as verbal text, with hyperlinks and glossaries, as well as two-dimensional graphs, diagrams, and pictures. They make up up to 25% of the learning material.

Category 2. The learning materials are partially hypertextual and consist of a glossary, as well as text with 2D graphics and 3D graphics. They take up to 25% of the learning material.

Category 3. Learning materials will have text, 2D graphics, video and audio animations, and 3D effects. They will take up to 25% of the learning material.

Category 4. Electronic learning resources are created in a virtual environment, using modern network technologies, and at the level of conducting distance learning sessions with a teacher connected via a computer network (Internet).

Since electronic educational resources must comply with the requirements of information technology and it is desirable to have a limited text section, it is necessary to follow the principles and approaches for creating electronic educational resources.

Electronic learning resources - each topic should have the following components: Theoretical part; Theoretical questions; Examples; Problems and examples for independent solution; Questions with answers by module; Control work; Supporting information; Notes; There should be visual frames that facilitate the mastery of topics. [5]

In addition, e-learning resources should be self-managed by students, allowing them to test themselves by opening complex examples and problems, receiving help from a computer, i.e. complex mathematical calculations, checking their knowledge, using dictionaries, and of course, e-learning resources should be designed for students to study and learn independently.

Electronic educational resources - facilitate the assimilation of the studied material by using other methods (with increased reception); adapt to the requirements, training and intellectual level of the student; create conditions for deeper assimilation of the subject due to time savings in complex calculations; create ample conditions for self-testing at each stage of the work; provide the opportunity to save or print the completed work to a file; provide the necessary explanations, repetitions and auxiliary materials. Electronic educational resources - can save time by using computer assistance in solving various problems;

allow students to conduct classes on computers in the form of independent work; complex computational control works are checked using a computer.

Electronic learning resources The emergence of information technology in science and education Electronic learning resources are of particular importance in the learning process due to the following most important aspects:

- organize a differentiated and individual learning process;

- assessment of the learning process, feedback;

- self-control and self-correction;

- demonstrate the topics being studied and show their dynamic process;

- use of computer and information technologies such as animation, graphics, multiplication, and sound in science subjects;

In developed countries, the method of teaching is currently being implemented in the areas of education. Practice shows that teaching students based on electronic educational resources is twice as effective and can also save time. When learning based on electronic educational resources, up to 30% of time can be saved, and the acquired knowledge is retained in memory for a long time. If students perceive the materials presented visually, the retention of information in memory increases by 25-30%. In addition, if educational materials are presented in the form of audio, video and graphics, the retention of materials in memory increases by 75%.

In the process of teaching based on electronic educational resources, students will have the opportunity to fully teach a specific subject on a computer, edit topics, improve the presentation of topics based on the analysis of the results of the control tests submitted by students, and see, hear and reflect on the animation elements of information technology based on electronic educational resources during the lesson. High-quality electronic educational resources There are different areas of development, and different technological methods. [6]

CONCLUSIONS

Electronic educational resources are a didactic tool designed to partially or completely automate the educational process. They are considered one of the promising forms of increasing the efficiency of the educational process and are used as a means of teaching modern technologies. Electronic educational resources include a software product (a set of programs) aimed at achieving specific didactic goals in the subject, technical and methodological support, and additional auxiliary tools.

Electronic learning resources can be divided into:

1. Educational programs.

- guides students to acquire new knowledge based on their level of knowledge and interests;

- test programs are used for the purpose of verifying or assessing acquired knowledge, skills and abilities;

2. Exercises.

- serves to repeat and consolidate previously mastered learning material;

- creates a virtual learning environment with the participation of the teacher.

many positive factors that confirm the superiority of e-learning resources over traditional lessons in terms of implementing technology for creating e-learning resources.

REFERENCES

1. Khamidov Jalil Abdurasulovich, Khujjiev Mamurjon Yangiboevich, Alimov Azam Anvarovich, Gafforov Alisher Xolmurodovich, Khamidov Odil Abdurasulovich. "Opportunities and results to increase the effectiveness of multimedia teaching in higher education." Journal of Critical Reviews 7 (2020), 89-93. doi: 10.31838/jcr.07.14.13
2. Sh.Egamkulov, N.Toshpulatova. Creation of methodological systems of school heometry for using information technologies. A Multidisciplinary Peer Reviewed Journal. June-2020. Research for Revolution. ISSN № 2581-4230. Impact Factor-5.785
3. Sh.A.Egamkulov. Pedagogical and psychological basics of using electronic literature in the learning process. “Internotional Journal for Innovative Engineering and Management Research. A Peer Revieved Open Access International Jurnal. ISSN 2456-5083. Impact Factor 7.011. Vol-09, Issue-11 Nov-2020. www.ijiemr.org