



## E-LEARNING TO ENSURE EDUCATIONAL SERVICES' QUALITY IN UNIVERSITY DISTANCE LEARNING

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**Abstract:** *The high-tech industry and the development of applicable online tools are inspiring various institutions and individual educators to change teaching and learning approaches and methods, especially in higher education. Borys Grinchenko Kyiv University has been implementing distance learning technologies as one of the components of blended learning for 10 years now. Today's challenges for world pedagogy have shifted the emphasis to the need for speedy introduction of distance learning technologies at all stages of education. It is important not only to organize distance learning, but also to ensure sufficient quality of educational services and to design objective assessment technology. The article summarizes the experience of BGKU in organizing e-learning to provide distance learning for students and its impact on improving the quality of educational services. Also it presents the analysis of using various services and tools for organizing the educational activity of students in e-learning. Several options for organizing and conducting summative assessment as combined online-exams in the implementation of e-learning are described. Recommendations for the use of online tools and services to disseminate positive experiences in ensuring the quality of educational services are provided.*

**Keywords:** e-learning; quality of educational services; tools; distance learning; assessment; services for e-learning.

### INTRODUCTION

Education, which is one of the universal values in all conditions, both favorable and critical to the world community. It needs change due to the rapid development of digital technologies. Thus, modern online tools and services are being introduced into the educational space, forcing them to change approaches and methods in teaching and learning, especially in higher education. More and more attention is paid to

lifelong learning The lifelong learning's value, which includes formal, non-formal and informal education, is expressed as an idea, a principle of learning, the quality of the educational process.

The book *Universities in the Networked Society: Cultural Diversity and Digital Competences in Learning Communities* (Smyrnova-Trybulska, Kommers, Morze, & Malach, 2019) is devoted to the study of the impact and effectiveness of the use of digital technologies in lifelong learning. In it, scientists from around the world mark the importance and relevance of the use of e-learning, MOOCs, and the importance of increasing the academic staffs' digital competence for the quality of education. Improving the quality of educational services requires not only upgrading the higher education curriculum, but also changes to the in-service training staff. E-learning competencies are described in research by Roszak, Mokwa-Tarnowska, Kołodziejczak (Roszak, 2019); digital competencies of modern teachers are described in research by Morze (Morze, 2019); while the use of MOOCs for professional development are described by Smirnova-Trybulska (2019). Also, universities are introducing joint innovative master's programmes "E-Learning in Cultural Diversity" (Smyrnova-Trybulska, 2019), in which the key is to develop the professional competence of masters in the design and management of e-learning for different age groups, preparation of masters for the implementation of the educational process in the electronic educational environment using modern digital technologies (Morze, 2017).

Today's challenges have shifted the emphasis in world pedagogy to the need for the rapid introduction of distance learning technologies at all levels of education. It is important not only to organize distance learning, but also to ensure sufficient educational services' quality and design objective assessment. The need becomes especially urgent for a qualified, professional organization of distance learning with e-learning, which are flexible, dynamic and accessible 24/7/365 and stand up from the experience of blended and online learning.

In BGKU, e-learning is implemented using a variety of available digital tools in combination with the use of LMS Moodle, which is an integral part of the implementation of blended learning and a key system for providing high quality educational services in distance learning.

## **1. FEATURES OF UNIVERSITY EDUCATION IN THE COVID-19 PANDEMIC**

### **1.1. Ways to organize the teaching**

The world community and leading educational organizations are actively working to find the best ways to organize training in an extreme situation.

International and Ukrainian experts have urgently developed documents on how to organize training in the context of the COVID-19 pandemic: OECD. A framework to guide an education response to the COVID-19 Pandemic of 2020 (OECD, 2020); Recommendations for the blended learning introduction to institutions of professional higher and higher education (MES of Ukraine, 2020); Challenges and international organizations' responses of to overcome the problems in education caused by COVID-19 (Ovcharuk, 2020); Results of the online survey "Teachers' needs to

improve the professional level on the use of digital tools and ICT during quarantine” (Ovcharuk, Ivanyuk, 2020).

The latest normative documents of Ukraine offer blended learning and explain the principles of blending and the role of distance learning as a separate form of education through indirect interaction of subjects through online technology. (MES of Ukraine, 2020). In Ukraine distance learning technologies have previously been used in the university teaching, but occasionally for approbation. Distance technologies in the teaching are defined as “distance learning” (DL), where knowledge is delivered to the student using specific platforms and tools, such as Moodle, Google Classroom, Zoom, Skype, Google Suite/Docs, etc. (Sosnytska, 2020). The DL toolkit allows communication between the teacher and students, the performance and checking of tasks, attendance control, the organization of the semester, certification, etc.

Due to distance learning, there are open educational structures of different purposes and scope: national and international. Students have the opportunity to study at any university in the world, in some even to receive certificates or diplomas. Everyone gets the opportunity to lifelong education, for continuous enhancement or a radical change of occupation. Ukrainian researcher Morze (2016) defines DL as an educational technology in which communication between a teacher and distant students takes place using digital technologies. Besides, she identifies e-distance learning, in which participants and organizers of the educational process interact both synchronously and asynchronously as a kind of distance learning. In addition, Morze singles out as a kind of distance learning, e-distance learning, in which participants and organizers of the educational process individually interact in synchronous and asynchronous.

## **1.2. Using distance learning**

University strategy effects on the quality of education while using DL, including a clear vision for the management of active involvement of teachers and students, in the form of relevant documents regulating the use of DL to encourage teachers and students; taking into account the work on content design in the individual plans of teachers. Thus, in the report “Framework Guidelines for the Response of Education to the to the COVID-19 Pandemic” (Reimers & Schleicher, 2020), the authors believe that the educational institution’s policy to support the effective use of digital media is important and decisive in the implementation of DL. Finally, such a policy will help reduce the destructiveness of education caused by the pandemic. DL and e-learning provide the greatest versatility and interoperability.

DL is actively used in blended learning, which is the integration of distance learning and full-time education, mixing learning materials online and group learning with a teacher, the flipped classroom or flexible blended teaching and learning model, where students have a high level of autonomy and flexible schedule personalized to their own needs. DL gives students and teachers access to a variety of resources to organize the educational process in an acceptable and adequate form; provides intensification of the education system, the opportunity to develop creative and intellectual abilities of each student by means of open online resources; and the possibility of lifelong learning. DL can be effectively implemented in the form of e-learning,

which allows one to maintain the quality of educational services in the normal functioning of the university and in the current situation, i.e. in a pandemic.

### **1.3. The impact of e-learning on the quality of educational services**

High-quality and conscientiously organized e-learning is transparent, open, accessible and objective. To organize it, you need to use a convenient LMS and additional tools to ensure quality online communication.

The KUBG e-learning system is organized in such a way that each student has a personalized entrance and access to e-learning courses (ELC), which are created by university teachers for e-support of disciplines.

Students can track their personal progress in the course, see the rating for a certain task among those who performed this task without opening the grades of other students. The student is set to be successful due to the fact that all learning outcomes are recorded in the e-learning system, information on the evaluation of tasks performed by the teacher is open, activity is constantly monitored. The student is interested and encourages the teacher to make the materials relevant and presented in an understandable form. Teachers, in turn, try to contribute essential structured information with the latest scientific data, current requests for professional realization of students to their ELC. Also, the quality of ELC is influenced by the students' ELC assessment, which results affect the teacher's rating. Another important quality component is the ELC certification at the university level, which consist by three expertise's types: content, resource examination and technical. The using level of certified ELCs in the educational process is also part of the teacher's rating.

These points, the needs of students on the one hand and the creativity of teachers on the other, are mutually motivating factors to improve the quality of education.

## **2. UNIVERSITY EXPERIENCE IN THE DEVELOPMENT OF E-LEARNING**

### **2.1. E-learning as the learning process support in the implementation of blended learning**

BGKU has been implementing blended learning for almost 10 years through a combination of e-learning and traditional teaching in the form of lectures, laboratory and practical work, seminars, etc. E-learning at university is based on an e-learning system deployed in the modular object-oriented distance learning environment – Moodle. The unified structure of an e-learning course, adapted to the students' needs, is provided for each curricular discipline. This structure is described in the Regulations on ELC, approved the Rector and is as follows: unit with general information about the discipline; training materials and guidelines for each content module; tasks for independent work of applicants; evaluation of content modules; summative assessment in the form of an examination.

Until this year, e-learning was focused primarily on the organization of interaction between teacher and students as e-support disciplines. At the moment, e-learning in combination with additional online communication tools is becoming the main en-

vironment for the implementation of the educational process in compliance the of educational services' quality.

The e-learning formation process as a support of the educational process in the blended learning implementation also continues in the direction of teacher's professional development on the principle of lifelong learning. Objective staff turnover, improvement of methods and technologies, the emergence of new tools, updating the fleet of gadgets requires teachers training as teaching; leadership; use of digital technologies; scientific research, etc.

## **2.2. E-learning at BGKU during the pandemic**

For the quarantine period in BGKU a temporary classes schedule was created with maximum consideration for distance learning opportunities. Almost 80% of the disciplines from the class schedule are provided with their own e-learning courses created in the university e-learning system, which functions on the basis of LMS Moodle. There are also other services and platforms for organizing the educational process, such as Coursera, Google Apps for organizing video classes (lectures, workshops, seminars), the Classroom is used to speed up file sharing between teachers and students. Additionally, for online communication we use Viber, Telegram, WhatsApp. On a daily basis, university administrators monitor the implementation of the class schedule, students' and teacher's participation in the work on remote and online platforms.

By the data of internal monitoring, 6343 university students should take part in distance learning, but only 98% actually joined: have problems with Internet access or no Internet connection – 0.6% of students; 0.4% of students have technical problems; receive tasks, but do not complete them – 0.4% of students; sick – 0.1%; other reasons – 0.2% of students.

The period April, 2020 was chosen for our study, when the educational process was partly adapted to extreme conditions. During this period, according to the approved class schedules, 1473 disciplines were taught at the University. According to the analysis, 76% of all disciplines of this period were taught through an e-learning system using developed ELC, built-in chats and forums.

In total, the university used other services and apps – not the e-learning system – to organize classes in 342 disciplines, which is 23% of total number of disciplines. 96 disciplines (28%) were taught exclusively through corporate mail, 23% – corporate mail + messengers + video conferencing; Google Meet was used for 36% of disciplines, 11% via Zoom, 1% – via Google Classroom and Skype, 1% – Webex, Google Drive, and Cloud.

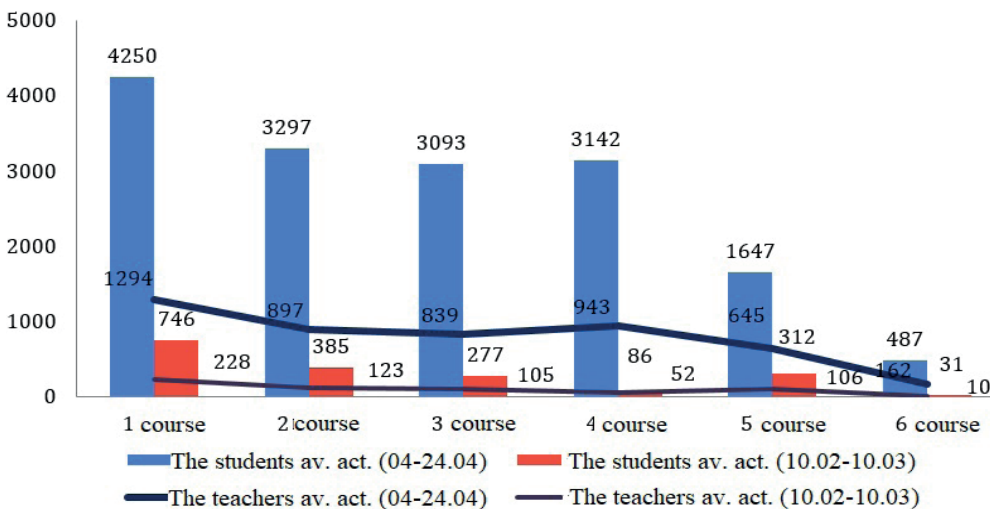
Considering that 76% of disciplines are provided by ELC, the level of its development is analyzed. According to the results of the analysis, the average level of ELC filled with quality content is 57%.

For a bachelor's degree, the average level of ELC development is 48%, while for a master's degree – 75%. However, despite the huge number of ELCs submitted for certification during the year, only 11% of ELCs were certified. The quality of education is ensured by the procedure of expert evaluation of ELCs, which receive the status of certified with positive results. In general, only 9% of certified ELCs were

used for education BA students in a certain period, and 18% at the master's level. Analyzing the provision of certified ELC 1–6 course we have: 1 course – 13%, 2 – 11%, 3 – 31, 4 – 2, 5 – 16, 6 – 57%.

Two periods: the beginning of the semester – from mid-February to mid-March and April, when both students and teachers in general were able to organize the process of distance and online learning in quarantine, were selected to analyze the average activity on ELC, which were used according to schedule to provide educational process. In general, the average level of students' activity in April increased 8 times, and teachers' – 7 times.

The work of students and teachers in the final courses (4 and 6) at the beginning of the semester in certain disciplines on the schedule was almost not carried out, which is probably due to the work of students in classrooms. During the quarantine, work in the e-learning system was successfully carried out, which is confirmed by a significant increase in the average activities of students and teachers. In the fourth course, the activity of students increased 37 times, teachers – 18 times (Figure 1).



**Figure 1. The average activities of students and teachers in ELC**

Source: Own work.

This growth is explained by the intensification of the design of teaching resources by teachers in the e-learning system, the preparation and use of ELC. A series of video instructions for creating video lectures, organizing video conferencing using a variety of online tools, recommendations and short videos on organizing and conducting distance and online classes were developed to help teachers by researchers of IT Lab in Education (<https://cutt.ly/VfwEhFP>). Preference was given to a combination of e-learning system and Google suite services, familiar to students and teachers, which are available through corporate mail.

### 3. ORGANIZATION OF THE STUDENTS' ACADEMIC ACHIEVEMENTS ASSESSMENT PROCESS

#### 3.1. Summative assessment online

The organization of assessment is very important in modern-day conditions, because you need to be confident in identifying the student and demonstrating his understanding of the discipline's content. The use of proctoring system, observation of the student and his computer screen, is quite common in world practices. As a whole, proctoring is a control procedure on an online exam or test, where the whole process is monitored by an administrator – a proctor who monitors students' actions with a webcam and sees what is happening on their computer monitor, which allows to confirm the student's identity, objectively assesses his knowledge, eliminate cheating and other tricks on the exam.

The most common solutions in the world are:

- Certify – a feature is the real monitoring, during which teachers observe students live, and students take the exam. To identify violations and resolve disputes, it is possible to record and review the exam process.
- Proctorio – a complete integrity platform that easily integrates with Moodle, scans suspicious student behavior, identifies plagiarism and verifies identity.

The Certify assessment platform supports various innovative methods of supervision, such as:

- Live proctoring, i.e. real-time proctoring (observation), means that students are monitored in real time using multiple streams (webcam, mobile camera and computer screen). One proctor can control and interact in writing with several students at the same time.
- Recording and review – recording and review tests provide more flexibility, as they can be done anytime, anywhere. The entire test session is recorded from several angles with the same streams as for direct work: webcam, mobile camera and computer screen of the candidates. These recorded exam sessions are made available in the reviewer's panel for review and documented by certified proctors.
- Automated proctoring – a fully automated proctoring solution, without planning, and with round-the-clock availability.

The presentation of these two solutions, which was joined by all top managers, was commissioned by the University. Several employees were given the opportunity to feel like students. The participants had to add to the system an identity document and set up a phone camera to permit observation. After that, they were allowed to take a test exam, the results of which were demonstrated during the planned online event. Participation in the decision demonstrations confirmed their relevance and importance for remote exams, however, according to the authors, there are a number of caveats: lack of quality Internet connection for teachers and students; not all teachers have a PC with cameras at home; difficulty in mastering new solutions; fear of take in and using new solutions; underestimation of exam results, especially with automatic proctoring; time frame for tender procurement, execution of contracts, receipt

of products, training of teachers on their use. Given the above concerns at the university, it was decided to conduct current and final certification using familiar to teachers and students' tools.

### **3.2. Summative assessment organization by combined online exams in BGKU**

University administration recommended the combined form of the exam – testing and examination/interview/demonstration of practical skills, for exams during the test session (for students of all courses and forms of study) taking into account the specifics of the discipline can be chosen form of testing and testing + interview, interview. In fact, students take the test, being in direct contact with the teacher, then pass an interview (survey, demonstration of practical skills, etc.). The recommended options for conducting a combined exam online are to use the Google Meet or Webex Meetings resources in combination with an e-learning system. The technical features of this exam are: the presence of a webcam, and access from a computer or laptop. For the successful implementation of such certification, to help teachers and students, appropriate recommendations were developed in the form of step-by-step instructions and videos, which were posted on the BGKU website and a specially created YouTube channel (<https://cutt.ly/VfwEhFP>). In addition to video fragments prepared to help teachers and students, video lectures of teachers recorded in special distance learning studios were placed on it. Three training sessions and more than 100 individual consultations on the use of tools to ensure the quality of activities and the objectivity of the summative assessment were conducted for teachers who needed help.

## **4. RECOMMENDATIONS FOR ENSURING THE EDUCATIONAL SERVICES 'QUALITY USING E-LEARNING**

### **4.1. Basic recommendations for conducting training sessions using online tools**

For online lectures, webinars, etc., about 20 available and free resources and platforms were analyzed. As a result, university teachers are recommended to use: Google Meet, Webex Meetings and Zoom (see Table 1).

Online lectures given by teachers should be visualized, for example in a PP presentation in compliance with the basic rules of quality presentation and the use of corporate style of the university. It is recommended to organize a lecture or webinar in advance in the selected resource and send invitations to participants by corporate mail, as well as a link to the organized lecture or webinar to place in the ELC, which is e-support for this discipline.

As the organizational points, attention was focused and it was recommended to teachers: to join the lecture 5–10 minutes before and wait for the students to join; in the window of the online lecture, get acquainted with students' roster; send text messages in chat; ask participants to turn on the microphones only if they need to give the information/question; visualize the lecture, and choose a convenient version of the presentation: "Window" or "Your entire screen"; use video, not just audio, when conducting an online lecture or webinar; follow the rules of cropping, choose a business style of clothing and makeup; and after the event, add a link to a video recording in the ELC as support to the discipline.



Table 1

## Online tools for classes

Tools	Pros	
Google Meet	connected to a corporate account; free; does not require additional registration; not limited in time; ability to record a session; possibility to demonstrate the screen of the teacher and students; polylingual titles; a large number of participants; the ability to download videos for editing in available editors	no whiteboard; without a waiting room; group remote interaction cannot be organized
Webex Meetings	setting up a personal room with one link for lectures and a separate link for the exam; save and convert video in the cloud; the ability to download videos for editing in available editors	requires installation for the organizer and speaker;
Zoom	free account for up to 100 participants; white board for joint work; availability of simultaneous translation; availability of a waiting room to prevent unwanted participants; Subscribed subscription allows 3000 participants; allows you to deploy virtual hybrid audiences; integration with Moodle	the full version requires a prepaid subscription free account for a 40 minutes' session

Source: Own work.

### 4.3. Recommendations for conducting a combined exam using online tools

The academics staff of BGKU carried out an objective and transparent summative assessment of the academic achievements of students of all levels of education, as well as students defended their bachelor's and master's theses online. To implement the assessment, Google Meet and Webex Meetings were recommended for online communication and e-learning system for competency tasks or tests.

Researchers of IT Lab in Education by the decision of the university administration developed recommendations in the form of step-by-step instructions and video instructions (in Ukrainian). We present the main components of the recommendations for the fragment that reflects the possibility of students taking the test, being in direct contact with the teacher, and then taking the interview (survey, demonstration of practical skills, etc.).

The recommended form of the exam for the final year students' attestation at BGKU is a combined (testing and examination/interview/demonstration of practical skills), for exams during the credit-examination session (for students of all courses and study forms), taking the specifics of the discipline, can be the chosen testing or testing + interview or interview. It is mandatory to record the examination procedure.

One option for online combined exam conducting is to use Webex Meetings. Technical features of this exam: the presence of a webcam, access from a computer or laptop. Login is by personal corporate account. Once the students have gathered, we

give them a brief instruction that they will be testing in an e-learning. In the test parameters, it is important to set access times, including time, restrictions on trying and opening the test in a separate pop-up window (with JavaScript protection) so that students cannot open additional tabs, and work on the test.

All students must have video cameras and microphones turned on during the test. In parallel with the students' performance of the test, the teacher can monitor the progress of the test in viewing the attempts in the test. At the end of the test, all students close the ELC and focus on the exam room, where the teacher voices the test scores and conducts a short interview with the students. At the end of the interview, we announce the interview scores and the general exam scores to the students in any chosen scenario. During this time, it is recommended that you display a screen that displays the ELC scorecard with the exam scores entered.

After completing the exam and receiving a link to the record of the exam, it is necessary to place the record in the ELC so that it is available to all students in the group who took the exam.

Thus, BGKU academics staff perform objective and transparent summative assessment of students' academic achievements during the exam, while the use of e-learning systems and video recording of the exam in the course mobilizes students to prepare better, which will increase the level of mastery of academic disciplines.

## CONCLUSION

According to the analysis, the priority of urgency in addressing the issue of qualified, professional organization of distance learning through e-learning using modern technologies is confirmed. It is proved that university teachers, including humanities, are able to master digital tools at a fairly high level, as at the end of the academic year 98% of disciplines are provided by ELC, which were developed by teachers during the pandemic. The quality of ELC and, accordingly, the quality of the educational services' quality has increased significantly, which is confirmed by an increase of 42% in the number of ELCs prepared and submitted for certification. Traditional student assessment of teachers' activities in using e-learning during a pandemic demonstrates an improvement in the quality of prepared and presented teaching materials and the educational services' quality in general.

Given the above, universities can use the experience of BGKU in organizing e-learning, which is provided by high-quality ELC. Another useful example is the development of an ELC structure, a certification procedure to ensure the quality of education, implementation of transparent and objective assessment of students' academic achievements in the form of a comprehensive exam.

Thus, the experience of BGKU teachers confirms that e-learning fosters the objectivity and transparency of the educational process and the quality of educational services provided to higher education students.

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