

SCIENTIFIC-METHODICAL PRIORITIES OF UNIVERSITY EDUCATIONAL PROCESS: DIDACTIC PROTOTYPE OF THE ELECTRONIC TEXTBOOK

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The relevance of the study is conditioned by the search for alternative approaches to the definition of scientific - methodical priorities of university educational process in connection with the intensive introduction of information training materials and electronic media technologies into it, which are borrowed from the arsenal of the Internet - resources, and combined by complex concept of "electronic book". In this regard, this article is dedicated to the development and testing of theoretical - methodical approach to the structure's and content's projecting of the electronic textbook's prototype which corresponds to the aims and objectives of scientific - methodical priorities of university educational process. To substantiate the theoretical and practical significance of didactic prototype of the electronic textbook as a scientific - methodical priority of the educational process the method of pedagogical modeling was used. The article discloses the discourse of the concept "electronic textbook"; based on the results of the study it reveals the structure and content of the electronic textbook's didactic prototype, multimedia technology of its implementation; substantiates the structure of the elective modules for students "Didactic prototype of the electronic textbook"; proves the effectiveness of elective module using motivational, cognitive, axiological and activity criteria. Presented in the article results of the study may be useful for the practice of teachers, trainers, supervisors and university students.

Keywords: electronic textbook, didactic prototype, scientific-methodical priorities media conglomerate, hypermedia learning tools, information technology, multimedia technology, simulation method, performance criteria.

INTRODUCTION

The relevance of research

Mass informatization of university educational process creates objective conditions for the transformation of its scientific - methodical priorities. The theoretical and

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practical relevance of the study of the problem is noted by modern specialists (Lankin, 2008; Logvinov, 2005; Selevko, 2006; Khutorskoy, 2001; Choshanov, 2013; D'Angelo, 2007; Burns, 2011; Mitra, 2005; Khuziakhmetov & Nasibullov, 2016; Gabdrakhmanova, Khuziakhmetov & Yesnazarova, 2015). The primary task of the implementation of these reforms is pedagogical correction of the structure and content of scientific - methodical priorities of the educational process, which are borrowed from the arsenal of the Internet - resources and promoted in the education market as an electronic textbook. The structure of the priorities identified in the current conditions is not only means of educational purposes, but also structurally - contextual components of the information educational environment in which the teacher and the student unite together in a union of equal entities to solve common educational objectives. These trends provide electronic textbooks multi-level functions of the educational environment: training, education, development, communication, formation of professional creative activity, reproduction of knowledge, cultural values, cognitive information sources, etc. But before the current time the experts do not have scientifically - based approach to the definition of teaching essence of this phenomenon. The question remains open - what is the electronic textbook today: whether it is a means of learning process, the system factor of the educational environment or the model of university educational process in which the main role is played not so much by subject content but a technology with the help of which the course material is included in the system of educational-information communication (Berenfeld & Butyagina, 2005; Gordon, Loginova & Khristochevsky, 2008; Valeeva, Aitov & Bulatbayeva, 2016; Kalimullin, Khodyreva & Koinova-Zoellner, 2016; Vasyagina & Kalimullin, 2015; Kalimullin & Islamova, 2016; Vlasova, Simonova & Soleymani, 2016). The results of this study prove that the electronic textbook today is a media conglomerate of the whole variety of scientific - methodical priorities of university educational process, defining bifurcations (critical points) and teaching background of its didactic prototype's projecting (objectives, content, technology, communication "teacher - student - information space"). In this regard, the focus in this article is devoted to the development and testing of theoretical - methodical approach to the projecting of the structure and content of the electronic textbook's didactic prototype corresponding to the aims and objectives of scientific - methodical priorities of university educational process. To substantiate the theoretical and practical significance of the studied problem the discourse of the concept "electronic textbook" is determined; the structure and content of the electronic textbook's didactic prototype, multimedia technology of its implementation are set; the structure of the elective modules for students "Didactic prototype of the electronic textbook" is substantiated; the effectiveness of elective module using motivational, cognitive, axiological and activity criteria is determined.

LITERATURE REVIEW

The semantic content of the term “electronic book”

During the study the developmental regularities of the semantic content of the concept “electronic textbook” are established in relation to the needs of the university in the creation of training facilities to meet modern educational objectives, and rapidly developing information - communication technologies (Kulagin, Naikhanov & Ovezov, 2004). It is proved that the electronic textbook is now a key part of the learning process of university students. It is found that interactive computer technology activates all kinds of student activities: mental, verbal, physical, perceptual, accelerates the process of assimilation of educational information. Computer simulators contribute to the acquisition of practical skills. Interactive testing systems analyze the quality of knowledge. In short, the use of media - tools and multimedia - technology enables to build a training scheme in which a reasonable combination of conventional and computer forms of organization of educational process provides a new quality in the transfer and assimilation of the students’ knowledge system (Drevs, 2014). Among the variety of classifications, types and kinds of the concept “electronic textbook” in the course of the study the efficacy of textbooks is established:

- 1) with high dynamics of illustrative material representing a textbook which has become traditional already on the subject area, which is independent and immutable. Along with the base material it contains means of interactive access, means of animation and video-image which in dynamics demonstrate the principles and methods of implementation of the contents of the studied processes and phenomena. It is used on personal computers or local computer networks and distributed on CD-ROM, DVD, CD-R, as well as electronic computer network;
- 2) Internet-books - open and having references to external sources of information, database and knowledge. They are displayed at one of the university’s servers or in the Internet.

Different points of view of scientists on the research problem

Attempts to use the information (technological) approach in university didactics, undertaken in the 90-ies of XX century in the world’s higher education systems, have begun fundamental transformations of the educational process of high school: the introduction of information technologies, based on the programmed, intelligent and simulation training, expert systems, hypertext and multimedia, microcosms, demonstrations. This private technology is implemented in universities of 90s in accordance with the learning objectives and teaching situations that arise in the process of rethinking the students’ needs in higher education and teachers in the

harsh conditions of renovation of educational technology. In these processes, the dominant role is played by the computer as a scientific - methodical priority of university educational process. In modern conditions of information technology's development the nature of these transformations has shifted in the area of modernization of the educational process with the help of media resources of science - methodical priorities of the process, that is, through an electronic textbook. The study finds that there is no a unified approach to solving this problem among specialists. Supporters for active use of e-books (Burns, 2011; Andreyev, 2003; Bashmakov & Bashmakov, 2003; Yelistratova, 2011; Kameneva, 2012; Kolesnikova, 2010; Ilyina, 2007; Ivanov, 2002; Klarin, 2002; Choshanov, 2013; Valeeva & Bushmeleva, 2016) prefer them for their information and electronic - technical advantages over traditional textbooks (compact storage of educational material on magnetic media or on the Internet; modeling and solving of educational tasks interactively, providing educational material in both linear and nonlinear format, convenient navigation system and an opportunity to study for an individual trajectory in an optimal pace, use of multimedia - graphics, audio-visual and animated objects to design training material, implementation of portfolio of students' educational activity in the course of results' monitoring of tasks' implementation. Supporters of a more moderate, pedagogically balanced approach (Avdeyeva, Baryshnikova & Bosova, 2008; Bepal'ko, 1995; Zagvyazinsky, 2001; Zainutdinova, 1999; Zizek, 1996; Krajevski, 2001, Khutorskoy, 2001) are concerned about the fact that the electronic textbook is focused on the "withdrawal" of the teacher and reduction of his role to the role of "navigator" in the learning process. Thus, on the one hand, the potentially increases, and on the other - becomes implicit and hidden, student's personal involvement in the activities of the educational space. The supporters of moderate direction are convinced that what is now clearly perceived as a positive factor of transformation of scientific - methodical priorities of university educational process can contain significant methodologically incorrect solving for the educational space of the university. Among them they include moving of educational functions and powers from the individual teacher into the electronic media, the transformation of the university educational environment into virtual technologies' environment, replacement of the institutional nature of the higher education institutions from the information space as a competitor of transnational corporations on the reproduction of intellectual resources, and others. During the study of alternative points of view on the issue of research was established pedagogical mechanism which coordinates the diversity of views and approaches to electronic textbooks and regulates its use in teaching university students as a scientific - methodical priority of the educational process. Such a mechanism based on the results of research is the didactic prototype of the electronic textbook, which integrates and coordinates the objectives, principles, functions, training content, advanced technology and criteria for the creative development of the individual student.

RESULTS

Regulatory - structural classification of scientific - methodical priorities of the university educational process

A set of types determined by electronic means is justified:

- educational electronic editions - a set of graphics, text, digital, voice, music, video, photo and other information, as well as printed documentation. The electronic edition can be executed on any electronic media - magnetic (magnetic tape, magnetic disk, etc.), optical (CD-ROM, DVD, CD-R, CD-I, CD + etc.), as well as published in the electronic computer network. Educational electronic publication contains the systematized material on relevant scientific and practical knowledge, provides a creative and active mastery of knowledge, skills and abilities by students in this area, has a high level of performance and artistic design, completeness of information, quality of methodological tools, technical design quality, clarity, logic and consistency of presentation;
- e-learning course - learning disciplines of training cycles in university, which are included in the structure of state educational standards. The official status of academic electronic publication should be approved by the higher education authorities;
- electronic textbook – is the edition, which partially or completely replaces or supplements the textbook and officially is approved as of this type of publication. Electronic textbooks are books on some of the most important sections of the disciplines of the state educational standard of professions and trends, on the disciplines of an exemplary and working plan, as well as collections of exercises and tasks, albums of maps and charts, atlases of designs, anthologies on subjects of exemplary and working curriculum, guidance to conduct educational experiments, guidance to the workshop, course and degree projecting, reference books, encyclopedias, fitness equipment, etc.;
- electronic textbook – in teaching - standard documentation is defined as the basic educational electronic edition, created at the scientific and methodical level, corresponding to federal component of specialties and areas defined by the didactic units of standard, curriculum and a specific program (Kamenev TN 2012).

In the current theory and practice of university educational process, there is a wide variety of definitions of the concept. Often under the electronic textbook is understood electronic educational publications, electronic manuals, e-learning course, and electronic educational - methodical complexes. The study established

the generalized characteristics of electronic textbook used in the practice of university professors:

- a system of teaching materials organized in a certain way designed to achieve a set of goals, which is used, as a rule, in the course of studying the subject under the control of the teacher (Yelistratova, 2011);
- computer training system, including didactic, methodical and information and reference materials on the subject matter, as well as software that enables to use in the complex materials for self-control of learning and educational achievement (Avdeyev, Baryshnikova & Bosova, 2008);
- training program - methodical complex, allowing independently to master the educational course or parts of it, and which in its educational purpose, combines the functions of the textbook, reference book, task book and laboratory practicum (Zainutdinova, 1999)

It is found that in existing definitions of the electronic textbook its basic idea is not traced - projecting of the new educational environment for students in educational process of high school. Such innovative indicators of the electronic textbook escape from the attention of the creators of the concept:

- the identification of the electronic textbook with functions which are inherent to the traditional textbook on paper-based information's carriers (information - as the main source of obligatory educational information for students; motivation, developing an interest and needs of the individual student in training; orientation, guiding students on mastering the methods of cognitive activity; integrative, revealing the significance of interdisciplinary connections, bringing up, focused on the improvement of personal qualities of students, etc.);
- the presence of opportunities of Computer visualization of educational information;
- maturity of active-activity cognitive environment for students due to the opportunities of the information retrieval and research activities, a variety of practical tasks with automatic check of the results, automation of training processes and the control of knowledge, creative activity support with content items, use of built-in tools of communication for the organization of network interaction "teacher - student - information environment", forming of partnership skills, communicative competence, solving problems of distance learning;
- high level of function of navigator on installed on a mobile device of electronic materials of educational - methodical complex;
- sufficient level of conditions for the development of individual educational trajectories of students in the mastering of each subject based on the use

of additional material, hyperlinks to the electronic application materials to the textbook, on network resources of electronic educational repositories;

- availability of download technology, and rapid updating of educational content by modern communication channels;
- providing communication between the participants of the educational process by interaction with a mobile devices with remote systems of organized data storage (educational portals).

The study proved the organizational - methodical and technological advantages of e-books compared to the traditional paper-based textbooks: compact storage of educational material on magnetic media or the Internet; modeling and solution of educational tasks interactively; providing educational material in both linear and nonlinear formats; convenient navigation system and an opportunity to study by an individual trajectory in an optimal pace; the use of multimedia (graphics, audiovisual and animation projects) for the design of educational material; implementation of monitoring of educational activity of students due to logging of results of completed jobs.

This study enables to define the concept “electronic textbook” as a system, and the full presentation on the certified mobile devices of the subject material or a separate section in accordance with a program that supports all parts of the educational process’s didactic cycle.

The set of established indicators reveals the following types of e-books:

- autonomous, which are located on a PC or a CD-ROM. They provide for the student’s work in the same mode - mode of full autonomy;
- network. Open and having references to external sources of information, data and knowledge base, placed on one of the servers of the institution or the Internet;
- complex. They can be placed on a CD-ROM, integrating in their functional structure the means of organization of asynchronous and synchronous communication, such as email and Internet resources.

The established types of electronic textbooks provide the opportunity for the organization of feedback in the offline and online modes, the program management of educational - cognitive activity of students in the process of passing by them of individual learning trajectory (Kolesnikova, 2010).

The didactic prototype of the electronic textbook: the structure, content and media technologies

This study substantiates didactic prototype as a pilot project of the electronic textbook. Along with the basic material the prototypes contain tools for interactive access, the means of animation and animation, are characterized by high dynamics of illustrative material, as well as video images showing mobile principles and methods of implementation of individual processes and phenomena. Prototypes

are realized on personal computers or in local computer networks and distributed on CD-ROM, DVD, CD-R, CD- I, CD +.

Basic pedagogical and information requirements for pedagogical purposes of the prototype:

- focus on the training of specialists of a new generation;
- focus to increase the students' independent work;
- focus on the availability in use, information content, clarity, full use of science - methodic priorities of the educational process and new information technologies;

To keep the program of functioning of the scientific methodic priorities of the educational process the structure and content of the electronic components of a didactic prototype is established: navigational, subject - contextual, objectively - procedural; information-referential and activity-based. The study proves that each of these components has a specific functional load in the educational environment of the electronic textbook, which is created through the integration of various information technologies to improve the efficiency of educational activity of students.

The navigational component supports an independent educational activity of students in mastering the content of the discipline. This component includes the necessary funds of students' methodical support when working with text material, printing the necessary fragments of the navigation apparatus (table of contents, characters -signals, alphabetical, names, and topic signs, custom bookmarks, notes, etc.), providing fast information search, instant transition to the desired chapter and paragraph, reflecting the relationship between the main and auxiliary materials, as well as allowing students to monitor and adjust their user level in the educational space of the electronic textbook.

Subject - contextual component. It contains general information about the electronic textbook (goals, objectives, place in the learning process, what disciplines it is based and what disciplines it supports); sections' content, list of themes and sub-themes of the discipline; methodic guidelines for study of academic material, profiles and sheets for monitoring of the knowledge acquisition by students.

Objectively-procedural. It is a major component in the organization and implementation of the learning process for each subject individually. It defines the scientific content, methodical construction and sequence of study of educational discipline. The quality of the discipline study can be significantly higher if methodical recommendations or methodical guidelines for its study are used, which provide guidance (navigation) of students in the content of the material being studied.

Information-referential component includes training, teaching and information resources to support the work of students of the information - retrieval and problem-

practical nature. Among them there may be terminological electronic dictionaries, grammar reference books, electronic libraries, a list of recommended information sources for independent study, a list of addresses of additional Internet information resources (distance courses, business, computer games, electronic encyclopedias, and informational materials), indicative lists of the design work and requirements for their registration.

The activity-based component. It is designed to fix educational and professional knowledge and skills which are obtained in the process of self-training. The activity based component provides the assimilation by students of cognitive activity methods, develops an interest in creative work, the ability to solve scientific and applied problems. Practical problems can be presented in it as a test, and in the form of collections of tasks (exercises), depending on the specific of the discipline. In the structure of the activity based component means of evaluation of educational achievements, means of their management, means of students' communication are determined:

- the means of students' educational achievements' evaluation provide collection of current and effective information on the educational activity of the subject of study and provide him with information on the work completion in the form of a report. Electronic testing is a formalized type of control and / or training. Work with training and supervising tests and self-control systems may provide an explanation in case of an incorrect response and recommendations on the use of the textbook, thesaurus, or additional material. In case of the electronic textbook's placing on Internet-server of the institution the obtaining by the teacher of information on the progress of each student through e-mail resources may be provided;
- management tools provide students with the opportunity of free choice of one of three operating modes in the electronic learning environment – self-government, differentiated management on the part of the teacher and the rigid control by the software learning tools. The first two types of control are conditioned by the human factor - the student and the teacher and the level of communication between them. Hard Control mode provides program management of training and cognitive activity of students in the process of their individual learning path's passing and in this case all the achievements and failures of the student are fixed by electronic means in accordance with the specified program. In this mode the following forms of educational activity are implemented: self-study and self-examination of educational material submitted in text, graphical and schematic form, using hypertext and multimedia technologies, both within the didactic prototype of the electronic textbook, and the Internet;
- means of communication are used for the organization of electronic interpersonal communication between the subjects of study with the use

of synchronous and asynchronous communication. The learning process in this case is active, activity-based and communicative by nature.

The study proves the feasibility of creating and using of step by step algorithm of didactic prototype of the electronic textbook:

1. Definition of a didactic prototype's goals and objectives

In accordance with them, its classification is determined:

- for the study of certain subjects;
- for the study of individual sections of subjects with a through study of educational material;
- subject-oriented electronic simulators that have the reference teaching material;
- electronic automated systems of capabilities' development.

2. Development of a didactic prototype's structure as a set of stable relationships to ensure its integrity.

3. Development of a prototype's content by section and topics of the electronic textbook: the information unit, practical exercises, testing.

4. Preparation of individual programs' scenarios. The study finds that the scenario is a footage by footage distribution of the content of the course and its procedural part within the program structures of different levels and purposes.

Procedural part includes everything that is necessary to present on the screen of the monitor to disclose and demonstrate a substantial part. Software structure of different levels - are components of multimedia technology: hypertext, animation, sound, graphics, etc. The use of these means is focused: to enhance the visual and emotional memory, to develop cognitive interest, increase learning motivation.

5. The technology of practical implementation. The research proves that the most promising technologies of realization of didactic prototype in the educational process of the university are:

- designing technology for high-level programming language in combination with database technology (including multimedia). Didactic prototype is implemented as a software package, and is a separate entity that provides access to the didactic materials of database and implementing them in the learning process at a high scientific - methodical level. But this technology is economically costly. It is really feasible if the structure of the institution has a special department of professionals - programmers, advanced information resources, conceptual approaches, etc.;
- hypertext technology - best available techniques, which differ by a sufficient level of maturity;

- special language support technology using a specialized tool designed to find specific information on special requests, as well as the presentation of the found information in a convenient form for the student. Such technologies include technologies implemented by different types of mobile electronic devices (Internet tablets, netbooks, readers - devices for reading electronic books, etc.), considered as the primary client device for students.
6. Programming. At this stage, the developments of training material of didactic prototype are given to programmers for implementation on a computer.
When programming the scenario it is desirable the participation of a psychologist, teacher, designer, since the creation of a well-planned and well-thought-learning system is impossible without psychological - pedagogical and designing recommendations.
 7. Approbation. During approbation of the didactic prototype some mistakes, incorrectness, inconvenience in operation and others are revealed which were not accounted by developers.
 8. Correcting on the results of approbation.
 9. Preparation of a manual for the user.
 10. Software tools that provide design and implementation of a didactic prototype of the electronic textbook.

Common software tools:

- software products of series Microsoft Office (Word, PowerPoint, Notepad): with their use it is easy and quick to prepare high-quality e-education Benefit with built-in self-monitoring system;
- Macromedia Flash - multimedia platform used to create vector animation and interactive applications;
- Corel Draw - a vector graphics editor;
- Adobe Photoshop - a program designed to create and processing of images.

Softwear shell:

- Lotus Learning - software environment for the organization of remote full cycle and mixed learning: registration of students and teachers, the formation of training programs, study groups, carrying out on-line and off-line training, storage and analysis of training results, the preparation of various reports on learning outcomes;
- Macromedia Authorware - specialized environment for development of multimedia educational materials for training by the local network, the Internet or publications on the CD / DVD;

- Macromedia Director - a program that enables to create multimedia products with audio and video data, raster and vector graphics, text and animation materials.

The content of the elective module “electronic textbook’s didactic prototype

Objective of the module. It involves the substantiation of didactic prototype of the electronic textbook’s pilot project to provide organizational - methodical and consultative assistance to students.

Module tasks: definition of didactic possibilities, the composition of the educational content of the module, including its multimedia and interactive content; development of scenarios of interaction of students with educational content that takes into account their age, psychological and pedagogical features; development of scenarios of interaction of students with the educational content of different subject areas; development of scenarios of interaction of students with the educational content of interdisciplinary nature.

The structure and content of teaching materials in the media content of the elective module. It is defined by the features of integration of didactic and media content of the module (symbol information, static, dynamic and audio visual series, the basic content of the training material, the procedural part of the module).

1. The symbol information (text, hypertext, formula). Text of the content is distributed by sections corresponding to one or more lessons in the framework of the lecture forms of training. Paragraphs’ text is structured using sub-headings, lists, tables. Mathematical, scientific and technical texts contain formula. Hyperlinks provide a network structure of the content. Layout of the content’s text must provide its comfortable viewing: it is desirable to provide the ability to view the entire semantic unit on the same screen without using scroll bars or scroll through pages. Optimal use of screen space can be achieved by miniaturization of elements of navigation and media content, using of “pop-up windows”, and so on.
2. Static, realistic and synthesized visuals (photos, 2D-panorama photos, photomicrographs, macro mode, charts, diagrams, graphs, training drawings, etc.). The text of the module is accompanied by a significantly large number of high-quality images than the text of the classic printed textbook. In order to make optimum use of screen space the following forms of compact representation of illustrative material can be used: scaling of images, slideshows, tooltips on fragments of images and formulas, interactive maps, time bands, as well as the possibility of decomposition of block diagrams, structure diagrams (the device) of natural and man-made objects, etc.;
 - dynamic and realistic and synthesized visual series (video-experience, video excursions, 3D-panorama photo with approximation/deleting, 2D-

animation, morphing and imposition of objects, animation, created by the 3D-objects, virtual three-dimensional models of the object and so on.). Objects and processes, the main properties of which are manifested in the dynamics are necessary to be illustrated by the dynamic visuals. Students' submerging in the subject can be achieved by providing the tooltips and scalable virtual reality objects (spherical photographic and video panorama, including combined into virtual tours, interactive three-dimensional models of objects, etc.). In mathematical, scientific and technical subject areas in the study of complex models, variable parameters of which provide visualization of the phenomenon or process, parametric models can be used as the basis for the virtual lab work. Improved saturation of dynamic objects containing video fragments can be achieved through the parameters of the phenomenon / processes, etc.;

- series of sounds (audio clips) included in the didactic prototype's content for playback of audio objects (sounds of nature, technical equipment, music, speech). Multimedia - the most important characteristic of modern electronic textbook. The content of the prototype may include all of the components presented above, as well as their part. The criterion for the selection of media components is the degree of their importance in the presentation of the specific teaching material. Each component must make a qualitatively new content in the submitted material. A leading role in this process belongs to the synthesis of the content of information materials. The result should not be artificial symbiosis, but coherent, science-based and structured content corresponding to the logic of the presentation of the educational process and possessing the qualities of the new information in comparison with a simple set of media components;
3. The basic content of the training material. Prototype's material - is not a collection of basic information for storage and playback. In contrast to the teaching material on the paper information carriers it is not presented to the student in the ready form, but is set out step by step, suggesting the presence of the results of control actions on the part of the student. The procedural part of the module (unit for organization of assimilation) is a system conducive to the comprehensive development of students and includes modeling, anchoring and control components. The introduction in the content of tasks, materials and instructions is mandatory for independent work and practical training. for observation and tests, tasks and questions to test the knowledge and implementation of feedback, exercises to fix knowledge and skills, tasks and references to the previously studied material, and components aimed at the establishment of interdisciplinary and cross-disciplinary connections;

4. The procedural part of the module. The study proves that the implementation of the procedural part of the elective module is based on the possibility to establish various forms of interactive communication of students with electronic educational content: the manipulation of display objects; linear navigation (scrolling back and forth within the screen, or the transition from one screen (slide) to another); hierarchical navigation (selection of subsections with the help of the menu, tree); interactive references caused by the buttons on the navigation bar (the most effective context-sensitive help); feedback (resource responds to the user, evaluating the correctness of their assignments. These answers are visible on the screen. If further progress on training materials depends on the results, then there is a correction of the educational path.); constructive cooperation (resource allows you to create and customize on-screen objects, and manage them, for example, users can add new nodes and hyper references to the existing ones, expanding the existing structure of the multimedia application); reflexive interaction (resource takes into account the user's actions for further analysis, for example, to recommend the optimal sequence of learning the material within a lesson); imitating simulation (display objects are connected with each other and interact in such a way that the adjustment of these objects determines their behavior by simulating the actual functioning of technical devices, systems, social processes, etc.); surface contextual interactivity (the user is involved in various activities, having an implicit didactic value, this type of interactivity is used in many entertainment and educational curricula and didactic games); in-depth contextual interactivity (virtual reality, that is, the user is immersed in a virtual world simulated by computers and software). The high level of interactivity makes not only the user's sense of the ability to control the course of events, but also a sense of responsibility for the results. This activates the student. From passive outlook and perception of the information he passes to actively participate in the educational process.

DISCUSSION

The results of this study confirm the relevance of the research problem, its theoretical and practical significance in order to rethink the didactic content of scientific - methodical priorities of university educational process which are conditioned by the implementation of a new educational phenomenon - the electronic textbook. The study confirms the assumption that the electronic textbook in the modern university is a systematic and complete presentation on certified mobile devices of the subject material or a separate section in accordance with a program that supports all parts of the educational process didactic cycle. Three types of e-books are defined (stand-alone, networked, and integrated), carrying out the diversity of scientific - methodical priorities of university educational process: the bifurcations (critical

points) and pedagogical preconditions of correction of its objectives, content, technology, communications, “the teacher - student - information space.” These trends are observed in most studies (Avdeyeva, Baryshnikova & Bosova, 2008; Burns, 2011; Yelistratova, 2011; Zizek, 1996; Zainutdinova, 1999; Kameneva, 2012; Kolesnikova, 2010; Choshanov, 2013; Kayumova & Zakirova, 2016; Vlasova, Masalimova & Alamanov, 2016), devoted to the problems of integration of university educational process in its traditional pedagogical terms with the educational process, submitted in electronic format. The study establishes a pedagogical mechanism coordinating the diversity of views and approaches to electronic textbooks and regulating its use in teaching university students as a scientific - methodical priority of the educational process. Such a mechanism based on the results of research is the didactic prototype of the electronic textbook. Theoretical - methodical base of the use of the didactic prototype as a teaching mechanism of the electronic textbook is proved and confirmed by the results of its experimental verification in the process of implementation of the elective module “didactic prototype of the electronic textbook” through motivational, cognitive, axiological, activity-based quality criteria of educational activity of students (see Table 1 below).

TABLE 1: INDICATORS OF QUALITY OF STUDENTS' EDUCATIONAL ACTIVITY IN THE PROCESS OF IMPLEMENTATION OF THE ELECTIVE MODULE «DIDACTIC CONSTRUCT OF ELECTRONIC TEXTBOOK» (USING 5-POINT RATING SCALE)

<i>Effectiveness criteria of the elective module</i>	<i>Quality indicators of students' educational activity</i>							
	<i>During the planning stage,</i>		<i>During the design phase</i>		<i>At the stage of implementation</i>		<i>At the stage of evaluation and reflection</i>	
	<i>Before Experi- ment</i>	<i>After the experi- ment</i>	<i>Before experi- ment</i>	<i>After the experi- ment</i>	<i>Before experi- ment</i>	<i>After the experi- ment</i>	<i>Before experi- ment</i>	<i>After the experi- ment</i>
Motivational	0,5	1,5	1,5	3,5	2,5	3,8	3,0	4,8
Cognitive	0,3	2,0	2,5	4,0	3,0	4,5	3,5	4,9
Axiological	0,3	2,5	2,4	3,8	3,5	4,5	3,0	4,5
Activity-based	0,3	1,5	1,8	3,8	3,0	4,0	3,5	4,5

motivational criterion - the willingness of students to use the didactic content of the electronic textbook; cognitive criterion - possession of knowledge of the content of the material being studied on electronic textbooks; axiological - value - semantic aspect of the attitude to the content of didactic prototypes and technologies of the electronic textbook; the activity – based - experience in using the electronic textbook's didactic prototype in a variety of standard and non-standard situations.

CONCLUSION

The study confirms the theoretical and practical significance – to justify the scientific - methodical approach to the defining of university educational process's priorities, which is mainly in the education market is the electronic textbook today. This phenomenon is a media conglomerate of the whole variety of scientific - methodical priorities of university educational process, defining bifurcations (critical points) and pedagogical preconditions of correction of its didactic prototype (objectives, content, technology, communication “teacher - student - Information Space”). To substantiate the theoretical and practical significance of the electronic textbook as a scientific - methodical priority of the educational process in the paper the discourse of the concept “electronic textbook” is disclosed; based on the results of the study the structure and content of the electronic textbook's didactic prototype, multimedia technology of its implementation are revealed; the structure of the elective modules for students “didactic prototype of the electronic textbook” is substantiated; the effectiveness of its application in the educational activity of students with the help of motivational, cognitive, axiological and activity –based criteria is proved. This issue as a scientific - methodical direction is not exhausted by the solving of goals and objectives. Important for the theory and practice of university educational process is the problem of training a new generation of teachers possessing competences of mobile activities in unusual situations when changing scientific - teaching priorities of the educational process; designing new models of teachers' and students' activities in the educational space of the electronic textbook; designing and implementation of interdisciplinary teaching prototypes of electronic textbooks of tomorrow.

References

- Andreyev, A.A. (2003). *Didactic bases of remote training*. Direct access: <http://www.iet.mesi.ru/br/ogl-b.htm>.
- Avdeyeva, S.M., Baryshnikova, M.Yu. & Bosova, L.L. (2008). *Training materials of new generation. Experience of project “Informatization of Education System” (ISO)*. Moscow: Russian Political Encyclopedia.
- Bashmakov, A.I. & Bashmakov, I.A. (2003). *Development of computer textbooks and training systems*. Moscow: Information and Publishing House “Filin”.
- Berenfeld, B.S. & Butyagina, K.L. (2005). Innovative training products of new generation with the use of ICT. *Education Matters*, 3: 104-144.
- Bespal'ko, V.P. (1995). *Education and advanced education technologies*. Moscow: Education.
- Burns, M. (2011). *Distance Education for Teacher Training: Modes, Models, and Methods*. Washington: Education Development Center.
- Choshanov, M.A. (2013). Integration of didactics and engineering in the conditions of modern education. *Integration processes in the modern vocational education*. Kazan: Publishing house “Pechat’ - services 21st century”, 171-188.

- D'Angelo, G. (2007). *From Didactics to e – Didactics: e – learning Paradigms Models and Techniques*. Napoli: Liguori.
- Drevs, Ju.G. (2014). Electronic textbook as adaptive information system. *Economy*, 4: 49 - 51. Moscow.
- Gabdrakhmanova, R.G., Khuziakhmetov, A.N. & Yesnazarova, U.A. (2015). The Formation of Values of Education in the Mathematics Teachers of the Future in the Process of Adaptation into University Study. *IEJME-Mathematics Education*, 10(3): 147-155.
- Gordon, L.G., Loginova, T.Z. & Khristochevsky, S.A. (2008). *Modern requirements for electronic publications of educational nature*. Moscow: Institute of Informatics Problems RAS.
- Ilyina, I.A. (2007). Images of hypertext space in modern science. *Joint scientific journal*, 10: 35-41.
- Ivanov, V.L. (2002). Electronic textbook: Knowledge control system. *Informatics and education*, 1: 71 - 81.
- Kalimullin, A.M. & Islamova, Z.I. (2016). Formation of Information-Educational Environment in the Partner Universities of University of Shanghai Cooperation Organization. *IEJME-Mathematics Education*, 11(6): 1879-1890.
- Kalimullin, A.M., Khodyreva, E.A. & Koinova-Zoellner, J. (2016). 'Development of Internal System of Education Quality Assessment at a University'. *International Journal of Environmental and Science Education*, 11(13): 6002-6013.
- Kameneva, T.N. (2012). The development of the electronic textbook as a component of information educational space. *Educational Technology & Society*, 3(15): 464 - 475.
- Kayumova, L.R. & Zakirova, V.G. (2016). Educational Environment Risks: Problems of Identification and Classification. *International Journal of Environmental and Science Education*, 11(6): 1013-1019.
- Khutorskoy, A.V. (2001). *Modern didactics*. St.Petersburg: Peter.
- Khuziakhmetov, A.N. & Nasibullov, R.R. (2016). Dialectics of Correlation of the School Student Personality Socialization and Individualization in Pedagogical Theory and Practice. *IEJME-Mathematics Education*, 11(4): 475-487.
- Klarin, M.V. (2002). *Learning Technologies: the ideal and the reality*. Moscow: Nauka.
- Kolesnikova, O.V. (2010). Electronic textbook as means of informatization of society. *Bulletin of the Pskov State University. Series: Natural and physical - mathematical sciences*, 10: 64 - 67.
- Krajevski, V.V. (2001). Education or training? *Pedagogy*, 3: 3 - 10.
- Kulagin, V.P., Naikhanov, V.V. & Ovezov, B.B. (2004). *Information technology in education*. Moscow: Janus-K.
- Lankin, V. (2008). Electronic textbook: opportunities, challenges and prospects. *Higher education in Russia*, 2, 131 - 134.
- Logvinov, I. I. (2005). *Basics of didactics*. Moscow: Moscow psycho-social university.
- Mitra, S. (2005). Self organizing systems for mass computer literacy: Findings from the «hole in the wall» experiments. *International Journal for Development Issues*, 4(1), 71 – 81.
- Selevko, G. G. (2006). *Encyclopedia of Educational Technology*. Moscow: Research Institute of Technology school.

- Valeeva, R.A. & Bushmeleva, N.A. (2016). Forming Analytical Competency of Higher School Students. *IEJME-Mathematics Education*, 11(8): 3137-3148.
- Valeeva, R.A., Aitov, V.F. & Bulatbayeva, A.A. (2016). The Levels of English Language Acquisition on the Basis of Problem-solving and Product-oriented Tasks in the Multilingual Social Medium. *IEJME-Mathematics Education*, 11(1): 255-266.
- Vasyagina, N.N. & Kalimullin, A.M. (2015). 'Retrospective analysis of social and cultural meanings of motherhood in Russia'. *Review of European Studies*, 7(5): 61-65.
- Vlasova, V.K., Masalimova, A.R. & Alamanov, S.K. (2016). 'The Technology of Teacher Training Contents Projection and Implementation on the Basis of Information Streams Integration'. *International Journal of Environmental and Science Education*, 11(3): 225-236.
- Vlasova, V.K., Simonova, G.I. & Soleymani, N. (2016). 'Pedagogical Support Components of Students' Social Adaptation'. *International Journal of Environmental and Science Education*, 11(5): 641-653.
- Yelistratova, N.N. (2011). *Multimedia as a means of informatization of educational process of the university and the teaching method*. Ryazan: Ryazan Higher Airborne Command School.
- Zagvyazinsky, V.I. (2001). *Training theory: A modern interpretation*. Moscow: Academy.
- Zainutdinova, L.Kh. (1999). *Creation and use of electronic textbooks*. Astrakhan: Center for printing dissemination of scientific and technical, economic and environmental documentation.
- Zizek, S. (1996). *From virtual reality to the virtualization of reality. Electronic culture: technology and visual representation*. New York: Aperture.