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E-Teaching Materials as the Means to Improve Humanities Teaching Proficiency in the Context of Education Informatization

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The aim of the article is to determine the specifics of the creation and methodology of the use of e-teaching materials on humanities in the training system of future teachers. The leading approaches to the study of this problem are student-centered and personally-meaningful approaches to teaching leading to realizing the need for new educational opportunities associated with the use of modern information technologies in the training of future teachers of humanities. The article explains the pedagogical rationale of creating and using e-teaching materials in teaching humanities, based on the integration of subject and methodological knowledge, skills and experience in the training of future teachers; identifies and rationalizes the requirements (integrative framework, gradual development of materials, marked structure, individualization of the teaching process, the strategic character of knowledge assimilation, openness of the system) for the design of e-teaching materials for the humanities disciplines in the training of future teachers; highlights principles of integrative educational process on the basis of e-teaching materials (prioritizing e-teaching materials in the educational process; the integrity and continuity of the didactic cycle carried out with the help of e-teaching materials); grounds organizational and methodological conditions of the effective use of e- teaching materials in future teachers' training (students' needs and motivation, cognitive independence, control and diagnostics); focuses on the developed methodology of using e-teaching materials for the humanities disciplines in the training of future teachers (on the basis of the course "Teaching proficiency").

Keywords: education, teaching, students, e-teaching materials, information technologies, teachers training, integrative approach, teaching proficiency

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INTRODUCTION

The relevance of the problem under investigation is due to the fact that current orientation of education towards openness and mobility, maximum satisfaction of students' needs defines changes in the activity of University professors realizing the teaching process, education and identity formation of the future teachers in conditions of education informatization (Lopanova, 2015; Valeeva, Sirazeeva & Morozova, 2015; Ismagilova & Polyakova, 2015). The role of independent educational activity of students increases, which implies a qualitative changes in the traditional forms of educational activities in accordance with the objectives of the intellectual potential of the students. Corresponding to these problems, methods and forms of organization of university studies involve extensive use of information and communication technologies, increasing the share of independent work of students, improving individual counseling, organization of teacher-student' interaction for a joint search of new knowledge (Kalimullin, 2014). Analysis of the studies in the discussed field allowed to determine that the traditional forms of education cannot fully ensure the formation of technological knowledge of future teachers. To solve this problem in modern conditions is possible through informatization of educational space. Promising areas of education informatization include the use of modern information and communication technologies, the development of educational electronic materials/ resources, expanding the scale of their implementation in the educational process (Golitsyna, 2013; Sadykova, 2014; Semushina & Galeeva, 2013; Valeeva, Sirazeeva & Morozova, 2015).

Theoretical background

There is an urgent need for understanding new educational opportunities associated with the use of modern information technologies in the training of future teachers of humanities (Khuziahmetov, 2009). The means to achieve integrated orientation in a complex set of humanities disciplines, to form deep subject and teaching knowledge, to build a systematic presentation of the professional work of humanities' teachers are electronic teaching materials (Yachina, 2014). Their use in the teaching process allows not only to improve the professional training of future humanities' teachers, but also to ensure the formation of their experience with educational electronic teaching resources and to give knowledge as the process of concepts assimilation within a virtual didactic environment rather than as the final product (MacDonald et al, 2013). Currently, there are a number of studies on students' activity in the educational process of educational electronic materials / resources implementation, which include electronic teaching materials (Galchenkov, 2015). A distinctive feature of the use of electronic teaching materials compared to traditional means of education is to provide information not only in the form of a text, but also by means of images that allow students to focus on the studies as much as possible and contribute to a better understanding and storage of information. However, there is a lack of electronic teaching materials specifically designed for humanities course, and the structure and content of existing e-resources (information, help-guides, games, etc.) do not always meet the didactic requirements.

The analysis has shown that the integration of subject and methodological training, combined with modern information technologies makes it possible to intensify educational and cognitive activity of the future teachers of humanities and translates it into a productive level, whereas theoretical features and prospects of the integrative approach to the design and use of electronic teaching materials in the training of future teachers of humanities, taking into account not only the content of the subject, but also methods in teaching relevant disciplines at school are not

studied enough (Valeeva & Ziyatdinova, 2011). Extensive study of the training of future teachers of humanities in Universities made by N.N. Abakumova (2002) has shown that in practice of teaching humanities there are no science-based tasks designed to attract students to solve pedagogical problems by means of modern information technologies and those providing integrative knowledge and skills.

Thus, the relevance of chosen research direction is determined by the need to resolve contradictions between: potential didactic opportunities of e-teaching materials in the system of the future humanities teachers' training and the lack of design technology, reflecting the specifics of graduates' future professional-pedagogical activity; the necessity of e-teaching materials use to enhance the effectiveness of the subject and methodological training of future humanities teachers and the lack of theoretically based techniques of such training.

The fundamental studies of the following scholars served as the methodological basis for the present study: in the field of pedagogy and psychology (Krayevskii, 1994; Rubinshtein, 2002); informatization of education (MacDonald et al, 2013); professional competence (Yachina, 2009), the creation of electronic interactive tools, electronic textbooks (Anisimova & Krasnova, 2015; Prishchepa & Polev, 2009; Lapshina, Solovieva & Savicheva, 2012; Budnik & Bitkin, 2007); business games in the learning process (Traynev, 2002; Valeeva, Morozova & Sirazeeva, 2015); the development of intelligence (Sheroziya, 2013).

MATERIALS AND METHODS

Methods of research

The object of study is the process of professional and pedagogical training of future humanities teachers. The subject of research is e-teaching materials creation and its application methodology for humanities disciplines in the system of future teachers training (based on "Teaching proficiency" course).

To achieve the objectives there were used the following theoretical methods: scientific and pedagogical literature theoretical analysis on creation and use of e-teaching materials in teaching process, personal diagnostics of learning and teaching processes, systematic approach in analysis and synthesis of e-teaching materials theoretical principals, comparative analysis of traditional methods of "Teaching proficiency" course teaching and on the basis of e-teaching materials, as well as empirical methods: the collection and compilation of current information on e-teaching materials creation and use for pedagogical students' training; pedagogical experiment.

Trial infrastructure

The Department of History and the English language of Kazan (Volga region) Federal University was the trial infrastructure.

Research phases

From 2011 to 2014 years there were developed and experimentally verified the content of e-teaching materials based on the "Teaching proficiency' course and methodology of its implementation in the future humanities teachers' training.

Pilot test peculiarity of conducted research was not only in traditional and alternative teaching methods collation, but also determination of the availability and methodological effectiveness of developed e-teaching materials.

Table 1. General characteristics of the experimental work phases

Phase	Lead time	Trial infrastructure, participants	Main objective	Methods
Ascertaining	2011–2012 years		Determination of problem actual state in future history teachers' training based on "Teaching proficiency' course	Conversation with history teachers, monitoring, documents and literature analysis. Interviews and questionnaires of teachers and students.
Formative	2012–2013 years	54 people	Pilot test of e-teaching materials application effectiveness, based on "Teaching proficiency" course in comparison with the traditional teaching forms	Experimental teaching, interviews with teachers, testing, monitoring
Generalizing	2013–2014 years	Introduction of e-teaching materials application to the process of future History teachers training based on "Teaching proficiency' course in Kazan (Volga region) Federal State University	Confirmation of hypothesis	Theoretical and experimental data processing, primary methods of mathematical statistics

Ascertaining experiment was conducted at the first phase of the pilot test (2011-2012 years), having the objective to establish the actual state of the problem. At this phase, the following activities were carried out:

- analysis of current educational programs State Educational Standard of Higher Professional Education;
- future history teachers' state of training examination, majoring in "History and the English language";
- the study and generalization of humanities teachers' pedagogical experience in schools of the Republic of Tatarstan and Leninogorsk district, based on computer support implementation in the process of subjects study;
- using interviews and questioners to check teachers and students' computer skills (making presentation, sketches, taking photos and e-library creating by Ipad)
- development and implementation of the content, requirements for design and e-teaching materials methods of use in future humanities teachers training.

The results of ascertaining phase of the experiment led to the conclusion that the humanities graduates' computer skills training is insufficient to lead effective training process in a comprehensive school. The majority of respondents (89%) agreed that there is a lack of modern electronic educational resources, adapted to the State Educational Standard new programs and requirements. The traditional practice of humanities disciplines teaching at most faculties do not meet modern requirements due to lack of material and technical base. Existing educational electronic publications / resources on subject disciplines are insufficiently focused on humanities students.

As a result of preparatory phase, there was conducted formative experiment (2012-2013 years). Comparative pedagogical experiment has become the base of methodology, which required the division of students into experimental and control groups. The experiment involved full-time and part-time students of History and the English language faculty. One of the factors that could affect the results of the experiment is a possible difference in the students' initial preparation level in experimental and control groups. Before the first lesson we have conducted

introductory a five-minute general questioning, that showed nearly the same level of initial preparation of these two groups.

RESULTS AND DISCUSSIONS

Structure and content of the model

The developed model of subject oriented training of future humanities teachers based on e-teaching materials (as exemplified in 'Teaching proficiency' course) consists of the subject oriented module, which includes e-textbook (theoretical, practical and diagnosis modules) and methodological, consisting of multi-level integrative tasks, which allow to implement the student-centered approach.

Model implementation stages

Stage 1. Determining of e-teaching materials' subject and methodological goals and objectives Given the specifics of future humanities teachers training there were formulated subject-oriented and methodological goals of e-teaching materials (E-TM).

Stage 2. Modeling of teaching material content. At this stage teaching material has been divided into separate elements and systematized in order of importance. The collection of teaching material is shown in the diagram, built in a hierarchical manner.

Stage 3. Development of course studying algorithm on the basis of e-teaching materials in terms of integration of subject oriented and methodological training. As part of the algorithm development, we have identified two links: the construction of content-related sequence of elements; construction of logical connections matrix of content elements.

Stage 4. Development of teaching materials content. Developed e-teaching materials include the following modules:1) subject oriented (containing an e-textbook, consisting of theoretical, practical and control and diagnostics modules); 2) methodological (includes course steering document, methodological recommendations on e-teaching materials use, interactive assignments and manuals on e-teaching materials use). At this stage there was formed the content of both program and subject oriented modules of e-teaching materials. The content of the e-teaching materials is supported by text, audio, video, graphics, animation, determined according to didactics.

Stage 5. Development of course teaching methodology based on e-teaching materials. On the basis of the identified organizational and methodological conditions of e-teaching materials implementation effectiveness there was developed teaching methodology based on the use of e-teaching materials and students' active participation in educational process, as well as instructional and methodological materials included in the methodological module of the e-teaching materials. Among the instructional and methodological materials, special attention was paid to the development of interactive assignments and compiling manuals on using the pages of the e-teaching materials for the creation of e-lesson plans, lecture notes for teachers and e-lessons for students.

Stage 6. Pilot test of e-teaching materials functioning. This stage is necessary to test the developed teaching materials in conditions close to the real learning process. Before implementing of e-teaching materials in teaching practice, we checked the functioning of all modules of the course on educational equipment. Pilot test must be correlated with the objective set at the beginning of e-teaching materials development.

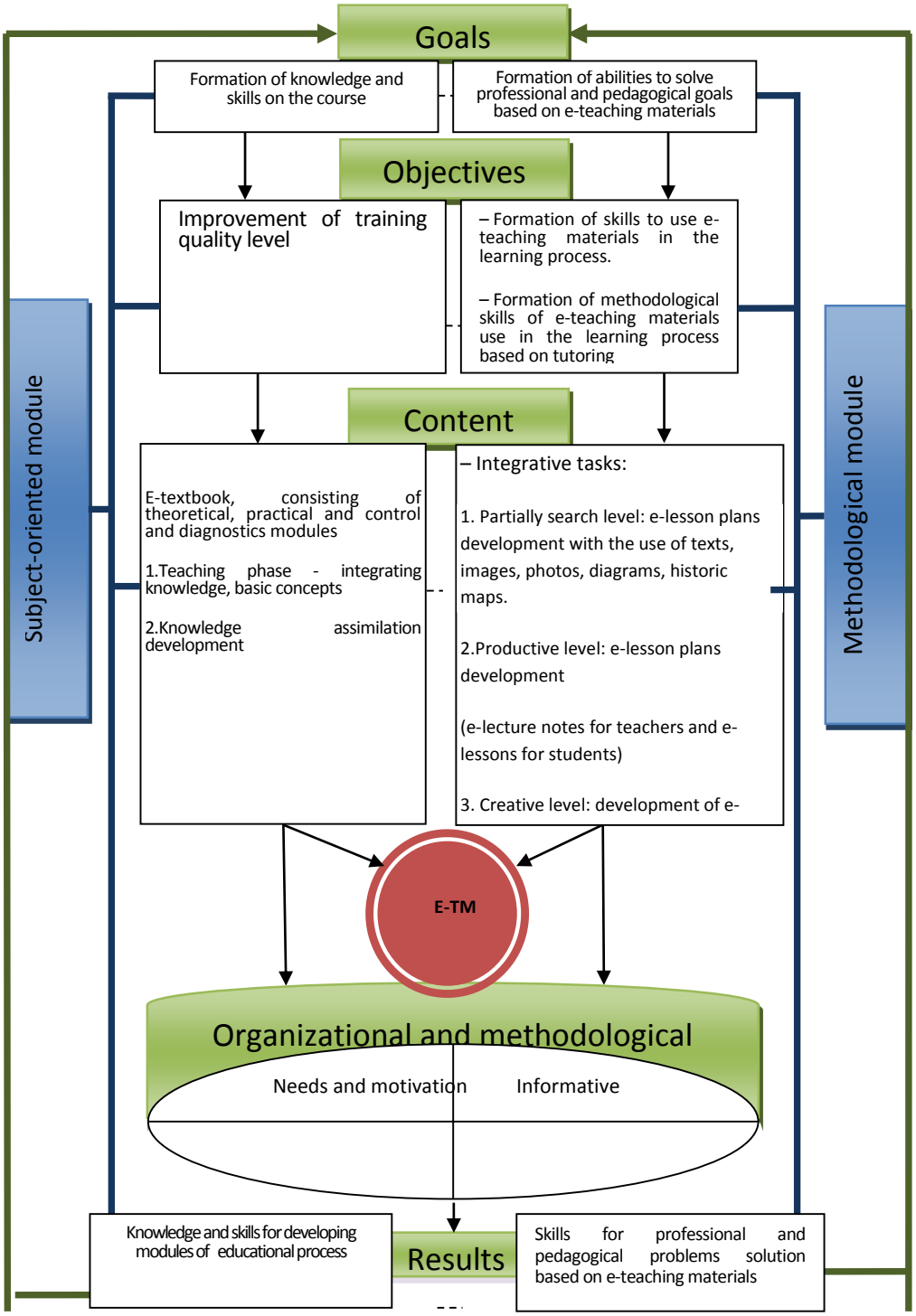

Figure 1. The model of subject oriented training of future humanities teachers based on e-teaching materials (as exemplified in 'Teaching skills' discipline)

Stage 7. Correction. At the correction stage there was carried out identification of those errors of e-teaching materials that had been determined as a result of pilot test. In particular, disruption of hyperlinks connection with the source; errors in the bookmarks; non-compliance of image scale, font characteristics, and color combinations of e-teaching materials with psychological, ergonomic and other requirements for electronic books / resources.

Stage 8. Practical application, efficiency checking. In accordance with the objectives set at the beginning of the research, it was necessary to apply e-teaching

materials to teaching practice, and to check the efficiency of the teaching methodology developed in the process of course teaching, which include teaching on the basis of e-teaching materials; to determine its effect on motivation level towards professional activity, the development of independence and cognitive activity, information competence. Pilot testing and evaluation of the proposed teaching method effectiveness based on e-teaching materials was carried out in the departments of Kazan (Volga region) Federal University. The experiment involved 54 people.

Table 2. Key Features of group of students (in %)

Group	**Performance level**			**Attitude to the modern IT**		
	Low (score 2-3)	Mean (score 3-4)	High (score 4-5)	Positive	Neutral	Negative
Experimental	21,5	49,7	31,8	64,1	23,1	12,8
Control	22,8	47,2	33	67,9	21,8	10,3

Application of e-teaching materials in the future History and English teachers' training was based on gradual formation of action method and the use of complex of multi-level integrative tasks, ensuring the integration of subject and methodological knowledge and skills.

On the basis of developments by U.A. Yesnazarova (2014) and N. P.Yachina (2015) in the field of problems of students' technological preparation through multi-level tasks implementation, we have been offered subject-integrative methodological tasks of three difficulty levels to consolidate the theoretical knowledge and to develop of professional and pedagogical skills of the future history teachers: *partially search level* – tasks of this level are supposed to stimulate students to get initial vocational skills and knowledge based on search and supplements of the missing fragments of proposed plans of e-lessons; *productive level* - tasks of this level are supposed to stimulate students to get professional knowledge and skills, since they are based on modeling of e-lesson plans: e-lecture notes for teachers and e-lessons for students; *creative level* - tasks of this level stimulate students to set objectives and solve professional problems independently. The third level of difficulty tasks involve independent development of e-lesson plans for teachers and e-lessons for the student on the disciplines of History, English. Determination of initial conditions (class, which is designed for this lesson, the topic of the lesson, the lesson type), as well as the selection of the content were carried out by students independently.

In the process of discipline studying the students were involved in the future professional environment by performing the functions of a tutor, and implementing mutual control and mutual learning. Along with other features of e-teaching materials using the system of students' access from the previous to the next educational stage, stimulated self-organization, initiative, revitalization of the students. The complex of integrative tasks provided independent fulfillment of operations with e-teaching materials, search for the necessary knowledge, the need for cognitive activity formation, the ability to solve professional and pedagogical objectives that were developed in the course of teaching practice.

To control the assimilation of knowledge and skills there were used traditional tests, which were applied after studying each topic of subject discipline. The tests offered by the experimental and control groups were identical and were introduced at the same stages of the studying material. For the experimental groups tests were offered in electronic form as one of the modules of e-teaching materials, for the control groups - on paper.

Using statistical analysis, we assessed the results of the experiment. The evaluation was conducted on the following parameters: speed, volume and quality of educational materials assimilation; productivity of practical work, expressed in the results of operations; ability to solve professional and educational goals. We obtained experimental data to evaluate the effectiveness of training (through assimilation coefficient and quality coefficient of assimilation). Final testing was carried out immediately after the studying of subjects, final deferred - after a month of the discipline. The results of the calculation of knowledge assimilation coefficient and assimilation quality coefficient, recalculated on a scale of achievement, are presented in Figures 2 and 3.

Data processing stage (2013-2014 years) includes data interpretation, drawing conclusions on the experimental work and the determining of organizational and methodological conditions of effectiveness in support of future humanities teachers training based on e-teaching materials.

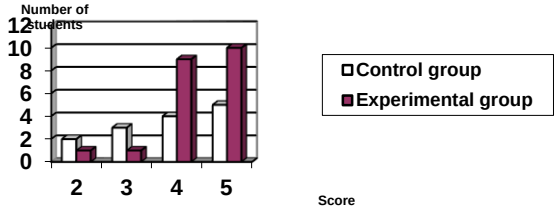

Figure 2. Final test results

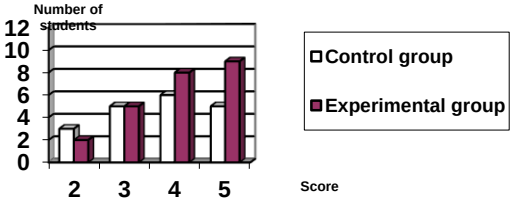

Figure 3. Final deferred test results

The experiment showed increased learning efficiency as a result of e-teaching materials implementation: the knowledge assimilation coefficient in the experimental groups is higher than in the control groups by 11%; assimilation quality coefficient - by 8%, the level of motivation has increased by 22% (Table 3).

Table 3. Results of the experiment (in %)

Group	Knowledge assimilation coefficient	Assimilation quality coefficient	Level of motivation
Experimental	82,4	79,2	87,0
Control	71,4	71,1	65,7

The survey showed that the contextual nature of the teaching, the implementation of the integrative tasks helped to raise the quality of methodical preparation of the future History and English teachers. Students of the experimental group are better than control group students (by 14%), are familiar with educational electronic editions / resources, they can use electronic teaching materials and other educational programs, as well as using them in teaching process. 73% of students confirmed that experience with e-teaching materials, obtained in higher educational institution, was used in teaching practice, and 17% are focused on participation of e-teaching materials development for disciplines of the humanities.

CONCLUSION

Results analysis suggests that students have positive attitude to e-teaching materials use while studying the humanities disciplines. Almost all the students enjoy working with computers during the learning process. The survey results

showed that students are aware of the effectiveness of computer technology and approve the use of e-teaching materials.

Summing up, we can state that the creation and use of e-teaching materials in the future humanities teachers' training lead to enhance the quality of vocational education and to develop the ability to solve professional and educational goals.

The findings of the article may be useful in practical terms for teachers of higher educational institutions in future teachers training.

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