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Electronic Multimedia Tutorial As One of Modern Methods of Training

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Annotation: *At the time of development of information technologies new methods of training are even more often used in educational process, interest in electronic textbooks increases. It's not an electronic textbook as an electronic analog of the printed edition, but an electronic multimedia tutorial on use of a software tool is described in this article. The reasons why there was a need for creation of an electronic multimedia tutorial are specified, its advantages in comparison with the printed educational editions and video manuals are analyzed. The approximate cycle of creating an electronic multimedia tutorial is given and the programs used at its creation are listed. Questions for future researches in this direction are raised.*

Key words: *Electronic multimedia tutorial, electronic textbook, distance learning, hypertext, multimedia.*

Introduction: In the education system work on combination of means of information technologies with means of classical pedagogical school has recently been widely carried out.

One of the most effective methods of self-education is the use of multimedia learning tool which brings system of open education to qualitatively new level.

The most widespread approach to realization of self-directed learning are electronic multimedia textbooks, the automated training systems, etc.

Relevance of creation and application of electronic multimedia textbooks is caused by need for development of new approaches and for improvement of the existing information and methodical foundations for improving the quality of education.

First of all, electronic textbooks are in demand and are used in distance learning. But beyond that, they significantly enrich traditional forms of education as they allow to include a huge amount of training and evident materials and contribute to the development of qualitatively new techniques of teaching.

As for the concept of "electronic textbook", researchers define it basically almost the same. For example, K.S. Akhmetov, A.G. Fedorov [1] define electronic textbooks as a set of theoretical,

reference, practical material and tasks for training, monitoring and assessment of the quality of knowledge assimilation.

S.A. Khristochevsky believes that the electronic textbook is the program and methodical complex providing an opportunity for self-directed or with the assistance of the teacher development of a training course or its big section by means of the computer [8].

E. Azimov defines the electronic textbook as a new teaching tool on the computer disk storing and representing audio-, video, text and graphic information, a tutorial which is designed for a student working with a computer in interactive mode, and the pupil can get acquainted with educational information in that form, sequence, pace and with the depth that suits him [3].

It is also possible to mark out some types of electronic textbooks.

1. According to the method of distribution:

- network electronic textbooks – which are fully or partially represented on servers on the Internet/Intranet;

- local electronic textbooks – which are usually written on compact disks or other removable data carriers and either can be used directly from the carrier, or can be installed on a personal computer.

2. According to the representation of educational material:

- the electronic textbooks which for the most part repeat printing manuals (more often – scanned texts) and used for independent work of students in combination with traditional forms of education (lectures, seminars, tests and examinations);

- the electronic textbooks including some interactive components along with texts and presentation and used not only as a tutorial for full-time study, but also as an element of self-directed studying of a course;

- the electronic multimedia textbooks for distance learning which are almost completely designed for self-directed studying of a course and virtual communication with the teacher.

Due to the increasing public interest in electronic textbooks teachers, library and information and other spheres experts began active work on research of methods and techniques of application of electronic textbooks, the establishment of the main requirements to their creation, the conditions of use in full-time studying and in distance learning. In recent years the number of articles and tutorials on this subject considerably increased.

S.A. Khristochevsky, B.E. Alginin, B.G. Kiselyov and others in the early nineties raised the issue of “informatization of education”, thus considering the application of electronic textbooks in traditional forms of education.

E.S. Polat mentions electronic textbooks, referring to the problem of creating educational and material support of distance learning [10].

Methodical aspects of designing electronic textbook are defined in the principles of development of new information technologies (Zimina O. V., Zaynutdinova L.Kh., E.S. Polat and many others) and some other works on methodology and technology of creating electronic methodical system in the conditions of informatization of education.

Our foreign colleagues also bring up the informatization of education question and therefore they study advantages and disadvantages of electronic textbooks.

Matthew K. McGowan with coauthors studied students' perception of electronic textbooks and how this perception may affect the development and application of electronic manuals in practical training [6]. Comparing a group of students preferring printing editions and a group of students giving preference to electronic textbooks, researchers found out that in general students are attracted by discounts at acquisition of one or another sort of textbook. In this regard electronic textbooks have a certain advantage over the printed counterpart, however this advantage alone will not lead to substantial increase of a consumer demand for electronic textbooks. In this connection researchers should pay attention to another format of electronic textbooks which will use means of presentation of material that should be directed to the

profound assimilation of information and would be able to increase students' interest in this product.

M.K. Murray and H. Perez in their paper "E-textbooks are coming: are we ready?" [7] compare printing textbooks and electronic tutorials, but they also didn't find significant differences in students' perception of them and therefore researchers come to the conclusion that until electronic textbook format and features are standardized and considerable reduction of price is reached it will be impossible to consider electronic textbook as a competitive alternative to printing editions. Though scientists see the future of electronic textbooks in their compatibility with modern digital devices (e-book readers, iPhones, iPads) and in use of the integrated media means, hyperlinks to additional materials and means of maintenance the intertext links.

An issue of expansion of reproduction opportunities of electronic tutorials was also raised by Russian scientists. Bosova L.L., Zubchenok N. E. in their work explored options of reproduction of electronic content on mobile electronic devices, specified concept of "electronic textbook", determined its main opportunities [4]. The basic structural components of the electronic textbook were characterized, the requirements to multimedia and interactive content of the electronic textbook were submitted.

Gasov V.M. and Tsyganenko A.M. explore methods and means of preparation of electronic editions, describe in detail the main components of electronic editions, discuss modern language design tools of HTML-documents, scripts, applets, questions of practical implementation of modern electronic editions in relation to Web-publications. In spite of the fact that this manual was published in 2001, it still has not lost its relevance to this day and it is recommended for review before creation of electronic tutorials [5].

The most part of modern researches is aimed at identifying the principles of the structural organization of the electronic textbook, the representation of material in the form of hypertext and the participation of multimedia means in the presentation of the material. Therefore in articles and reviews on the subject often we are talking about electronic textbooks or video textbooks which represent the electronic version of the printing edition, collection of the digitized texts with elements of animation and audio-and video records, or video recording of a class teacher. We, on the other hand, will consider relevance and the principles of creation of the electronic multimedia textbooks intended for the study of software.

At the time of prompt development of information technologies, in a century of scientific and technical progress there is a continuous increase in the number of software products, continuous updating of the existing programs, processes on many activities are automated. In this regard there is a constant need for the development of the products which appeared in the market of software.

Our institute is engaged not only in the development, but also in the implementation of programs (both developed by our employees, and purchased), while implantation usually occurs in all subjects of federation at once when large volume of information is required to be transferred to very extensive audience. Therefore creation of electronic multimedia textbooks on the put into operation programs is a vital, urgent necessity.

Our experience in creating electronic multimedia tutorial: In modern educational institutions a lot of attention is paid to computer maintenance of professional activity. Different training and testing programs for various disciplines are used in educational process. With informatization of educational process interest in electronic multimedia textbooks also increased.

First of all, we find it very important to stress that we are going to use the term "electronic multimedia tutorial" instead of "electronic multimedia textbook" because "textbook" usually imply the existence of a text component while we intend to explore completely different kind of a textbook – a tutorial, a guide with a another set of opportunities. In that kind of a tutorial text is only supportive element but not a dominant one.

The basis of constructing and presenting information in the electronic multimedia textbook are hypertext and multimedia.

The hypertext structure is widely used, generally in information and library systems in various fields of knowledge. Hypertext is the information array where links between the selected elements are set and automatically supported. In this case, you can use a quick search of information on various criteria.

Usually the hypertext is understood as a set of texts with properties of the interface which contain transition knots between certain fragments that allows to choose readable data or sequence of reading. For example, the hypertext is any story, the dictionary or the encyclopedia where there are links to other parts of the text, usually associated with the term.

Nowadays multimedia systems more and more gain ground. Multimedia (English «multimedia» from Lat. «multum» is a lot of and «media», «medium» is a center; means), the electronic medium of information including several of its types (text, image, animation and so forth).

The multimedia in modern understanding means the computer technology using not only text for presenting the information, but also graphics, color, sound, animation, video materials in any combinations. Respectively the electronic multimedia textbook is a textbook by creating which the computer technology of multimedia, that is technologies of the combined transfer of color, sound, graphics, etc. is used.

Mutual coordination of music, voice of the teacher, sound effects with visual are capable to provide nearby figurative perception of educational material, emotional impact on the student that promotes not only to deep assimilation of knowledge, but it is interfaced to much less strain on the eyes of students. Therefore the principle of the hypertext and hypermedia is displayed in a known Russian proverb "It is better to see once than to hear a hundred times" or in an English proverb "A picture is worth a thousand words".

Speaking about personal experience of creating the electronic multimedia tutorial, we will start with why there was a need to develop an electronic manual.

The department of training and distance learning more and more actively uses remote methods of training of employees, such as:

- organization and conducting webinars;
- organization and conducting videoconferences;
- creation and use of electronic aids.

One of the main work's objectives of the staff of department of training and distance learning is distribution in all possible ways of practically relevant information on optimum methods of use of the software products developed by the Institute or acquired for its usage in the Penitentiary System. Therefore, there was a necessity to develop the available and visual aid during the implementation of a software for simplification of work with a software of employees on places. During the application of a program it is impossible to be limited only by instructions and the manuals with illustrations and tables, it is absolutely necessary to demonstrate the direct work with the program, functions of certain buttons.

The electronic tutorial represents the educational electronic edition created at a high scientific and methodical and technological level, allowing to present for exploration theoretical material, to organize testing and self-directed work, allowing to estimate the level of knowledge on a certain subject, and also containing necessary reference information for studying.

The electronic multimedia tutorial is suitable for use in both traditional system of training, and in distance learning. At lectures and practical lessons the electronic tutorial allows the teacher to give classes in the form of self-directed work on the computers, while acting as a director and a consultant; allows the teacher quickly and effectively monitor students' knowledge by means of the computer, to set the contents and level of complexity of control measures; allows to use in the classroom the most essential material, leaving the rest of educational information for independent work with the electronic tutorial.

In the system of remote education the electronic multimedia tutorial is not a supportive application, but it is one of the main methods of training. Therefore it has to include detailed methodical recommendations, control questions for testing, situational tasks and tasks for creative activity.

How did we begin our work on creation of the electronic multimedia tutorial? We started with the method of trial and error because at that time nobody in our field of work created anything similar. We began with conducting monitoring software tools for audio recording, editing electronic aids, and we also studied the electronic multimedia tutorials created in other various organizations.

The first electronic manual was created by employees of our department in 2009 by means of Course Lab software: it had no general menu and represented the folder in which the separate files named by theme were collected. Our first experience was inefficient both from the practical point of view (to move from topic to topic it was necessary to close one file and open another), and from the aesthetic point of view.

Creating the electronic multimedia tutorial focused on studying of a new software tool you are required to use the program allowing to make a screen capture and to display the actions performed on the computer while recording comments and explanations of the performed actions. In this case visualization is extremely important. In creation of electronic multimedia tutorial on work with computer program Subsequently in our work we began to use possibilities of Adobe Captivate, which allowed us to achieve obvious progress on development of electronic tutorials.

Today 16 electronic tutorials are developed, and work on their creation continues. But it is necessary to remember that in electronic multimedia tutorials of this sort the attention concentrates on the studied program, and the identity of the teacher, although not completely, but for the most part is reduced. Naturally, nobody will be able to replace completely real teacher, but we also don't aspire to it. Though modern technologies of distance learning make it possible to replace this communication with implementation of multimedia interactive elements of management and, thus, to provide an effect of the environment which will organize transfer of knowledge to the trainee in the best way.

To facilitate the work of those who plan to create their electronic multimedia tutorials in the future, we developed an approximate cycle of preparation and creation of electronic tutorials, based on personal experience. The cycle includes the main stages involved in that work.

Process of developing of the electronic multimedia tutorial on working with a software tool consists of several stages:

1. Studying of functions, opportunities and features of the program, and also studying of the standard and legal base regulating work with this software.

2. Scheduling of the electronic multimedia tutorial: distribution of educational material according to sections and chapters. Separate sections can be corrected and added in the course of training. Updating of a training material, release of the corrected and updated versions do not involve significant expenses on republication unlike the way it happens with the printed textbooks.

3. Making HTML menu corresponding to the plan of the electronic multimedia tutorial: implementation of convenient and understandable navigation on chapters of the electronic multimedia tutorial. The HTML format is the primary Internet format that allows to use the electronic tutorial and its separate sections to be placed on the server of educational institution, and also to apply it in distance learning system.

4. Writing down the texts to chapters of the electronic multimedia tutorial, preparing additional materials for recording of the chapters when combination of all opportunities offered by modern computer equipment is used: hypertext, graphics, video records, audio records and animation.

5. Recording audiovisual materials by means of Adobe Captivate software. Implementation of screen capture and demonstration of work in the program with parallel commenting workflow.

6. Editing recorded chapters, adding graphic and animation materials.

7. Publication of the recorded chapters and attaching them to the electronic multimedia tutorial.

To record video and audio we used Adobe Captivate. This program allows to record the actions made on the screen and a voice of the teacher who comments on it simultaneously. Thus the project is created, record divides into slides which then can be edited and supplemented. But besides the opportunities given by Adobe Captivate we also used another software. Processing of images was performed by means of Adobe Photoshop, CorelDRAW and in some cases by Fast Stone Image Viewer. More often processing of images includes control of a tone curve, color correction, increase of sharpness of the image, suppression of noise and correction of distortions. Processing of an audio recording can be performed directly in Adobe Captivate, or it is possible to process a sound by means of another software, for example, by Adobe Premiere Pro, and then to load it into prepared Adobe Captivate project. In our opinion, if it is required to impose sound filters, to suppress noise or to add reverberation then it is better to use Adobe Premiere Pro. It is also easy to load the presentations created in Microsoft Office Power Point into the Adobe Captivate project. We tried to make each chapter of our tutorial not only informative, understandable, but also colourful and interesting. Creation of the menu of a tutorial also requires knowledge of bases of the HTML language to prepare a homepage of the tutorial.

Thus, we create electronic multimedia tutorial by using software tools, such as: Adobe Captivate, Adobe Photoshop, Adobe Reader and other software of a line of Adobe, as well as HTML technologies of contemporary level.

As a result the tutorial for self-training of employees adapted for training of various groups of users both on preparation level, and on the nature of activity is created. By means of electronic aids students receive not only the factual information provided with illustrative material. This kind of tutorial demonstrate various processes which can not be actually shown and completely understood when using printed textbook.

It is obvious that creating electronic multimedia tutorial the set of software tools and opportunities are used, and that is exactly what allows us to create the new, colorful, relevant and competitive tutorial in the market of textbooks.

Results and significance of the question posed: The problem of making and using electronic textbooks in educational process has been being discussed for a long time now. Both Russian, and foreign researchers quite often turn to this topic and offer their own approaches to the creation of electronic textbook, derive advantages and disadvantages of its use in the learning process. However, not enough attention is paid to electronic multimedia tutorials which are more and more widespread in recent years. Most often electronic textbooks are considered in comparison with printed textbooks which is quite understandable and explainable. But in this comparison electronic manuals on educational disciplines with obvious prevalence of textual material in them are taken into account. The problem of making electronic multimedia tutorial on work with a software tool remains poorly understood and insufficiently studied to this day.

At the same time there are many new tools for creating electronic multimedia tutorials, and consumer interest in such type of a product increases.

We can sort advantages of the electronic multimedia tutorial in comparison with traditional printing editions.

Firstly, it is possible to mark out obvious compactness of storage of huge amounts of information. Not just a few volumes of the encyclopedia, but even the library of the school student can fit in on one CD-ROM disk.

Secondly, the undoubted advantage of the electronic textbook is its accessibility. A teacher has an opportunity to place the textbook on the server of educational institution or on a web page in the Internet for simultaneous access to it for multiple users.

Also the possibility of filling the manual with powerful visual aids should be noted. The electronic textbook is performed in the format that allows hyperlinks, graphics, animation, various active elements like registration forms, test interactive tasks and other multimedia opportunities.

Unlike the printing textbook, edition and addition of which takes several years, the updating of electronic textbook is much faster and easier.

Besides, it is easy to use: the electronic menu allows to pass quickly from one subject to another, to exercise free navigation according to sections.

Creation and design of the textbook, in principle, doesn't include special expenses, except the availability of necessary programs and time for creation of a textbook.

And of course, it is necessary to mention the fact that the electronic textbook created in a digital format is almost eternal, isn't afraid of wear and aging.

However if we are talking about a text component of the electronic textbook then the inconvenience of reading texts from the monitor screen should be considered as its shortcoming although in this case it rather goes for the digitized printing edition, but not the electronic textbook in its modern understanding.

Now let's compare the electronic multimedia tutorial to the video manual which represents a collection of video tutorials on a particular discipline. The video manual is based on an audiovisual component while it is also possible to add to the electronic multimedia tutorial text inserts, presentations and additional materials of other types. Also one of features of the video tutorials is direct participation of the teacher in presenting information, that is training by means of such tutorial is most likely approached to perception of information on traditional lectures. And in this case the identity of the teacher, his impact on students, methods of transferring of educational material are very important. In the electronic multimedia textbook extent of participation of the teacher can vary.

Having a necessity to create electronic multimedia tutorial you should consider some recommendations:

- The electronic tutorial has to make the process of training convenient and comfortable to contribute to more efficient assimilation of the material in a self-directed training.
- The training material has to be well structured and provides complete course fragments.
- Since we discuss not just an electronic textbook, but the multimedia tutorial describing the application of a specific program, it is necessary to emphasize predominant use of video records and audiocomments.
- The text part whenever possible has to be followed by cross references for reduction of time for search of required information.

Informatization of education is the main part of global process of informatization of society, thus, the electronic tutorial is another step to improve work skills in the computer environment, stimulation of ability to education and self-education.

Conclusion and glance to the future: Researchers see the increasing role of electronic editions of educational nature in possibility of their rapid modification in accordance with the change of the achieved level of knowledge. Nowadays electronic textbook or electronic tutorial is being transformed to constantly developing training and monitoring the level of knowledge specialized information tool. Educational editions of a new generation are urged to ensure unity of educational process and modern scientific researches, to provide expediency of using new information technologies in educational process and, in particular, various kinds of so-called "electronic textbooks". The effect from application of means of the computer technology in education can be achieved only when the expert on a subject isn't limited in means of presenting the information and in ways of using databases and knowledge.

Modern technologies develop promptly; the period of moral obsolescence of technical innovations takes often two-three years. Under these circumstances the expert has to continue training continuously, without interruption from main activity. For this purpose it is necessary to create computer systems for distance learning and their content – in the form of electronic tutorials and lectures. Development of the effective learning tools that rationally use all possibilities of computer technologies – is a very difficult challenge requiring a long, continuous and laborious work. Now there is no uniform concept on creation of electronic tutorials, and only the first steps in its creation are taken.

Researchers, in our opinion, have to pay attention to a new format of electronic textbooks – multimedia interactive tutorials. They can be used both at school, and in the highest educational institutions when studying various disciplines, and also at advanced training courses. Opportunities and methods of application in practice of such tutorial aren't completely studied and aren't appreciated by everyone. Besides, it is necessary to understand extent of assimilation of a training material by students when using an electronic multimedia tutorial.

It is our deep belief that an electronic multimedia tutorial is an irreplaceable assistant when training to work with a new software. We have already stated all its advantages earlier.

We hope that our work will bring the contribution or can become a basis for creation of the similar concept of the electronic multimedia tutorial.

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