

Organizational and Methodological Aspects of Improving the Quality of Online Teaching at a University

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Abstract: Quality of online distance learning in a modern university is evaluated, an overview of the methodological aspects of online teaching is given with the examples from four universities of Russia. The experience of using digital resources MS-Teams, Mirapolis, Zoom, Cisco Webex, etc. in teaching is complicated by some technical shortcomings. Due to that instructors admit that there is an unstable voluntary attention of students, and there are challenges of providing objective testing and assessment of students in different subjects. Methodological adjustment of certain aspects of online distance learning in order to improve its quality is proposed, including interactive inclusions in online classes, individualization of teaching tasks in the pedagogy of higher education discipline and double mini-testing in higher mathematics contributing to a better assimilation of lecture material by students. For practical classes in the discipline of foreign language in professional activity a three-stage technology for students' independent work was developed using video auditing and mental mapping to prepare more efficiently for communication during the class work. Silent and freeze video viewing technology introduced in foreign language teaching is also aimed at enhancing students' voluntary attention in online classes.

1 INTRODUCTION

Online distance learning at a university became especially relevant in the spring of 2020 due to the aggravation of the global epidemiological situation, when all universities in Russia and abroad were forced to transfer their students and teachers to self-isolation. As of July 2020, 98.6% of students worldwide were affected by the pandemic, representing 1.725 billion children and adolescents, from preschool to tertiary education, in 200 countries (United Nations, 2020). Therefore, to make learning possible and accessible through distance learning has become a requirement of the time (Pokhrel, Chhetri, 2021).

The use of such electronic resources as MS-Teams, Mirapolis, Zoom, Cisco Webex, etc., as based on our observations of the educational process and the survey of participants in distance learning, was positively assessed by the teaching staff of universities and was recognized as acceptable for online learning mode. Despite the positive experience of using these electronic resources in teaching various

disciplines, in the process of university practice, some shortcomings of e-learning were also identified.

For example, in order to achieve technically optimal operation of the MS-Teams program, it was recommended to turn off the visualization of the lecture participants on the screen, and due to that their concentration on the content of the lecture and the intensity of individual participation was very different. Students whose names were displayed on the monitor screen at the beginning of the lecture could then disappear and report in the chat that their microphone did not work, or inform their fellow students that their Internet was turned off. Verification of this information has never been carried out, and it had to be treated with understanding, although the teacher may have had doubts about the reliability of the information provided by students. The students' ability and readiness to follow the course of events, the information offered during the online class, could also raise doubts among teachers. The teachers' attempts to get feedback from students often required repeated efforts and often remained without response.

Almost all teachers also have problems conducting tests online. When students are tested online, teachers do not have complete confidence that the students perform them completely independently. In this context, those online resources and specialized websites, which are created to effectively promote student learning in cooperation, can play a negative role. For some students, cheating becomes a common practice in taking tests, and teachers have to doubt the objectivity of their assessments. According to our observations, the number of students' high positive assessments for the tests performed online has increased by about 20%. Satisfactory students' ratings are virtually non-existent.

In teaching a foreign language online, there are difficulties in adequately assessing students' oral speech. If, for example, a poor student answers the "topic" well, then the teacher can be sure that he is using the text as a visual support for the answer. For an objective assessment, the teacher needs to ask a few questions on the topic or ask the student to comment on some of the topic extensions in a foreign language. With an evident insufficiency of the students' oral communicative competence, they can have a very competent portfolio of written works, obviously made by other students or simply downloaded from the Internet.

When setting a semester grade, there is a dilemma: whether to give a student "satisfactory" grade due to the fact that the profiling oral-speech communicative competence is not sufficiently developed or, for example, a "good" grade taking in account all the work performed. The criterion of truth, in our opinion, could only be an off-line interview with a student, which may not be feasible due to the regulated conditions of online learning at a particular university.

The above examples of problems that arise in the process of implementing online distance learning indicate a decrease in the quality of this learning mode compared to the traditional, classroom mode of conducting classes. The urgent task of educators today, due to the high likelihood of the pandemic continuing and returning to online learning in the new academic year, is to quickly overcome the existing shortcomings of online learning, improve its efficiency and the quality of students' knowledge.

The purpose of this article is to review the scientific and methodological literature on the problem of improving the quality of online distance learning at a university, as well as to consider specific methodological solutions for optimizing online learning in several Russian universities.

Research methods: monitoring the educational process online, questioning students and teachers, comparative analysis of scientific and methodological literature on online distance learning in the format of a systematic approach that allows studying online learning as a system of interrelated elements, organically included in the electronic information educational environment of a modern university. The methodology of the systematic approach is focused in this study on the analysis of the organization of practical activities to improve the widespread online learning. The online learning system is considered in the dynamics of the many pedagogically significant factors, such as the quality of education, methodological techniques for developing an optimal strategy for students to work in a digital environment, and electronic resources.

2 LITERATURE REVIEW

Adoption of the Law of December 29, 2012 273-FZ "On Education in the Russian Federation" Article 16 "Implementation of educational programs using e-learning and distance learning technologies", legalized the use of these technologies nationwide and, thereby, intensified general attention to e-learning, which received a powerful impetus for the development in connection with the global epidemiological situation of 2020-21.

The COVID-19 pandemic has indeed had a major impact on students, teachers and educational organizations around the world (Adnan, Anwar, 2020). To provide participants of the educational process with opportunities for social distancing (Toquero, 2020) measures were taken everywhere to switch to online learning, which became an indicator of the organizational flexibility of universities (Wu, 2020). Academic institutions have focused on the transfer of educational content to the digital environment. Successful ensuring the teaching process with the use of digital technologies required significant technical and organizational efforts.

However, so far it is hardly possible to give a reasonable answer to the question of whether it is possible to ensure the required quality of knowledge using digital platforms without significant methodological and structural changes in the educational material and the learning process. The Massive Open Online Courses (MOOC) development example shows the need for fundamental changes in the teaching strategy, in the structure and processes of preparing educational material, as well as in the processes of its application (for example, training

materials for MOOCs can be prepared by teams of specialists, including scriptwriters and cinematographers).

The main disadvantages of online learning, noted by students of higher educational institutions, were the lack of personal interaction with the teacher, the long response time of the distance learning system to requests, and the lack of traditional socialization in the learning process in university classrooms (Blagoveshchenskaya et al, 2020).

Despite these shortcomings, we must recognize that online learning, experienced during the pandemic on a global scale, has become a familiar resource that can be used as a complementary learning tool. Currently, most university students in Russia study in two formats: mixed or hybrid (full-time education + distance learning) and distance education itself. According to the new rules, all streaming lectures that are attended by more than a hundred people are transferred online, that is, into webinar rooms that are virtual analogues of a university audience. At the same time, practical and laboratory classes, master classes and lectures in small groups are held offline.

Important for our general understanding of the existing diverse problems in the distance learning system is the analysis of opinion polls, known to us from the literature, of students and teachers as participants of the distance learning process. For example, the Institute for Social Analysis and Forecasting of the Russian Presidential Academy of National Economy and Public Administration (RANEPA) conducted a survey of teachers and students on their attitude to distance learning in all branches of the academy. 12,201 students from 53 branches of the RANEPA (almost a third of all students of the academy) took part in the opinion poll. Students were asked to rate the quality of online learning by answering three questions: whether they have more free time, how convenient this form of learning is, and if respondents prefer face-to-face learning to distance learning.

The answers of the students were compared with those of 4000 teachers of the academy, who were surveyed in April 2020 (Lamova, 2020). The results of the survey are presented in Table 1.

Most students and teachers consider the quality of distance learning to be lower than that of traditional, full-time mode, but students, as can be seen from Table 1, turned out to be much more loyal than teachers in relation to online learning. Apparently, this is due to the fact that contemporary young people, our digital generation, tend to perceive all technological advances more positively, while the older generation of teachers is more skeptical about

online distance learning, as this means a change in the learning format they are used to.

Table 1: Modals Opinions of students and teachers on online learning.

Assessment parameter	Percentage of students	Percentage of teachers
Reduction of free time when switching to distance learning	55,4%	87,4%
Distance form of online learning is inconvenient	35,8%	62,1%.
Full-time education is preferable to distance learning	69,6%	85,5%

Speaking about the quality of online distance learning, we should, first of all, emphasize the complexity and multidimensionality of this category of the university educational process. Evaluation of the quality of online learning is increasingly attracting the attention of Russian and foreign researchers, such as G.V. Kuritsyna (2015), Dmitrieva G. G. (2015), A. A. Karasik et al (2018), A. A. Andreev (2015), E. S. Polat (2005), E. N. Bubnov et al (2015), I. V. Kiyan (2012), V. A. Trainev et al (2008), I.A. Kuznetsova (2011), N.V. Nikulicheva (2016), B.Zh. Zhigalev (2007), I.K. Voitovich (2014), N.V. Tikhomirova (2015), Nguyen T. (2015) etc.

In the field of education, the quality of education means, mainly, the correspondence of the knowledge, skills and abilities of university graduates to the requirements of the labor market, and, by and large, the prestige of the university itself depends on how they are evaluated on the labor market (Kuznetsova, 2011). From the point of view of general approaches to assessment and quality control, two main models of quality management are distinguished: whereas the first model is associated with the direct control of the students' competencies, the second model of education quality management is based not only on the control of competencies as the results of education, but also on the control of learning processes, their organization and the teaching means used.

For practical purposes, improving the quality of education is understood as "changes in the educational process and the learning environment, which can be identified as an improvement in the knowledge, skills and abilities acquired by students upon completion of a certain stage of education" (Dmitrieva, Kuritsyna, 2015). According to B.Zh. Zhigalev, the main didactic tool to guarantee the quality of education is assessment, since it provides

feedback in the educational process, is a confirmation that the quality requirements are met (or not met) (Zhigalev, 2007). A particularly important role in the distance learning system is played by the current assessment, which enables the teacher and the student himself to assess the depth of material assimilation, to outline an individual pace of learning, and to correct the educational process in a timely manner (Voytovich, 2014). It is the current assessment that creates the best conditions for the operational adjustment of the learning process in terms of the content organization, the nature of interaction and the teaching methods of each discipline (Dmitrieva, Kuritsyna, 2015).

According to Russian researchers, the concept of quality assurance implies that quality can be understood as a kind of “correction of what is envisaged by the educational institution itself, i.e. that the tasks set were achieved by the means compatible with the established quality criteria” (Bubnov, 2015: 532). Ensuring quality improvement in the process of methodological adjustment of certain online distance learning aspects seems to us the most efficient way of introducing positive changes and their subsequent testing in the process of online learning.

An example of such a targeted improvement in the quality of online distance learning can be the principle of information duplication described in the scientific literature (Blagoveshchenskaya et al, 2020) in online learning: the implementation of this principle involves the active use of not only basic, relatively innovative, electronic resources, such as MS-Teams, Mirapolis, Zoom, Skype, Google Meet, Cisco Webex, etc., but also traditional e-mail and LMS MOODLE virtual platform in the local informational learning environment of a modern university (ibid).

Based on the above, due to the limited volume of the article, we will not consider such basic indicators of the quality of the university educational process as curricula and syllabi; educational materials and practical training opportunities; technical and organizational support of the educational process. We will focus on the methodological aspects of conducting online classes, both lectures and practical ones, including the use of interactive learning methods, optimizing student testing, introducing individualized tasks and structured independent work in a digital environment.

At the same time, a general psychologically and physiologically justified recommendation (Dozhdikov, 2020) for conducting modern online classes, especially lectures, is to reduce the amount of theoretical material, provide it in portions of 15–20

minutes to facilitate perception, and in different formats (Shmurygina, 2020). Changing the material presentation form contributes to the creation of polymodality conditions, that is, the combination of verbal and non-verbal content (text, video, image, sound), which contributes to deeper assimilation of the material.

3 RESEARCH RESULTS

Most often, in online mode, teachers read their lectures on dark monitors with the initials of some students reflected on them, as a rule, 6-8 people, while students mainly see and perceive teachers as "talking heads" conventionally depicted on the screen. Teachers' attempts to turn their monologues into meaningful dialogues often did not bring significant results, since students were not ready for interactive lectures. The teacher's appeal to students with questions about the lecture material did not always meet with a response: some students were absent for technical or other reasons, some students, apparently, were distracted and could not answer the lecturer's questions correctly.

Realizing that technical problems (for example, disconnection of the Internet, lack of visual representation of the student and slow connection of the microphone) cannot be solved overnight, we will offer our methodological solutions for conducting lectures and practical classes, which will at least to some extent compensate for technical problems and contribute to increasing the students' attention and improving the quality of online distance learning.

As a result of the study, we have identified certain methodological techniques that, according to the results of pilot testing in several universities, contribute to improving the quality of online learning in various disciplines. These techniques, with indication of the place of testing, are presented below in Table 2.

Drawing on the results of the pilot survey of our colleagues, all the techniques we used to teach undergraduate and graduate students in the formats of online lectures and practical classes contributed to an overall increase in their learning activity, as well as a deeper assimilation of lecture and practical material.

Table 2: Methodological techniques for improving the quality of online distance learning.

The essence of the methodological technique	Discipline, testing mode	Name of the university
Interactivity of a general nature	Lectures on pedagogy of higher education for graduate students, classroom work	Peter the Great St. Petersburg polytechnic university (SPbPU)
Assignment Individualization		
Inclusion of practical workshop material into a lecture		
Double mini-testing	Lectures on higher mathematics for bachelors, classroom work	Emperor Alexander I St. Petersburg state transport university (SPbGUPS)
Video auditing and mental mapping to prepare for communication	Practical classes in the discipline "foreign language in professional activity" for bachelors, extracurricular independent work	Bonch-Bruevich St. Petersburg State University of Telecommunications (Bonch)
Silent and freeze video viewing technology	Practical classes in the discipline "foreign language" for bachelors, classroom work	Kadyrov Chechen State University

4 DISCUSSIONS

Speaking about the need for interactive lectures, we mean the use of elements of interactivity in the educational process. Interactivity means the ability to interact or be in a conversation mode, a dialogue with someone (a person) or something (for example, a computer). Interactive learning is a special form of cognitive activity organization, a way of cognition, carried out in the form of a joint activity of students or students and teachers. All participants interact with each other (Titova, Avramenko, 2014). exchange information, jointly solve problems, model situations, evaluate the actions of others and their own behavior, immerse themselves in a real atmosphere of business cooperation to resolve the problem. Students become equal participants in interaction with the teacher, and

the teacher adheres to a more democratic style of lectures.

Brainstorming, watching and discussing short videos on the topic of the lecture, feedback from students on the content of the lecture, a lecture with pre-announced errors that students need to detect, group development of certain tasks for presenting micromodules of structured educational material, etc. can be considered as common, or generally accepted elements of interactivity. It is with the interactive forms of conducting any classes (Odinokaya, Popova, 2016). that the personal aspects of professional competencies are formed to a greater extent.

Based on our observations on the educational process, interactive inclusions in the lecture clearly contribute to the strengthening of students' voluntary attention. For a greater pedagogical impact of interactive elements on students, the teacher needs to warn students about interactive inclusions and their occurrence, for example, every 15-20 minutes so that students' attention does not weaken. It is also possible to create external motivation factors for students if the teacher announces additional points for participating in the interactive activities. Interactive inclusions were, in particular, positively assessed by SPbPU postgraduates, who noted an increase in interest in the lecture material presented in the discipline "Pedagogy of Higher Education".

We also note that when conducting online lecture courses, the combined form of lectures with the inclusion of workshop material has proven to be efficient. The main principle of conducting such a lecture, for example, in the course of pedagogy of higher education (Popova, 2018) is the individualization of pedagogical tasks that students must perform on their own or in pairs of like-minded people or opponents. Whereas like-minded people or fellow-thinkers should supplement the concept of the pedagogical aspect developed by them, the opponents need to oppose their opinions. Paired presentations on the connections of pedagogy with other sciences, B. Bloom's taxonomy as a psychological and pedagogical concept of mastering knowledge on the example of a special discipline, interdisciplinary connections and peer review of the articles on professional education from the journal "Higher Education in Russia" were quite successful performances.

An additional means of enhancing the students' voluntary attention during an online lecture is the teacher's announcement of a mini-test on the content of the lecture 10-15 minutes before its end. The teacher gives a test, which mainly includes questions on the theoretical aspects of the lecture, its results are automatically reflected in the electronic environment of the university and are taken into account by the lecturer when assessing students. It is important to

note that the mini-test at the end of the lecture should not be difficult, since the student after the lecture in higher mathematics (Blagoveshchenskaya et al, 2022) needs a positive attitude to overcome further difficulties.

We also note that mini-testing can also be carried out at the beginning of each lecture to repeat the previous lecture material, especially if students completed the practical task in independent work mode. Mini-tests at the beginning of a lecture can help students recall what they have learned, emphasize the relationship between theory and practice, and focus students on the content of the upcoming lecture. The teacher, in turn, can make sure that the previous lecture has been mastered and that the students have completed the practical task.

This technique of double mini-testing was tested in teaching higher mathematics at SPbGUPS, and a preliminary conclusion on the effectiveness of this technique is the conclusion that online mini-testing provides a more objective assessment compared to the evaluation of a large test for an hour and a half. Unfortunately, when conducting such a “global” verification campaign, one cannot exclude the possibility of students’ dishonest work, that is, online counseling or, put simply, cheating.

As for teaching such an activity-based discipline as a “foreign language” online, the main difficulties arise in the organization of students’ oral communication. The true dialogic communication of students, when they need to demonstrate their communicative competence, cannot be evaluated objectively, since the teacher cannot be sure that students do not use textual supports. In addition, when working online in a new group, a foreign language teacher does not always clearly understand with whom exactly communication occurs. In order for the students to be better prepared for the classroom mode of foreign language communication, it is proposed to structure their independent work and strengthen it by introducing video auditing and compiling mental maps to prepare students for communication in the classroom mode.

The technology of using audiovisual aids in the mode of students’ independent work (Stepanova et al, 2021) consisting of three stages, was tested during the period of self-isolation in 2020 and received positive feedback from students. The first stage includes a two-time audition of an advertising professionally-oriented video material, 3-4 minutes’ long, about the American computer company CISCO, when students simultaneously answer the questions about the content of the video formulated by the teacher.

The second stage includes mind mapping by means of MindMeister electronic resource to prepare for rendering the professionally oriented content and recording it in Speak Pipe format in English. The mental map (Tsatsulina, 2019) indicates not only the elements of its content that are important for rendering the video, but also keywords in a foreign language. The example of students’ mental map is shown below, in Fig.1.

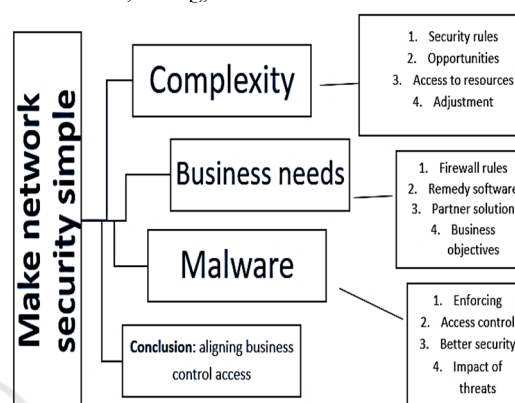


Figure 1: Mind map created by a student.

The third stage of the technology is aimed at students’ recording the content of a professionally oriented mental map-based audio file in English, with Speak Pipe audio recording link sent to the teacher for monitoring. Such an interactive audio report is necessary to make sure that students do not read the entire video script, but briefly reflect it using the mental map they have prepared, which is stimulating communication during the classroom session. After receiving and checking student audio reports, the teacher can identify and control the most problematic students and, first of all, listen to their dialogical speech in online mode, which helps to improve the general quality of online foreign language teaching.

Thus, structuring students’ independent work according to the specified algorithm helps students to prepare more effectively for the interactive mode of communication during an online lesson. The creation of a mental map is an additional step in the visualization of video content, which is positively evaluated by students. Drawing up a mental map is a task that forms the universal learning activities of students (Kulikova, Popova, 2019), which is currently considered an important functionality of all disciplines, in particular, the discipline of a foreign language. The skills of creating a mental map and voicing it in a foreign language are important, for example, for preparing students for presentations in

any disciplines, including profile ones, as well as for their future conference activities.

Silent and freeze video viewing technology introduced in Kadyrov Chechen State University in foreign language teaching is one of the classroom technologies aimed at enhancing students' voluntary attention in Cisco Webex online classes. Foreign language teachers know that sharing a video during the online class presents a problem for students, especially for those living in remote settlements, in terms of simultaneous perception of visual and audio information, and students often complain that they can't do listening comprehension properly for technical reasons. Even though there are certain doubts concerning learners' sincerity, it was decided to overcome this problem by introducing silent viewing technology supplemented by freeze-frame video viewing (Shahani, Tahriri, 2015; Shahani et al, 2014).

If the teacher has enough time for classroom work with video materials, he / she can have learners watch a short video of 1-2 minutes long, three times. The first silent viewing helps students focus on visual aspects only and form anticipation for audio content as prompted by preliminary classroom discussion or questions on the video given in advance by the teacher. Using the freeze frame function during the second ordinary viewing allows the teacher to organize a discussion of students on specific episodes of the video. The third silent viewing of the video may be preparatory to its rendering with the emphasis on the studied grammar and vocabulary.

Taking the educational benefits of video for granted, the use of silent and freeze video viewing technology helps to direct students' attention into visual and debating activities. According to our pilot experiment, over 70% of students report the greater effectiveness of watching videos actively, using various viewing methods, other than the conventional passive video viewing in a language class. Therefore, the proposed original use of video seems to be prospective in terms of learners' better focusing on its content in online classes.

5 CONCLUSIONS

It seems to us that there are no insignificant factors in the matters related to improving the quality of online education at a university, and the coverage of practical aspects in improving quality is no less important than its assessment on a global scale, taking into account its multifactorial nature.

In our desire to improve the quality of online learning at the university, we proceeded from a systematic approach to the practice of teaching lectures and practical courses in several Russian universities and close monitoring of the pedagogical process. Given the presence of some general technical shortcomings in the organization of online learning, we made an attempt to compensate for them by using certain methodological tools.

The organizational and methodological aspects of conducting online lecture courses in the disciplines Pedagogy of Higher Education and Higher Mathematics were analyzed in SPbPU and SPbGUPS, respectively. To increase the concentration of students' voluntary attention during lectures, we tested interactive inclusions, individualized learning tasks, and double mini-testing to check the assimilation of lecture material and the correctness of homework.

To increase the effectiveness of students' oral dialogue communication in the format of the discipline "foreign language in professional activity", a three-stage technology for using professionally oriented video auditing and compiling mental maps by students in the mode of extracurricular independent work was tested. This technology was used to prepare first-year bachelors of St. Petersburg Bonch University for communication and turned out to be quite effective in supporting the dialogue communication of students, who began to use more complex lexical-grammatical models more often in speech using general technical and terminological vocabulary.

Silent and freeze video viewing technology used in Kadyrov Chechen State University in foreign language teaching is an attempt to overcome the internet faults through the simple methodological techniques, which are easily accessible for any teacher. Instead of the commonly used passive video viewing it is proposed to use active video viewing with the scaffolding in the forms of preliminary questions, visual only silent video watching and freeze frame discussions.

All of our conclusions have been drawn from pilot studies conducted at four universities and are therefore preliminary. For a more informed conclusion on the topical issue of improving the quality of online learning and the development of sound recommendations within the framework of the modern educational paradigm, it is necessary that we conduct a more extensive study in Russia and abroad.

REFERENCES

- Pokhrel, S., Chhetri, R., 2021. A Literature Review on Impact of COVID-19 Pandemic and Learning. *Higher Education for the Future*. 8(1). pp. 133–141.
- Adnan, M., Anwar K., 2020. Online learning amid the COVID-19 pandemic: Students' perspectives. *Journal of Pedagogical Sociology and Psychology*. 2(1).
- Toquero, C. M., 2020. Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. *Pedagogical Research*, 5(4).
- Wu, Z., 2020. How a top Chinese university is responding to coronavirus. Retrieved from *World Economic Forum*. <https://www.weforum.org/agenda/2020/03/coronavirus-china-the-challenges-of-online-learning-for-universities>.
- Blagoveshchenskaya, E., Garbaruk, V., Popova, N. 2020. Organizational and pedagogical problems in the process of distance learning at a University. *CEUR Workshop Proceedings*. 2861. pp. 210–216.
- Lamova, E., 2020. Teachers prefer a closer look. *Gazeta «Kommersant»*. 87, 20.05.2020. S. 2. <https://www.kommersant.ru/doc/4349320>.
- Kuritsyna, G. V., 2015. *The content and organization of the quality assessment of distance learning at the university*. Abstract of thesis. Cand. dis., Nizhny Novgorod. 26 p.
- Dmitrieva, E. N., Kuritsyna, G. V., 2015. The content of the assessment of the quality of distance learning at the university. *Modern problems of science and education*. 6. <http://www.science-education.ru/ru/article/view?id=23913>.
- Karasik, A. A., Larionova, V. A., Kuzmina, A. V., 2018. A system for assessing the quality of online courses and virtual academic mobility. *New information technologies in education and science*. 1, pp. 65-72.
- Andreev, A. A., 2015. Evaluation of the quality of online courses. *The territory of science*. 1. pp. 20-26.
- Polat, E. S., 2005. Methodology for determining the effectiveness of distance learning. <http://distant.ioso.ru/library/publication/voprosef.htm>.
- Bubnov, G. G., Pluzhnik, E. V., Soldatkin, V. I., 2015. Criteria for assessing quality in the e-learning system. *Cloud of Science*. 2(4). pp. 530-543. <http://cloudofscience.ru>.
- Kiyan, I. V., 2012. Assessment of the quality of pedagogical technologies in the distance learning system. *Successes of modern natural science*. 2. pp. 76-84. <http://www.natural-sciences.ru/ru/article/view?id=29654>.
- Trainev, V. A., Gurkin, V. F., Trainev, O. V., 2008. *Distance learning and its development. Generalization of the methodology and practice of use*. Editing House Dashkov i K., 294 p.
- Kuznetsova, I. A., 2011. Assessment of the quality of distance learning systems. *Bulletin of Eurasian Science*. 2 (7). p. 22.
- Nikulicheva, N. V., 2016. *The introduction of distance learning into the educational process of an educational organization: practical*. Federal Institute for Education Development. p. 72.
- Zhigalev, B. A., 2007. *Pedagogical system for assessing the quality of education in a modern university (theoretical and methodological aspect)*. Nizhny Novgorod: Nizhny Novgorod Linguistic University. p. 115.
- Voytovich, I. K., 2014. Criteria for the effectiveness of e-learning and the quality of e-learning programs in the university. *TSPU Bulletin*. 4 (145). pp. 152-156.
- Tikhomirova, N. V., 2015. *Assessment of the quality of e-learning*. <https://expert-edu.ru/images/pdf/tihomirova.pdf>.
- Nguyen, T., 2015. The Effectiveness of Online Learning: Beyond No Significant Difference and Future Horizons. *MERLOT Journal of Online Learning and Teaching*. 11(2), pp. 309-319.
- Dozhdikov, A. V., 2020. Online learning as e-learning: quality and results (critical analysis). *Higher education in Russia*. 29(12). pp. 21-32.
- Shmurygina, O. V., 2020. Educational Process during a Pandemic. *Professional Education and Labor Market*. 2. pp. 51-52.
- Titova, S. V., Avramenko, A. P., 2014. *Mobile teaching of foreign languages*. Ikar. p. 224.
- Odinokaya, M. A., Popova, N. V. 2016. *Modern technologies of Interactive Learning in a Multidisciplinary University*. SPb., Publishing house of Polytechnic. University. p. 258.
- Popova, N. V., 2018. *Pedagogy of higher education*. Publishing house of Polytechnic. university. p. 103.
- Blagoveshchenskaya, E., Garbaruk, V., Popova, N. 2022. Contemporary Aspects of Online Teaching Mathematics in Technical Universities. *Lecture Notes in Networks and Systems*. 442.
- Stepanova, M. M., Popova, N. V., Kuzmina, A. V., 2021. Methodological aspects of the use of audiovisual means of teaching a foreign language and translation at the university. *Bulletin of the Samara State Technical University. Series: Psychological and pedagogical sciences*. 18(1). pp. 87-98.
- Tsatsulina, E. V., 2019. *Using the method of mental maps in teaching a foreign language*. http://www.ulspu.ru/upload/img/medialibrary/b6b/tsatsulina_saratov_statya.pdf.
- Kulikova, E. V., Popova, N. V., 2019. The concept of the formation of universal skills of scientific work among students of a technical university in the process of teaching a foreign language. *Bulletin of the Tambov University. Series: Humanities*. 24(180). pp. 31-43.
- Shahani, S., Tahriri, A., 2015. The impact of silent and freeze-frame viewing techniques of video materials on the intermediate EFL learners' listening comprehension. *Sage Open*. 5(2). pp. 1-8.
- Shahani, S., Tahriri, A., 2014. Divsar H. EFL Learners Views towards Video Materials and Viewing Techniques. *International SAMANM Journal of Business and Social Sciences*. 2(1). pp. 42-60.