General rules for creating electronic textbooks on the topic of information technology

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Abstract: In this article the possibility level and methods of using electronic textbooksfor increasing the efficiency of the scholastic process are clearly stated. Moreover, some requirements concerning the general rules of the creation and contents are also indicated.

Keywords: information technology, electronic textbooks, multimedia technologies, high education, educational process, video lecture

1. Introduction

Since the role of modern information technologies in the field of education, in all areas of economics, science and technology and social life is becoming greater rapidly, number of changes and reforms in the reconsideration of organization and management of the educational process and teaching methods is required in order to increase the effectiveness of educational process.

It is natural that the use of new literature and textbooks in the educational system, especially when they are in the national language, creates certain difficulties not only for students but also for teachers of high and secondary special educational institutions. In this regard, reforming and developing the educational process on the basis of modern technologies, studying the innovations and achievements of developed countries and implementing them in our country is considered to be necessary.

The use of technology in the education system has existed in various forms since the second half of the last century. Among the first in this field were M.I. Gelfand, M.L. Seitlin, L.N. Londi, A.A. Lyapunov, Y. N. Yakova, A.P. Yershovaand S.I. Shapiro, proposing a new method of teaching in the education system, non-traditional teaching aids and teaching methods.

The application of advanced pedagogical technologies is based on the following three principles:

- Developing of textbooks by dividing in parts;
- Placing parts in such a way that block diagrams are available from one to another under certain conditions;
- Reviewing textbooks before they are introduced.

Nowadays a number of opportunities have emerged to positively address the challenges in education. The implementation of integration of information and pedagogical technologies in the educational process requires reaching the goals regarding the increase in the efficiency of this process, covering the process of teaching and control based on computer technology, as well as the gradual implementation of this process in a clear way. Development of the process of teaching and controlling by relying on electronic textbooks which are based on information technologies and organizing their mechanisms with the help of software tools such as hypermedia, multimedia, hypertext, audio, video for each subject being taught in the education system is one of the today's issues.

2. Main results

E-learning books or electronic textbooks are designed to broaden students' horizons, develop and deepen their initial knowledge and to provide them with additional information, and it is suggested that they should be designed more for in-depth subjects. The content of educational literature provides students with the ability to think independently and freely, to enrich and improve the acquired knowledge gradually, to acquire independent learning, to search for new knowledge in educational literature.

An *electronic textbook* (ET) is an application based on multimedia technologies and is enriched with text, audio, video data, control part, animation and graphics. The quality of ET depends on the teacher's level of personal knowledge, author's style, pedagogical, psychological and methodological approach to the subject.

ET provides great deal of opportunities to demonstrate teaching materials compared to a traditional textbook. ET must meet all the requirements for the learning process, also must perform didactic functions which are designed for making students to work more independently. Since the human body requires specific features to receive information in electronic form, it is necessary to take into account ET's psychological, aesthetic, ergonomic, hygienic and methodological-psychological aspects as well. But there can be such psychological barriers that students may not be able to receive information directly on a computer screen.

The e-textbook should include a variety of didactic materials, self-monitoring tests and questions, and tasks of varying complexity depending on the level of preparation.

Practice shows that a lecture must meet the requirement. The optimal size of electronic text data is 2-3 screen information. IIn this case, the volume of relevant lectures covered in the course or e-textbook should be as above. To place a relatively large volume of text, it is advisable to divide it into appropriate pieces in some way

The main purpose of using ET:

- Improving the quality and efficiency of the educational process through the formation of new information and educational methods and the use of modern information and pedagogical, as well as information and computer technologies;
- Using modern educational resources and e-textbooks widely, organizing their libraries, applying distance learning methods in practice and accessing to the global electronic system in the system of continuing education.

Creating an ET:Before you start creating an e-textbook, you need to fully design the relevant textbook. There are specific objects of ET creation:

- Teacher;
- Creator of ET - technical specialist, designer;
- E-textbook.

*Teacher.*The quality of ET depends on the level of personal knowledge of the teacher, the author's style, pedagogical, psychological and methodological approach to the subject. Undoubtedly, each ET has its own rules, concepts and arguments. The teacher determines the structure of the ET course, indicating which parts it will consist of. Each curriculum can be divided into its own parts and elements. One part, which is the result of teaching the element, may be the initial concept of the next one, and some of their elements will be connected to each other in some way. In this case, the creation of one course of ET can be the basis for another. The teacher analyzes all of the above mentioned processes in detail and gives its resulting algorithm to the designer who created the ET.

The designer is the creator of this ET. He should pay attention to the pedagogical, psychological aspects in creating ET. ET should be designed in a simple, easy-to-use structure. The designer should take into account the following statements in the process of creating an ET:

- The principle of uniformity - ensuring that all the relevant components of the ET are the same;
- Selecting a single size for text and objects;
- Selecting a suitable background;
- Convenient interface;
- Choosing the right colors;
- Software and hardware compatibility.

E-textbook. In the process of creating an ET with the necessary software, it is necessary to pay attention to the following, in which the ET is built on the basis of the following objects:

1. Basic concepts: structure of topics; theoretical part; practical training; laboratory developments.
2. Auxiliary information: pictures, graphic elements; audio; video; animations.
3. Oriented issues: a demonstrative view of the course of this or that process.
4. Control: elements that control the learning process; test appearance; directional questions.
5. Additional elements: objects that increase the quality of ET; different colors; frames; menus; auxiliary buttons.

Moreover, ETs can also be organized through video lectures and video materials. Video lectures cover the entire course or parts of it that are difficult to acquire. By using these technical tools, it is possible to manage and organize students 'effective learning activities.

Clear images, graphs, various symbolic data allow you to fully understand the subject of science. Various objects, diagrams and moving demonstrations in the video lecture reach the student's mind through the primary signals as the simplest effective means. The chances of receiving information will be high.

Possibilities of video lectures to increase the efficiency of the educational process :

- Virtual access of students to the field of future specialization, scientific laboratories, openness;
- Observation of processes, events, appearances and their various models that are difficult to understand (rarely performed, continuous);
- To feel and understand the progress of a problematic process by managing its live demonstration;
- Demonstrations are based on attention-grabbing, affective-emotional, appropriate-logical methods of influence.

The video lecture should be created in such a way that it gives the user a natural impression. Demonstrating the object of study presenting photos and video is quite effective. Have "own spoken language" while watching the process of performing various graphic representations, mathematical operations, chemical reactions, logical formulas and calculations.

Based on the research results, around 80 % of information is received by people through vision. Thus a student receives a great deal of information when using a video lecture. But large volumes of text, audio data, comments, animations can cause a student to get tired quickly. Thus, this form of courses should be divided in small sections.

The video lecture can be organized on the basis of the following information:

- Different methods of solving the problem, films and videos of laboratory developments;
- Live video of modern technological processes;
- Educational, popular science, documentary and feature films, excerpts from Internet data;

- Speeches of well-known scientists, consultative videos of representatives of the relevant field;
- Physical, chemical, technological and other processes for demonstration (natural or computer based, animated, graphic);
- Supply part (tools, devices, chip and electronic device module, finished products, etc.);
- Obtained results, model of measuring process directly on instruments, repair, installation, operation of devices, etc.;
- Photographs, illustrations, graphics, monographs, etc. in scientific journals;
- Computer software development, glossary of some words, references (where to look for educational materials);
- Other materials suggested by the authors.

3. Conclusion

Based on the above mentioned requirements, a number of electronic textbooks for information technology specialties of high education institutions have been created such as "Informatics, information technologies", "Web page creation technologies", "Namo WebEditor", "Computer networks", "Adobe Flash", "Adobe Dreamweaver", "Computer graphics", "Video data processing software", "JavaScript course "

The use of these ETs creates a number of advantages:
- Teacher and student save time in use;
- Brings the student closer to modern technologies;
- Has comprehensive savings;
- The scope of the student's study is not limited;
- Convenient, easy and simple for student learning;
- There is an opportunity to quickly and constantly change the curriculum in accordance with modern requirements.

Sound Forge, iSpring, AutoPlay, CoursLab, Adobe Photoshop, Adobe Dreamweaver, JavaScript, Adobe Flash, Camtasia studio, Pinnacle studio and other software tools were used to create ETs. ET has a user-friendly interface and is enriched with video data. Also it possesses control of test according to the course. ETs are used by university students and teachers, as well as volunteer users. They are also included in the university's distance education system platform.

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