European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2021.07.02.4

EdCW 2020
International Scientific and Practical Conference Education in a Changing World: Global Challenges and National Priorities

MODERN EDUCATIONAL TECHNOLOGIES FOR ENSURING STRATEGIC ACADEMIC LEADERSHIP

Svetlana Shvedina (a), Oxana Fikhtner (b)*
*Corresponding author

(a) Irkutsk National Research Technical University, Irkutsk, Russia, shvedsv@istu.edu
(b) Yaroslav-the-Wise Novgorod State University, Veliky Novgorod, Russia, Oxana.Fikhtner@novsu.ru

Abstract

The study is aimed at developing the conceptual foundations of digitalization of education: it is impossible to achieve academic leadership by Russian universities without an effective digital transformation of the domestic higher education system. The results of the study contribute to the theory of digital didactics of higher education, which can not only form digital competencies of participants in the educational process, but also, in combination with other pedagogical technologies, become a promising direction for the development of modern higher education. Today, the educational process of universities requires a new understanding and development of adequate approaches to transformation due to a number of objective reasons and global trends: dissonance between the growing demands on the part of customers of educational services and the interests of universities; low levels of digital literacy and digital skills among educators; ineffective use of individual student reserves; insufficient level of development of didactics and infrastructure of digital education in universities. All this predetermines the need to identify and develop a new flexible interactive digital education system using various smart technologies and smart devices, which allow not only to increase the amount of educational information and enhance the individualization of the educational process, but also to diversify the ways of interactive interaction of subjects of the educational process to increase its effectiveness.

Keywords: Digital didactics, transformation of the higher education system, educational services market, competitiveness of Russian universities, educational technologies

https://doi.org/10.15405/epsbs.2021.07.02.4
Corresponding Author: Oxana Fikhtner
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

The transformation of the educational space is going along evolutionary and revolutionary paths. On the one hand, there is a new round of development of society and all accompanying life support systems: the total introduction of information and communication technologies, digitalization of the economy, changing labor market needs (Bonfield et al., 2020; Du Toit & Verhoef, 2018; Dubey et al., 2019; Klimov et al., 2019). On the other hand, there is the spontaneous total spread of the coronavirus infection COVID-19 and self-isolation, which require a quick response of the education system to these challenges and an early restructuring of the educational process using distance learning technologies. 2020 became the year of rethinking the educational paradigm: the ongoing digital transformation of the educational process tactically embeds the education system into today's realities through the development of new digital resources and technologies (Kaynak & Sadiq, 2020; Laitkep & Repkova Stofkova, 2020), and strategically it can provide Russian universities with competitive positions in the national and global market of educational services.

Of course, academic leadership is a priority in the development of the national education system, while Russian universities should become national leaders in the formation of scientific, technological and personnel support for the economy and social sphere, increasing the global competitiveness of the higher education system and promoting regional development. It is the promising developments of technologies and innovations for the national economy that can ensure the growth of labor productivity, reduce the costs of business entities, and improve the quality of human capital. However, this is hindered by the low level of digital literacy and digital skills of teachers, the insufficient level of development of didactics and the infrastructure of digital education at the university, the content-activity unpreparedness of the teaching staff for new professional roles and tasks in the context of digitalization of the educational process (Vetkina et al., 2018; Blinov et al., 2019; Pevzner et al., 2020). Therefore, an important task in the development of the theory and methodology of modern education is the study of a new branch of pedagogical science - digital didactics, which reveals the didactic and methodological aspects of the educational activities of subjects of the digital educational process. Digital didactics involves the development of both new forms of education (online, mixed, hybrid, combined, etc.) and new forms of organizing the educational process (videoconferences, video lectures, hackathons, meetups, webinars, virtual consultations, virtual supervision, etc.). It is digital didactics that can not only strengthen the positions of individual universities, but also ensure that students and teachers be more focused in the digital environment, rebuild pedagogical strategies for a comfortable and effective solution of pedagogical problems, and the formation of an adequate professional and communicative culture of students of a modern university.

2. Problem Statement

Modern researchers of digital transformation of the educational process are still in search of a unified conceptual model, despite the fragmentary methodological developments of its individual components.

https://doi.org/10.15405/epsbs.2021.07.02.4
Corresponding Author: Oxana Fikhtner
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

Thus, Karakozov et al. (2018) note that the openness of digital educational resources and the transition to "personalized learning" turn the student into a subject of information interaction within the digital educational environment. Gambeeva and Sorokina (2020), Tazov (2020) see digital transformation in a qualitative change in the content and organization of the educational process, considering the changing requirements for the role of the teacher, as well as forms, methods and technologies of teaching that meet the needs of the digital generation. Tulchinsky (2017, 2019) connects digital transformation with the processes of "depressurization" of education as its going beyond the university classrooms. Ovsyanitskaya reveals digital transformation in the spectrum of implementation of strategic national priorities, where digital data is becoming a key factor in mobility in professional activities (as cited in Podpovetnaya et al., 2018). However, all researchers emphasize the importance of fundamentally new approaches to learning, which are determined by the characteristics of the new generation of students, the needs of the digital economy and the possibilities of new digital technologies. Digital didactics forms a systematic solution to educational problems for each subject of the educational space - a student, a teacher, a university, the national education system.

3. Research Questions

The results of the author's research answer the following tasks:

- Analyze the research of Russian scientists and identify the features of approaches to the phenomenon of digital didactics.
- Formulate new concepts of digital didactics in accordance with the pedagogical tasks of our time.
- Identify the possibilities of digital didactics to achieve academic Russian universities.

4. Purpose of the Study

The purpose of this study is to develop the theory of digital didactics and, on its basis, identify new opportunities for Russian universities to achieve competitive positions in the world market of educational services.

5. Research Methods

The theoretical and methodological basis of the study was the monographic works and scientific articles of Russian and foreign authors on the problems of digital transformation, as well as applied developments devoted to the implementation of certain tools and means of digital didactics in Russian universities.

https://doi.org/10.15405/epsbs.2021.07.02.4
Corresponding Author: Oxana Fikhtner
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

6. Findings

6.1. Russian and foreign researchers of digital didactics

The educational process in the digital era sets the conditions for the learner and criteria for self-development. However, it should be recognized that digital transformation is also associated with limitations that do not allow the prompt development and implementation of digital didactic tools in the educational process. These include the following:

- social inertia associated with the unwillingness of society (and state institutions) to change as a result of the digital transformation of education;
- the impossibility of moving into the distance completely, since many universal competencies can be fully formed only on the basis of personally meaningful, comprehensive experience of activity received by the student in a real environment of human communication, and certain complex professional skills and abilities can be obtained only in the process of personal contact of the teacher and student;
- negative impact of digital technologies and means on health, functional and emotional-psychological state of a person.

The plurality and multidimensionality of threats to digitalization of the educational process reveal the need for special studies, as well as the formation of an integral paradigm of digital didactics of higher education on their basis, capable not only of effectively forming digital competencies of participants in the educational process, but also, in combination with other pedagogical technologies, to become a promising direction of development of modern higher education (Law & Liang, 2019; Spires, 2018; Vindača et al., 2020; Zain, 2021).

Today, it is not the volume of acquired knowledge and skills that is important for a student, but the mastery of a general system of orientation in life, the ability to constantly replenish and complete their personal knowledge system; find a way to already existing knowledge; generate new knowledge. This competence motivates the student for a constant scientific search in unity with innovative educational practices and underlies the convergence of knowledge and digital didactics (Brolpito, 2018; Sosnovskaya et al., 2016; Zemlinskaya & Fersman, 2016). The formed cognitive-competence paradigm allows combining several types of methodological approaches in the higher education system:

- transfer-integrative: Robert (2020), Tchoshanov (2013, 2018);
- context-medium: Verbitskiy (2017, 2019), Kondakov and Sergeev (2020), Sergeev (2010), Rozina (2012), Lichtman (2011), Gruman (2016);
- activity-technological: Blinov et al. (2020), Nikulina and Starichenko (2018), Uvarov and Frumin (2019), Rizzotto (2017), Monakhov (2017).

https://doi.org/10.15405/epsbs.2021.07.02.4
Corresponding Author: Oxana Fikhtner
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

6.2. Elements of digitaldidactics

Digital didactics is a new direction of pedagogy aimed at organizing activities in a digital educational environment. However, we are not talking about the formation of a new science, since in this case the principles and concepts of traditional didactics are only transformed, expanding the boundaries of direct pedagogical interaction using digital technologies.

The transformation of the basic principles of the digital educational process can be seen through filling them with new meanings:

- the principle of dominance - the teacher organizes the educational process, “helping” (including technical support) the student;
- the principle of personalization - allows choosing an individual training mode;
- the principle of expediency - introduces those technologies into the educational process that allow achieving maximum success;
- the principle of flexibility and adaptability - makes it possible to actively rebuild / adapt to the individual request of the student and the teacher's capabilities;
- the principle of teaching in cooperation and interaction - based on active multilateral communication between the teacher and the student;
- the principle of practice-orientedness - allows achieving learning goals through specific tasks, problem situations and real practical tasks, the development of an effective project or enterprise (start-up);
- the principle of saturation of the educational environment - requires a sufficient amount of various information resources to build an individual educational trajectory;
- the principle of multimedia - for greater “tangibility” of the educational process, it should involve various simulators, sensors, as well as augmented reality.

It is important to understand how the activities of students in a digital environment will be organized for the successful management of educational motivation, and what means of digital didactics will contribute to the personification of the educational process, as well as satisfy all the above principles. In addition to technical means, this will be facilitated by the project activities of students (Daniel et al., 2015; Daneykin et al., 2020): in the form of educational and production projects, as well as business projects from groups of students accompanying the directed influence of tutors and mentors. Such an organization allows achieving the specified educational results: to ensure that the skills and competencies of graduates meet the needs of the national economy and society. The development of effective digital tools ensures the automation of routine reinforcement elements and reduces the “monotony effect” in the reinforcement process, providing high educational motivation.

In the process of developing elements of digital didactics, it is necessary to clearly understand which pedagogical tasks are effectively solved by introducing digital technologies into the educational process. With the development of the digital environment (economic, technological) in digital didactics, we are witnessing the birth of new concepts:

https://doi.org/10.15405/epsbs.2021.07.02.4
Corresponding Author: Oxana Fikhtner
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

- “digital training simulators”,
- “student digital footprint”,
- “digital twins”,
- “digital laboratory / processmodel”.

Currently, immersive learning environments, AR/VR technologies, 360° technologies are being actively introduced into the educational process of universities, which allow remotely conducting educational and introductory practices, laboratory and research work in engineering areas of training (IRNITU, TPU). These modern technologies significantly improve learning outcomes due to personification, regulation, constructability, non-subject spatial localization, interactivity, synchronization, automated control of students' actions and objectivity in evaluating electronic results. Savings in the total and unit costs of time and money of the university for organizing and conducting a digital workshop or laboratory research are obvious.

6.3. Benefits of digital didactics for academic leadership in Russian universities

The enormous interest shown by the Russian government in the digital transformation of education is determined by the global tasks that the President of the Russian Federation, the Ministry of Science and Higher Education of the Russian Federation set for Russian universities: to ensure the presence of the Russian Federation among the ten leading countries in the world in terms of research and development, including through the creation of an effective system of higher education, as well as increase the “digital maturity” of key sectors of the economy and social sphere, including health care and education.

Of course, the tasks are global, but in the context of the development strategy of the state they are very urgent and realizable. Several regulatory developments will contribute to their implementation, including the following:

- priority national project “Modern digital educational environment in the Russian Federation”,
- program “Digital Economy of the Russian Federation”,
- Decree of the President of the Russian Federation of 09.05.2017 N 203 “On the Strategy for the Development of the Information Society in the Russian Federation for 2017-2030”,
- federal project “Development of integration processes in science, higher education and industry” of the national project “Science and Universities”

In addition, at the legislative level, significant financial support is planned for universities (over 800,000 million rubles) capable of achieving the set objectives, which will ultimately lead to an increase in the efficiency of the higher education system, the creation in Russia of a wide group of competitive Russian universities in the global education, science and technology market. In addition, the development of the EdTech market, especially its Russian fast-growing segment, forces universities to enter into a competitive struggle for students: to maintain an up-to-date electronic educational environment, to offer better educational content to students, to involve flagship programs and developments in the educational

https://doi.org/10.15405/epsbs.2021.07.02.4
Corresponding Author: Oxana Fikhtner
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

process. All this makes more serious demands on the quality of intellectual capital and intangible assets of the universities themselves.

To solve these problems, one of the directions of the development of the Russian education system is digital didactics – the development and implementation of such teaching aids, which, both technologically and pedagogically, will allow forming a graduate with the necessary digital competencies. At the same time, an important aspect of the technology is its low cost and at the same time high efficiency, which will allow the university to provide a competitive advantage in the market of educational services in comparison with other educational organizations of the region, state or world. Russian higher education with its rich experience and educational traditions, as well as the constant growth of the market for online educational services (self-isolation during the pandemic has very clearly revealed this surge) form a steady turn of the education system towards the virtual space using digital tools, interactive multimedia, and distance learning systems. The large-scale implementation of new approaches is hampered by the inertia and low level of preparedness of the system infrastructure for global changes, without which Russia still risks being left on the sidelines of the digital transformation of education. Inflexible curricula (enshrined in state educational standards), the unwillingness of the teaching staff of universities to embed innovative technological tools into the traditional educational process, the low level of the material and technical base of individual universities, together with the unworked legislative basis of digital education – all this hinders the development of promising areas of digital didactics and the introduction of digital technologies in everyday teaching practice. It is the state management system in the field of higher education that can change the situation: many universities have already accumulated sufficient potential to compete for the consumer, and the reduction of institutional barriers and financial support will provide: development of human resources in the research and development sector; training students in accordance with the demands of the world labor market; creation of technologies and innovations in the interests of companies in the real sector of the economy, increasing the global competitiveness of Russian science and higher education in general.

7. Conclusion

Digital didactics is an independent promising direction in the development of the theory of pedagogy, as well as an applied tool for achieving academic leadership in Russian universities. Informatization and client-oriented strategies for the development of educational organizations, together with the enormous technical potential of the Russian education system, are becoming a serious impetus for achieving the national development goals of the Russian state, and Russian universities will be helped to become the world's leading research and educational centers.

Acknowledgments

The authors express their sincere gratitude to Doctor of Pedagogical Sciences, Professor Irina Donina for constructive comments and valuable advice when writing this article. Also we would like to thank the anonymous reviewer for the constructive comments to improve the article.

References

Blinov, V. I., Bilenko, P. N., Dulinov, M. V., Yesenina, E. Yu., Kondakov, A. M., & Sergeev, I. S. (2020). *Pedagogicheskaya koncepciya cifrovogo professional'nogo obrazovaniya i obucheniya* [Pedagogical concept of digital professional education and training]. MCU.

Blinov, V. I., Esenina, E. Yu., & Sergeev, I. S. (2019). Cifrovaya didaktika professional'nogo obrazovaniya i obucheniya (klyuchevye tezisy) [Digital didactics of vocational education and training (key points)]. *Srednee professional'noe obrazovanie* [The Journal of Secondary Vocational Education], *3*, 3-8.

Bonfield, C. A., Salter, M., Longmuir, A., Benson, M., & Adachi, C. (2020). Transformation or evolution?: Education 4.0, teaching and learning in the digital age. *Higher Education Pedagogies, 5*(1), 223-246. https://doi.org/10.1080/23752696.2020.1816847

Brolpito, A. (2018). *Digital skills and competence, and digital and online learning*. European Training Foundation.

Daneykin, Yu. V., Kalpinskaya, O. E., & Fedotova, N. G. (2020). Modern technologies for implementation of individual educational trajectories in higher education. *European proceedings of social and behavioural sciences EPSBS, 87*, 24-31. https://doi.org/10.15405/epsbs.2020.08.02.4

Daniel, J., Vázquez Cano, E., & Gisbert, M. (2015). The Future of MOOCs: adaptive learning or business model? *RUSC. Universities and Knowledge Society Journal*, *12*(1), 64-73. https://doi.org/10.7238/rusc.v12i1.2475

Dubey, H. K., Singh, A., & Dubey, S. (2019). Education system in digitalised era. *International Journal of Advance and Innovative Research*, *6*(1(X)-1), 97-99.

Du Toit, J., & Verhoef, A. H. (2018).Embodied digital technology and transformation in higher education. *Transformation in Higher Education, 3*, 52.https://doi.org/10.4102/the.v3i0.52

Gambeeva, Yu., & Sorokina, E. (2020). Cifrovaya transformaciya sovremennogo obrazovatel'nogo processa [Digital transformation of modern educational process]. *Izvestiya Volgogradskogo gosudarstvennogo pedagogicheskogo universiteta* [Ivzestia of the Volgograd State Pedagogical University]*, 5*(148), 35-42.

Gruman, G. (2016). What digital transformation really means. https://www.infoworld.com/article/3080644/it-management/what-digitaltransformation-reallymeans.html

Karakozov, S. D., Ryzhova, N. I., & Uvarov, A. U. (2018). Usloviya rezul'tativnosti sistemnoj transformacii uchebnogo processa na osnove ikt v obrazovatel'nom uchrezhdenii [Conditions of performance of systemic transformation of educational process based on ICT in educational institution]. In A. I. Khodanovich (Ed.), *Innovacionnye tekhnologii v mediaobrazovanii* [Innovative technologies in media education] (pp. 227-235). St. Petersburg State University of Film and Television.

Kaynak, O., &Sadiq, M. S. (2020). Engineering education at the age of digital transformation. TechRxiv. Preprint. https://doi.org/10.36227/techrxiv.12058107

Klimov, A. A., Zarechkin, E. Yu., & Kupriyanovsky, V. P. (2019). Vliyanie cifrovizacii na sistemu professional'nogo obrazovaniya [Effects of digitalisation on the system of vocational education and training]. *Sovremennye informacionnye tekhnologiii It-obrazovanie* [Modern Information Technologies and IT-Education], *15*(2), 468-476. https://doi.org/10.25559/SITITO.15.201902.468-476

Kondakov, A. M., & Sergeev, I. S. (2020). Bazovye cennosti rossijskoj civilizacii i ih transformaciya na etape perekhoda k cifrovomu obshchestvu [Basic values of Russian civilization and their transformation at the stage of transition to a digital society]. *Pedagogika* [Pedagogy], *6*, 5-23.

Laitkep, D., & Repkova Stofkova, K. (2020). Digital transformation challenges and opportunities in university education. In L. Gómez Chova, A. López Martínez, & I. Candel Torres (Eds.), *EDULEARN20 Proceedings* (pp. 8048-8055). IATED Academy. https://library.iated.org/publications/EDULEARN20

Law, N., & Liang, L. (2019). Digital technologies and educational transformation. In L. E. Suter, E. Smith, & B. D. Denman (Eds.), *The SAGE handbook of comparative studies in education* (pp. 508-531). SAGE Publications Ltd. https://doi.org/10.4135/9781526470379.n28

Lichtman, H. S. (2011). What is Telehresence? *Telehresence Options, 1*, 6-7.

Monakhov, V. M. (2017). Razrabotka prognosticheskoj modeli razvitiya teorii obucheniya dlya IT-obrazovaniya [Building of the prognostic model of development of the theory of teaching for IT-education].*Sovremennye informacionnye tekhnologiii IT-obrazovanie* [Modern Information Technologies and IT-Education], *13*(2), 111-121.

Nikulina, T. V., & Starichenko, Eu. B. (2018). Informatizaciya i cifrovizaciya obrazovaniya: ponyatiya, tekhnologii, upravlenie [Information and digital technologies in education: concepts, technologies, management]. *Pedagogicheskoe obrazovanie v Rossii* [Pedagogical education in Russia], *8*, 107-113.

Pevzner, M. N., Petryakov, P. A., Donina, I. A., & Turkovskiy, V. I. (2020). Models and strategies of information diversity management.*European proceedings of social and behavioural sciences EPSBS, 87*, 56-64.https://doi.org/10.15405/epsbs.2020.08.02.8

Podpovetnaya, U. V., Zavyalov, O. G., Korovin, A. M., Ovsyanitskaya, L. Y., & Postovalova, I. P. (2018). *Cifrovye tekhnologii v obrazovanii, ekonomike i upravlenii* [Digital technologies in education, economy, and management]. PeroPubl.

Rizzotto, L. (2017). The future of education: How A.I. and Immersive Tech will reshape learning forever. https://medium.com/futurepi/a-vision-for-education-and-its-immersive-a-i-driven-future-b5a9d34ce26d

Robert, I. V. (2020). Napravleniya razvitiya informatizacii otechestvennogo obrazovaniya perioda cifrovyh informacionnyh tekhnologij [Strategic directions of development of informatization of domestic education of digital information technologies period]. *Elektronnye biblioteki* [Russian digital libraries journal]*, 23*(1-2), 145-164. https://doi.org/10.26907/1562-5419-2020-23-1-2-145-164

Rozina, I. N. (2012). Cifrovaya revolyuciya v Rossii: popytka istoricheskogo i terminologicheskogo analiza [Digital revolution in Russia: an attempt of historical and terminological analysis]. *Obrazovatel'nye tekhnologii i obshchestvo* [Educational technology & society], *15*(2), 464-482.

Sergeev, S. F. (2010). Na puti k pedagogike budushchego: novye lichiny staryh dogm [On the way to the pedagogy of the future: new faces of old dogm]. *Shkol'nye tekhnologii* [Journal of School Technology]*, 1*, 11-15.

Sosnovskaya, I. V., Drozdov, V. V., Klimenko, T. V., Roshchina, O. E., & Sadretdinov, D. F. (2016). Socio-pedagogical alternatives of modernization of the university educational process: The real and virtual space. *International Journal of Environmental and Science Education, 11*(17), 9903-9911.

Spires, H. (Ed.) (2018). *Digital transformation and innovation in Chinese education*. IGI Global Publishing.

Tazov, P. Yu. (2020). Voprosy cifrovogo obucheniya i metody povysheniya effektivnosti obucheniya cifrovogo pokoleniya v usloviyah cifrovoj sredy [Digital learning issues and methods for increasing the digital generation learning efficiency in digital environment]. *Sovremennye naukoemkie tekhnologii* [Modern high technologies], *6*, 385-391.

Tchoshanov, M. A. (2018). Engineering and didactics: blended approach. In O. B. Akimova, & N. K. Chapaev (Eds.), *Akmeologiya professional'nogo obrazovaniya* [Acmeology of vocational education] (pp. 178-181). RSVPU.

Tchoshanov, M. A. (2013). E-didaktika: Novyj vzglyad na teoriyu obucheniya v epohu cifrovyh tekhnologij [E-Didactics: A New Look at Learning Theory in the Digital Age]. *Obrazovatel'nye tekhnologii i obshchestvo* [Educational technology & society], *16*(3), 684-696.

Tulchinsky, G. L. (2019). Cifrovaya medializaciya obrazovaniya i transformaciya universitetov: social'nyj audit i gumanitarnaya ekspertiza [Digital media education and university transformation: social audit and humanitarian expertise]. *Vedomosti prikladnoj etiki* [Statements of the applied ethics], *53*, 17-24.

Tulchinsky, G. L. (2017). Cifrovaya transformaciya obrazovaniya: vyzovy vysshej shkole [Digital transformation of education: challenges for higher school]. *Filosofskie nauki* [Russian journal of philosophical sciences]*, 6*, 121-136.

Uvarov, A. U., & Frumin, I. D. (Eds.) (2019). *Trudnosti i perspektivy cifrovoj transformacii obrazovaniya* [Difficulties and prospects for the digital transformation of education]. HSE. https://doi.org/10.17323/978-5-7598-1990-5

Verbitskiy, A. A. (2019). Problemy i riski cifrovizacii obucheniya [Problems and risks of digitalization training]. In O. I. Shcherbakova, & L. V. Shukshina (Eds.), *Psihotekhnologii v biznese i obrazovanii* [Psychotechnologies in business and education] (p. 1). IP Afanasiev.

Verbitskiy, A. A. (2017). *Teoriya i tekhnologii kontekstnogo obrazovaniya* [Theory and technologies of contextual education]. MGPU.

Vetkina, A., Kudryashova, T., Fikhtner, O., Trifonov, V., & Zhukova, E. (2018). The innovative potential of digital transformation of the Russian higher education system: trends of the competence approach. *Advances in Social Science, Education and Humanities Research, 198*, 197-203. https://doi.org/10.2991/ictppfms-18.2018.35

Vindača, O., Ļubkina, V., Žogla, I., & Prudņikova, I. (2020).Effective digital transformation in the context of higher education. In L. Gómez Chova, A. López Martínez, & I. Candel Torres (Eds.), *EDULEARN20 Proceedings* (pp. 1027-1037). IATED Academy. https://library.iated.org/publications/EDULEARN20

Zain, S. (2021). Digital transformation trends in education. In D. Baker, & L. Ellis (Eds.), *Future directions in digital information.Predictions, practice, participation* (pp. 223-234). Elsevier. https://doi.org/10.1016/b978-0-12-822144-0.00036-7

Zemlinskaya, T. E., & Fersman, N. G. (2016). Metodika vuzovskogo obucheniya v kontekste klipovogo myshleniya sovremennogo studenta [Methodology of university education in the context of clip thinking of a modern student]. *Pedagogika. Problemy vysshei shkoly* [Pedagogy. High School Problems], *4*(255), 153-158.