CREATING UNIVERSITY ELECTRONIC EDUCATIONAL CONTENT WITHIN DIGITALIZATION OF EDUCATION

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Abstract: The paper presents the problem of creating high-quality electronic educational content in the context of digitalization of education. The teachers' experience in creating and using the electronic educational resources at pedagogical university has been analyzed. The authors have paid utmost attention to the creation and structuring of electronic educational content in the Mordovian State Pedagogical University named after M. E. Evseviev. It is asserted that the created digital educational environment at university, its high-quality content and extensive application in educational process allows pedagogical university to raise competitive graduates possessing necessary qualifications and demanded in the labor market.

Keywords: electronic educational content, digitalization of education, electronic educational resources, pedagogical university, future teachers, quality of education.

1 Introduction

The humankind has presently entered a new epoch, the epoch of digitalization. Now it is already impossible to imagine any field of human activity without information technologies: it is impossible to create the civilized market of services or to solve professional tasks. Digital technologies, their growth and spread have impact on all aspects of human activity. There is no doubt that digitalization and transition to a new technological structure push the humankind to a new stage in development. A special role in the process of digitalization belongs to the system of education, as it should become both a generator and a translator for global implementation and facilitation of this process. Digitalization of education is supposed to provide a quick way to transfer the knowledge, rapid development of science and technology fueled by the need to find quick methods for knowledge generation.

The existing system of higher education should ensure the training of competitive graduates able to make swift decisions in any situation, meet the society's requirements to on-the-job performance of university graduates, quickly adapt to the changing conditions, easily navigate in the educational space, successfully solve professional tasks, analyze and evaluate the results of their actions. Higher education institutions should raise a highly qualified specialist who knows how to proceed in a certain context and is able to quickly solve professional tasks indicating the quality of education received by such specialist.

The education systems across the world earnestly absorb and produce various innovative technologies that help to improve the quality of education. Their introduction contributes to the appearance of a new generation of teachers, who have competencies that respond to the needs of modern society. Improvement of digital learning processes becomes an imperative today.

In the context of education digitalization, the training of future teacher for creating and using electronic educational resources (hereinafter EERs), that contribute to more solid knowledge and better skills of students. Today, the e-learning market is rapidly developing and requires teachers to understand the potential of new information technologies in educational process (Bogush, 2019).

2 Literature Review

Digitalization firmly enters into all spheres of human professional activity, including education. Education processes in higher education institutions throughout the world and in Russia require a major change: university teachers are revising the existing forms and methods of education, focusing on the digital technologies (distance learning, creation and use of EERs, etc.).

A lot of research is devoted to the highly relevant issues related to the digitalization of education. B. K. Onete, D. A. Plesea, R. Dina, R. Negoi (2011) paid attention to the facilitation of formal and informal communication in e-learning, the experience in using e-learning models in education has been explored by Ana-Cornelia Badea, Gheorghe Badea, Silviu Clinci Tudorel (2012).

All digital educational technologies imply the use of EERs and fostering digital competence of educators. This fact was brought to light by J. López-Belmonte, S. Pozo-Sanchez, A. Fuentes-Cabrera, J.-M. Trujillo-Torres (2019). Studies by Russian and foreign researchers are devoted to the development of digital competencies and digital literacy among students (Lopez-Gil & Garcia, 2020; Dmitrova et al., 2019; Soltovets et al., 2019).

Global research on the development of the digital economy has also influenced modernization of the system of education in Russia. M. A. Shtanko (2019), when analyzing the current state of e-learning, has highlighted the necessary prerequisites for the introduction and development of e-learning in the global educational space.

The high importance of determining the effectiveness and potential of pedagogical education for raising information awareness among students against the backdrop of education digitalization was underlined by E. A. Barakhsanova, N. P. Olesov, L. V. Popova, A. I. Danilova, N. S. Dyachkovsky (2020). N. V. Dneprovskaya, N. V. Komleva, A. I. Urintsov (2018) dwell on the need to elaborate an approach to improve the information support for developing the proper content of higher education programs and educational materials.

I. N. Kuznetsova (2019) concentrates on modernization of professional education through introduction of a forward-looking form of education – m-learning (mobile learning). The impact of gadgets on the learning process in university was scrutinized by E. E. Kabanova, E. A. Vetrova (2019). E. V. Soboleva (2019), as well as S. A. Babina, V. V. Kadakin, O. V. Tereshkina, A. F. Bazarkin (2019) advocated the integration of mobile applications in educational process.

H. V. Kuznetsova (2018) stressed the need to use of innovative tools in teachers' training and the relevance of creating EERs for automating the lesson design process and methodological support of the lesson (Kuznetsova & Yankina, 2018). The need to create conditions conducive for the use of EERs in training has been repeatedly highlighted by E. V. Beloglazova (Beloglazova, 2019; Beloglazova et al., 2020). "A modern teacher should independently design the learning process consistent with the requirements prescribed by the standard," as noted by N. V. Kuznetsova, L. E. Babushkina, V. V. Kadakin, T. I. Shukshina, A. E. Faliliev (Kuznetsova et al., 2017, p. 123).

In the light of the above, the preparation of a future teacher for working in the DEE is becoming increasingly urgent. The contemporary young generation is born to and lives in the digital world, and educators are only underway to get knowledge and skills in new information technologies. Therefore, a substantive change in the approach to the training of a future teacher who will be able to apply, create and improve the electronic educational resources should occur (Bogush, 2019).

3 Research Methodological Framework

The purpose of this research was to demonstrate the potential of the EEC at university for training future primary school teachers in the context of education digitalization. The stated purpose predetermined a range of objectives: 1) Reveal a variety of EERs useful for building the necessary competences of teachers; 2) Reveal the unwinding potential of electronic learning and its educational value; 3) Promote the mastering by pedagogical university students of competences in the field of practical application of electronic resources. The following research methods were used: theoretical analysis, generalization and interpretation of scientific data, study and consolidation of pedagogical experience, method of pedagogical designing (planning, modeling and conduction of classes), classification, synthesis, generalization, analysis of empirical data.

4 Results and Discussion

The development of global digital economy has naturally led to changes in the system of Russian education, which is destined to reinforce the competitiveness of the country, improve the quality of life of its citizens and make them thrive in other important areas of life. Changes in Russia's system of education are reflected in the following documents: "The Strategy for the Information Society Development in the Russian Federation for 2017-2030", Priority Project "The Modern Digital Educational Environment in the Russian Federation" approved by the Government of the Russian Federation on October 25th, 2016 within the state program "Development of Education" for 2013-2020 and other legislative instruments contributing to modernization of the Russian system of education: introduction of changes in the system of education and vocational training consistent with the requirements of the digital economy, introduction of digital tools in education and their integration in the information environment.

The current situation contributed to the development and implementation of new Federal State Educational Standards for Higher Education 3++ (FSES HE 3++), under which each educational organization must create conditions for the use of electronic educational environment, one of the main components of which is EEC. This fact is especially relevant for pedagogical universities, as they are faced with the challenge to prepare a graduate who will be able to make full use of the potential of modern DEE.

DEE includes various components: material and technical base, information resources (EERs), human resources, regulatory framework, technical and methodological support, and automation of managerial and pedagogical staff.

In this paper, we will focus on creating one of DEE's components, the electronic educational content, and will share the experience of its effective creation during the preparation of a future primary school teacher at Mordovian State Pedagogical University named after M. E. Evseviev (MSPU). It should be noted that EEC in the above university consists of external electronic resources and internally generated resources, i.e. resources created by the professors and teaching associates of this university. At the same time, special attention is paid to the quality of EEC, its diversity, etc.

In order to effectively train future primary school teachers, many electronic educational resources were developed. Special mention should be made of the resources created by the teachers of the Department of Teaching Methods in Preschool and Primary Education at MSPU: databases, electronic publications, quiz modules, and others (see Table 1).

Table 1 EERs created by teachers of the Department of Teaching Methods in Preschool and Primary Education at MSPU

Seq. No.	Type of EER	Examples of created EERs
1	Electronic editions (textbooks, tutorials, teaching and learning aids)	Theoretical and Methodological Aspects of a Primary Mathematics Course; Theory and Technology of Primary Mathematical Education; Methods of Teaching "The Natural World"; Use of Educational Excursions for Teaching Mathematics to Primary Schoolchildren; Theoretical Bases of Modern Programs on Russian Language in Primary School; Theoretical Bases of Modern Programs on Literary Reading for Primary School; Interactive Spelling; Theory of Literature and Practice of Reading; The Use of Test Assignments In Teaching Russian in Elementary School; Workshop on the Syntax of the Russian Language; Russian Language: Morphemics, Word Formation, Morphology; Learning Punctuation Norms at the Russian Language Lessons in Primary School; Russian Language; Collection of Exercises on Russian Spelling, etc.
2	Quiz modules	Methodology of Language Teaching and Speech Development of Primary Schoolchildren; Methodology of Literacy Training; Syntaxis of a Complex Sentence; Phonetic System of the Russian Language; Morphhemics and Word Formation of the Russian Language; Lexicon of the Russian Language; Syntaxis of a Complex Sentence; Morphology: Verb, Adverbs, etc.; Morphology: Name Parts of Speech and Other Publications.
3	Databases	Databases with didactic materials on different subjects. Primary school; Databases with methodological techniques on different subjects. Primary school; Multimedia Course of Lectures on Specific Questions of Teaching Methods for "Theory and Technology of Primary Mathematical Teaching" and "Methods of Teaching Mathematics"; Multimedia Course of Lectures on Academic Discipline "Theory and Technology of Primary Mathematical Education" (Section "General Questions of Methodology"); Databases of methodological support for designing the educational process under the Federal State Educational Standards of Primary General Education in Various Subjects; Database of materials for self-training on calligraphy teaching in primary school; Electronic Materials for the Optional Discipline "Words' Formation by Children"; Database of multimedia course in the discipline "Theoretical Foundations of the Primary Course in Russian Language"; Methodological Materials for Automated Monitoring of Knowledge in the Academic Course "Theoretical Foundations of the Initial Russian Language Course" and other databases.

Source: authors

As seen from Table 1, teachers actively create various EERs.

The most popular among them (line 1 in the table) in the theoretical training of students are electronic textbooks, because they embrace all components of the learning process. Tutorials contain a systematic presentation of theoretical material, interactive tasks with the necessary instructions and quiz modules, focused on understanding the rules and deepening the knowledge in the field concerned. The most popular electronic editions registered with the Federal State Unitary Enterprise Scientific and Technical Center "Inform Register" of Russia. It should be noted that students may use these manuals both in and out of classrooms, having personal access to the EERs of MSPU.

The use of quiz modules (line 2 in the table) in the course of teachers' training allows to build the skills necessary for professional activity. By completing quiz modules created in the electronic shell iSpringQuiz Maker, students obtain steady knowledge through the multiple repetition of the material. The quiz modules include different variants of tests, theoretical and practical materials for self-control and allow students to assess their knowledge, determine the level of knowledge, quickly obtain the necessary theoretical information, perform practical tasks, eliminate gaps in the study of disciplines and consolidate the acquired knowledge. Interactive tasks included in the quiz modules provide an opportunity to automate the process of consolidating and applying learning materials through a variety of supervised learning activities (Babina & Vinokurova, 2019).

Databases (line 3 in the table) are not always perceived as educational resources. But the materials contained therein, their systematic presentation, interactivity of resources allows to use the database in the educational process of the university. Databases are very diverse. They may contain the description of methodological techniques with the universal learning actions and examples of their use at different lessons, classified by lesson types and stages; include additional theoretical material, entertaining material, schemes, tables, models, lesson summaries, audio-video materials. The databases have value for teachers and students of pedagogical educational institutions.

All these EERs help to qualitatively conduct lectures and practical classes on the methods of teaching the disciplines of primary school, subject-matter disciplines and optional disciplines, to correctly organize independent work of future primary school teachers, to correctly project tasks as part of different kinds of pedagogical internship in educational organizations. All publications are available in the MSPU's Electronic Library (http://library.mordgpi.ru/MegaPro/Web).

The teachers of the Department of Teaching Methods in Preschool and Primary Education at MSPU developed Electronic Constructor of Methodological Puzzles, a website for primary school teachers (www.tkumgpi.ru), which allows practicing teachers to quickly create high-quality technological maps of lessons in all primary school subjects. Electronic Constructor of Methodological Puzzles is a software-based dynamically developing electronic system designed to automate the process of lesson designing and methodological support through the use of databases with methodological techniques and formulated meta-disciplinary results, classified by subject area, lesson type, lesson stage, activity form, as well as databases with didactic materials structured by subject area (Kuznetsova & Yankina, 2018). This system greatly simplifies the work of primary school teachers in the digital educational environment at school. It is important that students, who are the future primary school teachers, get acquainted with it during their studies at university, actively use it in preparation for practical classes and during pedagogical internship in educational organizations.

5 Conclusion

The digital educational environment created at university, its high-quality content and extensive application in educational process allows to raise competitive graduates possessing necessary qualifications and demanded in the labor market.

It became especially important today when many countries across the globe imposed lockdowns due to the spread of a new dangerous virus. The unexpected rapid transition of education to the remote mode, having exposed certain gaps, as a whole has proved urgency and relevance of creation, expansion and further development of electronic educational content. Free access of students to EERs at MSPU, high-quality and diverse content of EERs allowed to render preparation for classes and ongoing monitoring and final attestation more effective, to produce research papers, to carry out projects, to produce end-of-year and final qualifying papers, etc.

The results of monitoring across disciplines, positive feedback from educational organizations accepting students for internships, a high level of knowledge and skills demonstrated at state exams and in final qualifying papers, feedback from employers on the professional performance of young specialists, allow us to make a conclusion about the high quality of EEC developed by teachers of the Department of Teaching Methods in Preschool and Primary Education at MSPU.

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