

ISCKMC 2020**International Scientific Congress «KNOWLEDGE, MAN AND CIVILIZATION»****E-LEARNING IMPLEMENTATION BY MEANS OF THE DIGITAL
EDUCATIONAL ENVIRONMENT OF THE UNIVERSITY**

Timur Gadzhievich Vezirov (a)*, Maria Anatolyevna Lapina (b),
Navrat Magomedsaidovna Umargadzhiyeva (c), Laura Kemalovna Bostanova (d)

*Corresponding author

(a) Dagestan State Pedagogical University, 17, G. Gamidova ave., Makhachkala, Russia, timur.60@mail.ru,

(b) North Caucasus Federal University, 1, Pushkin St., Stavropol, Russia, mlapina@ncfu.ru,

(c) Dagestan State University, 43-a, Hajiyev St., Makhachkala, Russia, nabrat@bk.ru,

(d) Institute applied mathematics and information technologies, North Caucasus state academy, Cherkessk, Russia,
bos_laura@mail.ru

Abstract

The article examines some of the pedagogical aspects of implementation of e-learning by means of the university digital educational environment, where the main components are digital educational resources posted in domestic Internet portals and author's digital educational materials that are used in the Master of education course program using blended learning technology “flipped class” based on educational platforms. We use the SKIF e-learning platform, where the author's digital educational resources are placed in the disciplines of the variable part of the educational program for Master program “Information and communication technologies in education” at Dagestan State Pedagogical University, which are also used by master's students of the program “Information and communication technologies in teaching foreign languages” at Novosibirsk State Pedagogical University. The author's online training course “Portal technologies in teacher education” is included in the variable part of the educational program “Information and communication technologies in education”. The results of the experiment showed the effectiveness of this course, which was determined by effectiveness of the learned material. The average value of relative effectiveness of the learned material was 38.4 %. The paper presents the process of using mobile devices to assess knowledge of students after studying disciplines of the variable part of the educational program. iSpringQuizMaker is used as a module. The article presents various means of the digital educational environment, which provide assistance to future masters of pedagogical education during the course of scientific and pedagogical practice in educational organizations and during writing the final qualifying work (MSc Dissertation).

2357-1330 © 2021 Published by European Publisher.

Keywords: E-learning, master's training, teacher education, digital educational environment



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Introduction

In modern higher education there is a paradigm change associated with the transition from classical to progressive, where there is a possibility of revising methods and approaches to teaching disciplines using modern means of information and communication technologies.

Today's graduate must have the necessary competencies to successfully realize himself in a digital society where e-learning is developing. In order for the future specialist to master the competencies of the 21st century, the teacher must include methods and means of integrating new learning formats into the educational process.

Currently, in order to improve the quality of education, the technology of blended learning “flipped classroom” is being introduced based on various educational platforms (TED-ED, YOURSTUDY, etc.), which allows to improve learning outcomes and improve the skills of autonomous learning of students-future specialists.

The main direction of development of the education system in modern Russia is the use of digital technologies, which lead to changes in traditional methods and forms of training for future specialists.

Currently, in the field of education, it is important to use e-learning technologies by means of the digital educational environment of the university. This new form of education is reflected in the Federal Law “On Education in the Russian Federation”. Educational environment is understood as organization of educational activities with the use of information contained in databases and used in the implementation of educational programs and information technologies that ensure its processing, technical means for interaction between students and teachers (RF Government, 2014).

With the advent of electronic didactics in the context of digitalization of education, all components of traditional didactics (content, means, organizational forms and methods of teaching) are expanding and changing based on the pedagogical capabilities of components of the digital educational environment of the university. In these conditions, the main tasks of e-didactics are: determination of the structure, volume and content of education based on digital tools and services; development of innovative forms, techniques and teaching methods that allow the development of an individual educational trajectory for future specialists; creating conditions for the development of digital culture, as well as enhancing independent cognitive activity and realizing the creative potential of students for continuous self-improvement through self-education.

2. Problem Statement

In the educational space of the Russian Federation, e-learning is being implemented based on the means of digital educational environment of the university, in particular, on the network interaction of universities. This process is aimed at the implementation of the Federal Program “Digital Economy” in the field of education. Currently, a promising direction in the training of specialists is e-learning in the digital educational environment of a university, aimed at increasing efficiency of educational process, developing digital competencies necessary for a future specialist. In this regard, development of mechanisms, ways, models and technologies for professional training of specialists-teachers in the context of the implementation of e-learning by means of the digital educational environment of the

university as a set of educational interfaces of the digital world seems to be very relevant for modern pedagogy of higher education. In this process, an important place is taken by the didactic provision of e-learning in higher education, the main component of which is the didactics of e-learning with new didactic principles at the stage of digitalization of society, in which digital tools and services complement and expand the possibilities of professional interaction. In the organization of an online form of implementation it is educational program by partner universities. When implementing this form, we use the technology of blended learning “flipped class”, combining traditional full-time online and offline education. Development of theoretical material can be carried out independently, in the classroom or outside of it, formation of practical skills – in the classroom, but mainly independently – in individual and group forms using active formats and learning technologies. In this form of training, the teacher becomes a tutor who guides, advises, and organizes learning situations.

3. Research Questions

As noted in the project “Modern digital educational environment in the Russian Federation”, by 2025 the content of education will be updated, role of a teacher will change, and a digital ecosystem with modern teaching technologies and the use of digital tools in the professional activities will be created. The feasibility of using pedagogical capabilities of e-learning in the digital educational space is considered during in different studies (Gottlieb, 2016; Gushchina & Ochepovsky, 2017; Snegireva, 2017; Sorochinsky, 2018; Vaganova et al., 2017). Analysis of studies and publications, which note that the readiness of students and teachers to implement e-learning in the digital educational environment of the university continues to be insufficient (Bradac & Walek, 2017; Skoulikari et al., 2015; Schulz et al., 2014). Various approaches to solving the problem of teacher training in the context of e-learning by means of the digital educational environment of the university are considered in different studies (Akupiyani, 2019; Baraskhanova & Danilova, 2018; Dyakova & Sechkareva, 2019; Komova, Musatova, 2019; Vezirov & Babayan, 2015).

Many foreign studies (Clark & Mayer, 2016; Gaebel et al., 2014; Kurucay & Inan, 2016; Martin & Alvarez Valdivia, 2017) consider the use of e-learning in the study of foreign languages, study the quality of knowledge acquisition when conducting an online course, and also demonstrate interest in the problem of using e-learning in higher education. For example, the work (Clark & Mayer, 2016) analyzes pedagogical approaches and a variety of educational technologies used in the implementation of e-learning, adaptive technologies in particular, which are based on a person-centered approach.

1. Professional training of master students is carried out optimally in the context of e-learning implementation by means of digital educational environment of the university, where you can study and solve pedagogical problems in a new way using modern digital technologies, as well as practical educational activities. The Department of Methods of Teaching Mathematics and Informatics of the Dagestan State Pedagogical University has developed work programs of disciplines intended for future master’s degrees in the field of training 44.04.01 Pedagogical education, the training program “Information and communication technologies in education” in accordance with the Federal State Educational Standard of Higher Education. Throughout the years of study, master students study both compulsory and optional disciplines. Compulsory disciplines include Digital educational environment, E-

learning tools in teacher education and Cloud technologies and services in education. Optional disciplines include Portal Technologies in Teacher Education, Virtual and Augmented Reality, and Mobile Learning. The most important goal of these training courses is to involve graduate students in the implementation of e-learning pedagogical possibilities by means of digital educational environment of the university.

2. When studying the above disciplines and writing final qualifying works, graduate students use the following interactive electronic educational content: <http://window.edu.ru/window/catalog>; <http://www.school.edu.ru>; <http://diplomnie.com>; <http://www.ict.ru>; <http://iit.metodist.ru>. In the discipline “Portal technologies in teacher education” we have developed a network training course posted on the website <https://kulibekovan.wixsite.com/1234> and the educational website of master's students <http://magistr-fmf.ru>, which is used by future graduates for preparation and writing the final qualifying work. It is also used by master's degree students of the partner University of Novosibirsk State Pedagogical University of the master's degree “Information and communication technologies in teaching foreign languages” in online educational program. The online training course “Portal technologies in teacher education” has such components as: an instrumental block, which describes objectives of studying the discipline, organization of educational process, guidelines for independent work; information block, including educational information and structure of an electronic resource; communication unit offering e-seminars, consultations, distance workshops and laboratory work; control block, consisting of test and rating control in an authorized mode; online interaction such as online webinars, chats, forums.

For the practical implementation of the master's degree, we use blended learning. Along with ICT, including telecommunication technologies, mobile devices, active and interactive learning technologies, we use the technology of inverted learning.

We represent the portrait of the future master of pedagogical education in a digital educational environment as the one possessing modern material in the subject area, having a broad outlook, continuing self-education; owning modern educational technologies, working with software, in the digital space, having access to the necessary resources for self-education.

One of the constituent digital educational environments is mobile device that we use in the educational process, when future specialists get acquainted with the method of using them in assessing educational results. To implement this process, there are many services, programs, one of which is “iSpringSuite”, which acts as a converter from PowerPoint format to Flash format and represents a set of specialized modules united by a single interface, a designer of presentations and courses used in e-learning. One of the modules of this software product is iSpringQuizMaker for creating tests and surveys. This module is used by graduate students when studying the “Mobile Learning” discipline.

iSpring Suite ensures compatibility of courses, tests, interactive simulators, video lectures with Russian and foreign distance learning systems. It is the world's first PowerPoint course creation tool to support the mobile learning standard, and it also allows you to track learners who are learning using mobile devices.

An important place in the implementation of e-learning by means of the digital educational environment of the university is occupied by the digital portfolio of graduate students, where they create personal web pages on the 4portfolio.ru platform, participate in distance and blended learning, and also create learning communities. All this helps the teacher to establish online communication with his

students. In particular, we use learning communities for organizing distance and blended learning, conducting educational and research projects, creating web quests, organizing observation, discussing the problems of digitalization of society.

Means of the digital educational environment provide assistance to future graduates of pedagogical education during the course of scientific and pedagogical practice in educational organizations and in writing the final qualifying work (master's thesis). These tools include educational portals UROK.RF; Edinyurok.rf; FIPI; 1sentyabrya.rf; Yandex.Uchebnik; Uchi.Ru and others.

4. Purpose of the Study

The aim of the study is to uncover significance of pedagogical potential of e-learning by means of the digital educational environment of the university, which offers pedagogical education.

5. Research Methods

The study used a set of complementary research methods. For example, the analysis of psychological and pedagogical literature and educational resources of Internet portals, and also conducted a conversation, questioning and testing of graduate students.

6. Findings

The result of training master's students of the program "Information and Communication Technologies in Education" while studying the disciplines of the variable part of the educational program using the author's digital educational resources was an increase in their level of non-standard thinking by 19.7 %. To assess the effectiveness of the author's network training course "Portal technologies in teacher education" we used a criterion of effectiveness of the learned material. Testing the second year graduate students was carried out on the following topics: scientific and methodological foundations of the creation and use of Internet portals; basics of portal technologies and educational portals; psychological and pedagogical aspects of using portal technology; organization of presentation of educational information on the portal; distance education portal model. The level of knowledge and skills on average increased by 27 % among students in the experimental group, and the average value of relative efficiency in terms of the volume of material learned was 38.4 %.

7. Conclusion

Means of the digital educational environment of the university (mobile devices, digital educational resources, web portfolios) make it possible to effectively implement e-learning in the preparation of master's students of teacher education.

Changes in modern didactics (e-didactics) make it possible to study the learning process, which functions through the implementation of e-learning by means of the digital educational environment of a university with a dominant tendency towards self-learning of students – future specialists.

The implementation of e-learning by means of the digital educational environment of the university made it possible to implement a system of organizing training sessions with future specialists, organizing network interaction of universities, using digital educational resources and interactive teaching tools to improve the content, technologies and general organization of the educational process.

One of the means of the digital educational environment is mobile devices, which we use in the educational process of the master's program, where they get acquainted with the method of using them in assessing education results.

The creation and maintenance of a digital portfolio of a graduate student made it possible to conclude that it is necessary to maintain a continuous portfolio that does not depend on the place of study or work of its owner.

Some aspects of the implementation of e-learning by means of a digital educational environment, future masters consider when passing scientific and pedagogical practice and while writing the final qualifying work (master's thesis).

References

- Akupiyan, A. N. (2019). Application of e-learning technologies in the university on the example of teaching general physics. *Pedag. J.*, 9, 208–214.
- Baraskhanova, E. A., & Danilova, A. I. (2018). Implementation of e-learning in a digital educational environment. *Azimuth of sci. res.: pedag. and psychol.*, 7(4(25)), 38–40.
- Bradac, V., & Walek, B. A. (2017). Comprehensive adaptive system for e-learning of foreign languages. *Expert Syst. with Applicat.*, 90, 414–426.
- Clark, R. C., & Mayer, R. E. (2016). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning*. John Wiley & Sons. <http://dx.doi.org/10.1002/9781119239086>
- Dyakova, E. A., & Sechkareva, G. G. (2019). Digitalization of education as the basis for teacher training in the 21st century: problems and solutions. *Bull. of Armavir State Pedag. Univer.*, 2, 24–33.
- Gaebel, M., Kipriyanova, V., Morais, R., & Colucci, E. (2014). *E-learning in European Higher Education Institutions November 2014*. http://www.eua.be/Libraries/publication/e-learning_survey
- Gottlieb, A. S. (2016). Online education in optics for teachers of Russian higher education. *Karelian sci. J.*, 5(4(17)), 230–233.
- Gushchina, O. M., & Ochepovsky, A. V. (2017). Psychological measurements for evaluating the effectiveness of online courses in the E-learning system. *Baltic Human. J.*, 6(4(21)), 301–304.
- Komova, N. V., & Musatova, M. A. (2019). Preparation of master's students for research activities at the Department of Theory and Methods of Professional Education, Moscow State University. *Pedag. J.*, 9, 21–30.
- Kurucay, M., & Inan, F. A. (2016). *Examining the effects of learner-learner interactions on satisfaction and learning in an online undergraduate course*. <https://doi.org/10.1080/10494820.2016.1143845>
- Martin, S., & Alvarez Valdivia, I. M. (2017). Students' feedback beliefs and anxiety in online foreign language oral tasks. *Int. J. of Ed. Technol. in Higher Ed.*, 14(1(18)).
- RF Government (2014). *Federal Law. On Education in the Russian Federation*. Eksmo.
- Schulz, R., Isabwe, G. M., & Reichert, F. (2014). *Supporting teachers' needs within and through E-learning system*. <https://doi.org/10.1109/ICWOAL.2014.7009228>
- Skoulikari, A.-I., Athnasios, T., & Tsolis, D. (2015). *Personalized and adaptive mobile e-learning for cultural education*. <https://doi.org/10.1109/IISA.2015.7387968>
- Snegireva, L. V. (2017). The current state of the problem of didactic support of e-learning in higher education. *Baltic Human. J.*, 6(4(21)), 398–401.

- Sorochinsky, M. A. (2018). Analysis of the readiness of teachers to work in the electronic educational environment of the university. *Society: social., psychol., pedagog.*, 8, 123–145.
- Vaganova, O. I., Gladkova, M. N., & Trutanova, A. V. (2017). E-learning as a means of organizing students' independent work. *Baltic Human. J.*, 6(2(19)), 100–102.
- Vezirov, T. G., & Babayan, A. V. (2015). *Professional training of masters of pedagogical education by means of e-learning. Monograph.* Zebra.