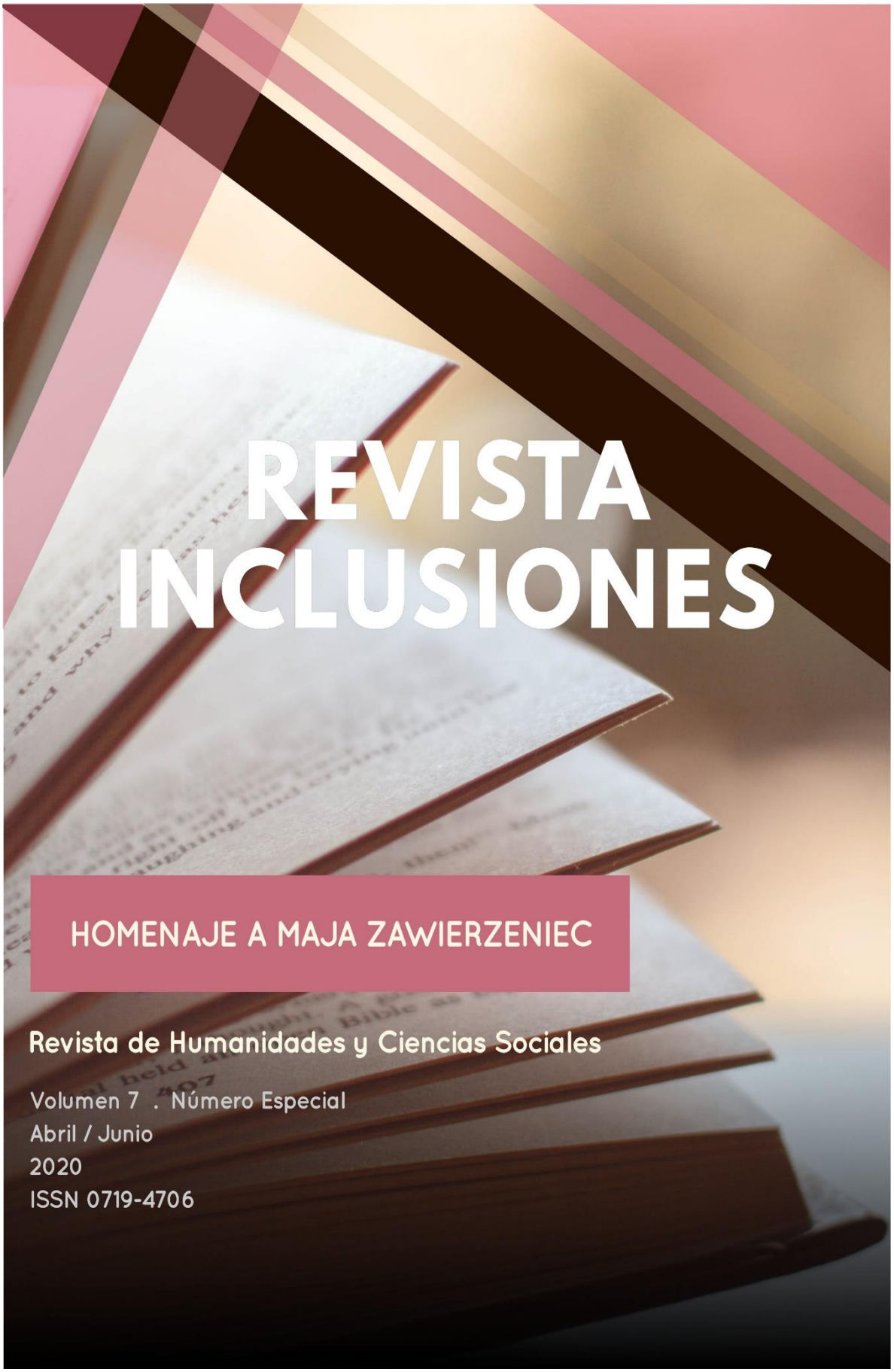

REVISTA INCLUSIONES

HOMENAJE A MAJA ZAWIERZENIEC

Revista de Humanidades y Ciencias Sociales

Volumen 7 . Número Especial
Abril / Junio
2020
ISSN 0719-4706

REVISTA
INCLUSIONES
REVISTA DE HUMANIDADES
Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA
EDITORIAL

REVISTA INCLUSIONES
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL

REVISTA INCLUSIONES

REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL

REVISTA
INCLUSIONES
REVISTA DE HUMANIDADES
Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA
EDITORIAL

Editorial Cuadernos de Sofía
Santiago – Chile
Representante Legal
Juan Guillermo Estay Sepúlveda Editorial

Indización, Repositorios y Bases de Datos Académicas

Revista Inclusiones, se encuentra indizada en:

BIBLIOTECA UNIVERSIDAD DE CONCEPCIÓN

REVISTA INCLUSIONES
REVISTA DE HUMANIDADES Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA EDITORIAL

ISSN 0719-4706 - Volumen 7 / Número Especial / Abril – Junio 2020 pp. 192-206

INTEGRATION OF NETWORK CAPABILITIES OF BLENDED LEARNING

Ph. D. (C) Svetlana Pivneva
Russian State Social University, Russia
ORCID ID: 0000-0003-2288-9915
tlt-swetlana@yandex.ru
Ph. D. (C) Nataliaya Vitkovskaya
Russian State Social University, Russia
ORCID ID: 0000-0003-1277-9616
natashavit@rambler.ru
Ph. D. (C) Oleg Nikolayevich Makarov
Moscow State University of Railway Engineering (MIIT), Russia
ORCID ID: 0000-0003-2106-2027
Dr. Dobrova, Katrina Benikovna
Moscow Aviation Institute (National Research University), Russia
ORCID ID: 0000-0001-7249-0924
kdobrova@mail.ru

Fecha de Recepción: 11 de enero de 2020 – **Fecha Revisión**: 25 de enero de 2020

Fecha de Aceptación: 04 de marzo de 2020 – **Fecha de Publicación**: 01 de abril de 2020

Abstract

Today, most universities stick to traditional forms of organization of learning. However, the processes of informatization and ubiquitous computerization are irreversible and involve significant changes in organizational forms. The level of development of ICT tools and the active introduction of computer-based learning indicate that digital education is becoming a traditional way of gaining knowledge among most countries of the world. The study defines the prerequisites for the introduction of blended learning based on ICT; theoretical analysis of the concept and features is carried out. ased on an expert survey, the integration of the network capabilities of blended learning is analyzed. It is based on the integration of online services in the information and educational environment of higher education institutions, the implementation of a cloud-based environment in the process of organizing the learning process, and the use of network capabilities in organizing pedagogical interaction between teachers and students in blended learning.

Keywords

Blended learning – ICT – Online courses – Online services – Cloud-based environment – Webinar

Para Citar este Artículo:

Pivneva, Svetlana; Vitkovskaya, Nataliaya; Makarov, Oleg Nikolayevich y Benikovna, Dobrova Katrina. Integration of network capabilities of blended learning. Revista Inclusiones Vol: 7 num Especial (2020): 192-206.

Introduction

Blended learning is a consequence of the development of information and communication learning tools. It is associated with the processes of informatization and computerization of society, the use of ICT in the educational process, the use of computer-based learning systems, the formation of informational and technical competencies of a specialist, the widespread use of network technologies, and the introduction of mobile-based learning[1].

The appearance of blended learning should be associated with the introduction of computer-based methodological learning systems (CMLS) in pedagogical practice. The active introduction of CMLS in the educational process is advisable to associate with the development of the first computer-based pedagogical software, teaching aids, and textbooks, improving the technical and software base of information and communication tools[2].

The relevance of introducing blended learning is primarily due to the fact that it is impossible to achieve high learning results by sticking to only one pedagogical technology. As indicated in[3], not every person can study remotely – only 30% of people successfully complete online courses (OC). However, the combination of various technologies and the introduction of blended learning can significantly increase the effectiveness of learning[4].

The traditional approach to learning involves the transfer of knowledge and skills from the teacher to the student[5]. Using blended learning, the student independently acquires knowledge and skills and the teacher performs the role of assistant and consultant. Under such conditions, the student develops the skills of self-study, organization, and planning of their own study time, as well as determines an individual learning path[6].

[1] A. V. Lobuteva; L. A. Lobuteva; O. V. Zakharova; S. A. Krivosheev y A. D. Yermolaeva, “Specifics of problem-based learning in the pharmaceutical education process”, Journal of Advanced Pharmacy Education & Research, Vol: 9 num 2 (2019): 131-136; S. Pivneva; D. Denisova; N. Vitkovskaya; R. Zakieva; E. Muraya y G. Ushakova, “Advanced Information Technology: Automated and Individual Learning Systems”, International Journal of Advanced Trends in Computer Science and Engineering, Vol: 8 num 6 (2019): 3481 – 3487 y S. V. Kondratiev; A. N. Andreev; E. A Baranova; T. N. Reva y E. S. Petrova. “Information educational systems for testing and monitoring students’ knowledge”, Revista Inclusiones, Vol: 7, (2020): 144-157.

[2] S. I. Osipova; I. A. Baranova y V. A. Ignateva, “Informatizatsiia obrazovaniia kak obekt pedagogicheskogo analiza”, Fundamentalnye issledovaniia Vol: 12 num 3 (2011): 506-510.

[3] S. K. Oswal y L. Meloncon, “Paying Attention to Accessibility When Designing Online Courses in Technical and Professional Communication”, Journal of Business and Technical Communication, Vol: 28 num 3 (2014): 271-300.

[4] Y. A. Sarycheva y V. V. Yakushev, “Forms and Methods of Knowledge Check of International Students at the Initial Stage of Training”, JARDCS, num 11 (2019): 104-108 y L. Muhammad; S. Persiyanova; B. Karadzhev y V. Levina, “Teaching foreign students to develop a monologic discourse based on cataphoric means”, Amazonia investiga, num 8 Vol: 23 (2019): 17-26.

[5] M. Akhmetova; S. S. Kunanbayeva y M. Kassymbekova, “Development of Metalanguage Competence through Content and Branch Training”, Rupkatha Journal on Interdisciplinary Studies in Humanities, Vol: 11 num 2 (2019): 1-11.

[6] K. L. Dangwal, “Blended Learning: An Innovative Approach”, Universal Journal of Educational Research, Vol: 5 num 1 (2017): 129-136.

Therefore, blended learning is a qualitatively new approach that transforms the structure and content of learning, changing the traditional roles of the teacher and student in order to obtain high results.

Note that the term “blended learning” was first defined by researchers C. J. Bonk and C. R. Graham in 2006[7] and is used by most researchers[8].

The analysis of the scientific literature indicates that most scholars stick to the definition that indicates that blended learning is a combination of various educational technologies (traditional, distance, mobile) and learning strategies[9].

There is also an approach that assumes the existence of a certain format of OC, during the study of which active learning methods are developed and implemented. The learning material is a part of the OC, which is studied by the student independently before class and the material is fixed during face-to-face meetings with a teacher, who uses active teaching methods[10]. Some researchers[11] focus on the combination of learning tools and define blended learning as a combination of formal learning tools (working in classrooms, studying and working out theoretical material) with informal ones (discussion via e-mail and video conferencing, providing advice via the Internet, consolidating the study material using multimedia learning tools). In[12], blended learning is interpreted as a formal educational program, which involves learning within an educational institution, distance learning, and methods that combine these forms of learning.

According to R. Launer[13], through its multifunctionality blended learning allows to organize various forms of learning, among which it is advisable to distinguish the following:

– the traditional form of organization of learning (lectures, laboratory work, practical classes, etc.);

[7] C. J. Bonk y C. R. Graham The handbook of blended learning environments: Global perspectives, local designs (San Francisco: Jossey-Bass/Pfeiffer, 2006).

[8] C. Dziuban y P. Moskal, “A course is a course is a course: Factor invariance in student evaluation of online, blended and face-to-face learning environments”, The Internet and Higher Education, Vol: 14 num 4 (2011): 236–241 y C. R. Graham, Emerging practice and research in blended learning. Handbook of distance education (New York: Routledge, 2013).

[9] R. M. Bernard; E. Borokhovski; R. F. Schmid; R. M. Tamim y P. C. Abrami, “A meta-analysis of blended learning and technology use in higher education: From the general to the applied”, Journal of Computing in Higher Education, Vol: 26 num 1 (2014): 87–122; C. Dziuban; J. Hartman; T. Cavanagh y P. Moskal, Blended courses as drivers of institutional transformation. Blended learning across disciplines: Models for implementation (Hershey: IGI Global, 2011) y S. M. Petrova, “Proprietary Methodology of Teaching Russian as a Foreign Language”, Opción, num 35 Vol: 88 (2019): 2337-2365.

[10] D. H. Lim y M. L. Morris, “Learner and instructional factors influencing learner outcomes within a blended learning environment”, Educational Technology & Society, Vol: 12 num 4 (2009): 282–293.

[11] D. Adas y A. Bakir, “Writing difficulties and new solutions: Blended Learning as an approach to improve writing abilities”, International Journal of Humanities and Social Science, num 3 Vol: 9 (2013): 254-266.

[12] D. R. Garrison y H. Kanuka, “Blended learning: Uncovering its transformative potential in higher education”, The Internet and Higher Education, num 7 (2004): 95–105.

[13] R. Launer, “Five assumptions on blended learning: What is important to make blended learning a successful concept?”, Hybrid Learning Lecture Notes. Computer Science, Vol: 62 num 4 (2010): 9-15.

– the distance form of organization of learning (synchronous: virtual classes, webinars, coaching, messengers, etc.; asynchronous: co-creation of documents, e-mail, forums, messengers, etc.).

Despite a large number of different interpretations and definitions, scholars hold a common opinion regarding the combination of various educational technologies, traditional and electronic (in particular, computer, distance, mobile, etc.), the use of which is an important condition for the effective implementation of blended learning models.

According to C. J. Auster[14], there are three main components of blended learning that can be implemented in the informational and educational environment:

– face-to-face – traditional classes in the classroom under the guidance of a teacher;

– self-study – independent work of students: the implementation of practical and laboratory work, the search for learning materials; work in cloud environments and with online services;

– online collaborative learning – work of students and teachers in the mode of synchronous interaction online, for example, conducting webinars, conferences, and forums.

The Clayton Christensen Institute for Disruptive Innovation has significant experience in blended learning. Since 2011, the institute has published a number of studies on blended learning, which describe in detail definitions, models, implementation experience, etc. In the research of the Clayton Kristen Institute, four blended learning models are identified: the Rotation Model, the Flex Model, the Self-Blend Model, and the Enriched Virtual Model[15].

Blended learning allows to combine the use of digital educational resources and a variety of online services for the implementation of educational activities. In particular, researchers point to tools that can implement such a combination: learning management systems (Moodle, aTutor, ILIAS, etc.), OC (Prometheus, Coursera, edX, Udacity, Duolingo, etc.), tools for creating educational resources and objects (designers of tests, forms, questionnaires, interactive tasks), communication and feedback tools, means for organizing group activities (mainly based on cloud technologies), tools for creating communities (social networks, forums, blogs), planning tools for learning activities (electronic magazines, calendars, etc.)[16]. The purpose of the study is to analyze the possibility of integrating the network capabilities of blended learning.

The hypothesis of the study: the effectiveness of training future specialists will increase significantly if it is carried out based on the integration of network capabilities in the context of blended learning.

[14] C. J. Auster, “Blended learning as a potentially winning combination of face-to-face and online learning: An exploratory study”, Teaching Sociology, num 44 (2016): 39–48.

[15] J. Poon, “Blended learning: An institutional approach for enhancing students' learning experiences”, Journal of Online Learning and Teaching, Vol: 9 num 2 (2013): 271-288.

[16] D. Lowe, “Roadmap of a blended learning model for online faculty development”, Distance Education Report, Vol: 17 num 6 (2013): 121-133.

According to the results of the study, we can conclude that the goal set in the study was achieved.

Methods

To achieve the goal set in the study, an indicative set of theoretical and empirical research methods was determined:

– theoretical methods (analysis, synthesis, comparison, generalization) – to study the psychological and pedagogical literature regarding the status and prospects of research and to justify the features of the integration of network capabilities in the context of blended learning;

– empirical methods (expert survey) – to determine the integration of Internet capabilities in the context of blended learning, its advantages and disadvantages and to review the experience of implementing blended learning abroad. Forty experts, teachers of higher education institutions, with teaching experience from 10 to 15 years, were invited to an online expert survey;

– methods of mathematical statistics for processing the obtained data and establishing quantitative relationships between phenomena and processes under study.

Results

The results of the expert survey showed that in the context of blended learning, the following Internet capabilities can be integrated (Table 1).

№	Network capabilities	Characteristic	%*
1	Online Internet Services	Given the large number of online services, they can be divided depending on the purpose of their use: management of learning activities; presentation of learning materials; feedback from participants in the educational process; monitoring, control and evaluation of performance; other types of activities (individual, group, collective).	90%
2	Cloud Native Environment (CNE)	Provides Internet users access to server computing resources, using software as an online service. If one has an Internet connection, they can perform complex calculations and process data using the power of a remote server.	87.5%
3	Network means of pedagogical interaction between the teacher and students	Conditionally classified into synchronous and asynchronous. Synchronous tools allow to exchange data in real time: webinars, video and text conferences (chats), video communications. Asynchronous tools make it possible to transmit and receive data independently, at a time convenient for each participant: forums, e-mail, wiki sites, messengers, social media tools, etc.	85%

Note: compiled based on the expert survey; * – percentage of expert references.

Table 1

Network capabilities of blended learning

According to most experts (80% of the respondents), the use of online Internet services in blended learning allows to consolidate and supplement learning program,

diversify and effectively improve the quality of acquired knowledge. According to one of the respondents, “online platforms are attractive for universities not only as open-source programs but also because of the wide range of tools for organizing the content of studies. The use of such platforms contributes to the effective implementation of the educational process in the context of blended learning and has significant potential in the formation of skills to independently acquire knowledge, carry out self-diagnostics, and collaborate with other participants”.

The experts named the following advantages and disadvantages of using external online services (Table 2, 3).

№	Advantages	Characteristic	%*
1	Easy to use	The service interface does not require additional skills.	90%
2	Free to use	In most cases, the main functions of the service are free, and extensions that are offered for a fee do not affect the performance of the work.	87.5%
3	Cross-platform	All types of online services work in a browser, so there is no need to use specialized software.	85%
4	Organization of group work	Almost all online services provide for the possibility of organizing group work for a large number of participants for the purpose of discussion, commenting, voting, rating etc.	82.5%

Note: compiled based on the expert survey; * – percentage of expert references.

Table 2

Advantages of online services

№	Disadvantages	Characteristic	%*
1	Problem of automatic integration	The educational activities of students that are carried out by means of the online service cannot be completely transferred (built-in) to the learning management system (LMS) (it is about the physical location of the software on the university server), for example, importing users, recording activities, grades, etc. Only “manual” embedding is possible, when a teacher, within the limits of a certain functional element, “embeds” the environment or indicates in which environment the classes will be held and students enter this environment with the LMS.	85%
2	Problem of the actual assessment of results	Despite the fact that in online services assessment systems are possible (voting, “likes”, points, etc.), however, they relate only to the current lesson, while an actual assessment of mastering the entire course takes place in the LMS.	82.5%
3	User data privacy issue	If in the LMS, which is installed on the university’s server, the reliability, security, and confidentiality of user data are completely under the responsibility of the university, then in external environments the level of reliability is significantly reduced. There is a need to study the features of a certain online service in order to identify its weaknesses.	80%
4	Problem of adaptation of the environment	Since online services are not always created for educational purposes, there is a problem of adaptability of the functional to educational needs.	75%

Note: compiled based on the expert survey; * – percentage of expert references.

Table 3

Disadvantages of online services

Speaking about the use of cloud technologies, the experts (85% of the respondents) argue that the most popular cloud model for implementation in blended learning due to the wide selection of offers, simplicity and ease of use, constant access, reliability, significant cost savings is the SaaS (software as a service) model. Cloud services distributed according to this model through a public cloud provide various services for working with electronic educational content (search, view, storage, editing, transfer, access, etc.) and the communication needs of users (messaging, video and audio communication, event planning, group discussion, etc.) and enable teachers to implement various educational technologies.

Among a number of software tools that can be provided to the user according to the SaaS model, experts distinguish the following: programs for processing text and tabular data; programs for the development of presentations; programs for editing and viewing pdf-documents; graphics editing programs; software for modeling and design; programs for planning and notes; programs for creating surveys and forms, etc.

Created documents (tables, presentations, images, models, graphics) can be stored in the cloud and can be downloaded or synchronized with the local device. Due to such versatility and scalability, cloud services enable teachers to not only store didactic materials, various educational documents, and related files, but also organize shared access to cloud storage for all participants in the educational process. The scope of cloud services is constantly expanding and provides educators with multifunctional tools using which each participant in the educational process can design their personal CNE.

The advantages and disadvantages of using cloud technologies are the following (Table 4, 5).

№	Advantages	Characteristic	%*
1	Free to use	Cloud services are free; however, in many systems there is an opportunity to expand the functionality of an application. For example, Google Drive offers 15 GB of free space in the cloud to save documents. For most users, this is quite enough, but if this amount is insufficient, it can be increased by acquiring additional memory. In some services, certain functions may not be available, for example, saving created documents in a specific format to the user's local computer.	90%
2	Cost savings	Savings on the purchase of software and equipment for specialized premises.	87.5%
3	Group work in the environment	It involves openness of the educational process, the exchange of educational materials that are available to all or individual users, the installation and support of information links with participants in the educational process; group creation and editing of documents, teamwork on projects, preparation of reports, and the accumulation of group experience within the framework of relevant environmental issues.	85%
4	Reliability of preservation of information resources	The data stored in the CNE is considered more protected from physical impact and malfunctions than on the local computer. In addition, it is always available from any computer with access to the Internet.	82.5%
5	Security and data protection	Only a user with access to their account can add, delete, and change data in the CNE. All resources that are downloaded and stored in the CNE are tested for viruses and are reliably	82.5%

		protected from external attacks.	
6	Easy to use	The basis of cloud applications is the idea of ease of use, as this will attract a large number of users of a service. The user does not need to have special skills in order to work with cloud applications since they do not need to be installed. They have easy-to-use tools similar to applications on the local computer and do not need to be updated.	75%

Note: compiled based on the expert survey; * – percentage of expert references.

Table 4

Advantages of CNE

№	Disadvantages	Characteristic	%*
1	Connection problem	The need for a constant, stable and high-speed Internet connection.	85%
2	CNE dependence problem	The user is completely dependent on the CNE since not only the programs that they use but also their personal data and resources are stored there.	82.5%
3	Language barrier	Most services are available only in the English version.	80%
4	Cloud server instability	It is characterized by the appearance and public availability of user-hidden data.	75%

Note: compiled based on the expert survey; * – percentage of expert references.

Table 5

Disadvantages of CNE

Speaking about synchronous means of communication in blended learning, the experts said that they were new forms of organizing the educational process and provided an opportunity not only to demonstrate the technical process or object but also to form certain information and technical competencies in students in real time. At the same time, a kind of online analogue of the traditional form of teaching is a webinar. It is a new form of organization of the educational process, within which one can organize the supply of educational material, its discussion and consolidation.

According to the experts, the advantages and disadvantages of using a webinar as one of the forms of organization of blended learning are the following (Tables 6, 7).

№	Advantages	Characteristic	%*
1	Insignificant material costs	Lack of rent for the hall, equipment, food, printed materials, etc. This is especially true for conferences, seminars, and round tables organized by the university. The only expense for such an event may be payment for providing access to the Internet.	87.5%
2	Time saving	The ability to organize distance learning does not include the arrival of participants at the event. One can listen to a lecturer at home or at work.	87.5%
3	Audience reach and availability	Depending on the platform and technical capabilities, the webinar can be held for an unlimited number of participants from different locations.	85%
4	Interaction of participants	As in a regular seminar, participants have the opportunity to communicate with the lecturer and other listeners using chat (most often) or via video, when the administrator switches roles and turns the listener into a lecturer and vice versa.	85%
5	Access to web resources	The opportunity to provide the speaker during the webinar, and listeners to visit any source of web resources.	82.5%
6	Saving a webinar	Webinar can be recorded and saved in the appropriate	80%

		video format. The recorded webinar can be placed on any web resource, for example, on a website or a blog, or saved on a traditional medium and provided on demand. A series of webinars of relevant topics or areas allow to create an electronic learning video course.	

Note: compiled based on the expert survey; * – percentage of expert references.

Table 6

Advantages of webinar

№	Disadvantages	Characteristic	%*
1	Lack of real contact and emotional connection	The fact of the physical presence of the audience is important in the discussion process since it is important for the speaker to see the emotions of the audience and accordingly respond to them to maintain attention. In addition, some people have difficulty perceiving information by ear or from a monitor screen.	80%
2	Difficulty of conducting practical exercises	Such a lesson is difficult to conduct since the lecturer cannot trace at what stage the tasks are performed by one or another participant and what difficulties arise during the execution; it is sometimes difficult for listeners to explain what is wrong. Therefore, usually, webinars are used for seminars where discussion, conversation, and storytelling prevail.	75%
3	Complicated educational work with participants	Such a need arises in the case of increased motivation to learn for a particular student when it is necessary to work with their personal qualities. As part of a webinar, this is difficult and sometimes impossible.	75%
4	Need for appropriate technical equipment	For full participation in the webinar, students need to have such technical means as headphones, a microphone, and an Internet connection. If a two-way video discussion is provided, then a video camera is also needed. The absence of these devices makes participation in the webinar impossible.	72.5%

Note: compiled based on the expert survey; * – percentage of expert references.

Table 7

Disadvantages of webinar

Results

According to most experts (85% of the respondents), the selection of online Internet services should be carried out according to the purpose of their use and the need to organize appropriate forms of activity. In general, the use of online services allows to get many opportunities for the organization of blended learning, carry out new interesting types of activities, control, and communication, which contributes to bridging the digital divide between participants in the educational process.

Today, cloud technologies do not yet have a widespread use in the educational sector, although, according to one of the respondents, “modern students actively use CNE to save and exchange their own resources, including educational ones”. Thus, the introduction of cloud technologies in the educational process and the formation of CNE allow to build an individual learning path for each student, interest them in working in CNE, and achieve greater effectiveness in learning. Despite a number of noted disadvantages, cloud technologies are actively used by both teachers and students. Opportunities for providing multilevel access to educational resources located in the CNE make it possible to accurately dose access and provide documents for work only for the intended use.

Thus, cloud technologies have significant potential and open up broad prospects not only for educational institutions but also for an individual, (and especially for large companies and organizations) interested in receiving quality education, because they create an opportunity for continuous learning with support for mobile technologies and social network services, making the learning process interesting and interactive[17][18].

The pedagogical interaction of the teacher and students in the web space of the Internet, in particular, webinar is carried out using the appropriate software, the means of which allow to organize learning activities between geographically distant users in real time.

Depending on the chosen webinar platform, one can perform actions such as: organize video, voice, and text communication (chat); use an electronic board that has a set of tools for drawing (brushes, lines, eraser); demonstrate presentations or other materials; exchange documents of the appropriate format; demonstrate the image of their own screen or other parts of it to the participants of the webinar; conduct polls, voting, and testing (in this case, the calculation of the results occurs automatically and they can be immediately shown to the audience); record a webinar in appropriate video formats for further distribution.

The main characteristic when choosing software for organizing webinars in most cases is the simplicity and ease of use, as well as the cost. Among a large number of well-known platforms for supporting webinars, some experts (60%) indicated the BigBlueButton platform, which is a free and open source software. BigBlueButton refers to software products that are deployed on the hardware of the relevant organization (university server, leased provider server, Internet server).

The expert's choice of the BigBlueButton platform is also due to the fact that it can easily be integrated into the LMS (for example, Moodle) or the educational site. The BigBlueButton platform can also be used by unskilled users, as it has a small number of functional and easy-to-use tools. Work in BigBlueButton takes place in a browser and does not require clients to install client support, which greatly facilitates the organization of a webinar (users can click on the link to enter the virtual class).

In addition, BigBlueButton can be integrated into such popular content management systems as Wordpress, Moodle, Joomla!, Drupal, etc. Integration takes place in the same way as installing any other functional element (plug-in) in the content management system. Speaking about the experience of implementing blended learning abroad, the experts noted that among the countries that educational institutions in Europe and the US were the first to study and introduce blended learning. There, ICT, distance education technologies, and modern learning strategies have been introduced over the past years. For example, in 2007-2008, 45.9 % of US educational institutions began to introduce blended learning and in 2011, such learning had already become the norm[19].

[17] M. N. Rusetskaya; E. V. Rubleva y A. S. Khekhtel, "The Use of Audiovisual Technologies in Teaching Russian as a Foreign Language (As Exemplified by Podcasts)", Amazonia, num 8 Vol: 20 (2019): 582-595.

[18] A. V. Soroko, D. S. Shemonchuk, V. V. Bondaletov, P. A. Baklanov, E. A. Zvezdina, "Scenario modeling as method of staff training in the organization", Espacios, Vol: 39 num 21 (2018).

[19] N. Napier; S. Dekhane y S. Smith, "Transitioning to blended learning: Understanding student and faculty perceptions", Journal of Asychronous Online Learning, Vol: 15 num 1 (2011): 20-32.

In European countries, blended learning is also being introduced as a new form of education, but in general, the EU does not have a specific policy for its implementation. However, this learning approach is supported in documents and reports on the inclusion of ICT in education. In particular, in the 2014 "Report of the European Commission on New Forms of Education and Teaching in Higher Education", blended learning is defined as a new practice, which is mainly used in institutions of higher education[20].

In the UK, specialists from the University of Exeter that are involved in blended learning define blended learning as the main education and case study strategies, within which learning subjects use a number of technologies to improve learning, from blogs and Wikipedia to video lectures on the Internet. In addition, the University of Exeter is part of a consortium of leading British universities that offer massive open OC using the FutureLearn platform[21].

In educational institutions in Sweden, as in many developed countries, among many educational models, the blended learning model is used. The Umea University, which is located in northern Sweden, is considered the pioneer in the use of blended learning. The impetus for research in this area was that the territory of northern Sweden is characterized by large distances and low population density, so if the university campus is too far away, many potential students do not want to get higher education[22].

In China, blended learning is recognized as a leading trend, the concept of which covers all educational institutions participating in the project. In particular, specialists of the Open University of China are working on the deployment of a system of cloud classes, combining the use of physical audiences with electronic information and educational space, which is filled with video and educational resources and has an opportunity to organize pedagogical interaction between students and teachers[23].

The Education University of Hong Kong Strategic Education Plan sets out its vision to strengthen learning by promoting innovative curriculum development, use of ICT, new teaching methods, and knowledge assessment. With this aim, an e-learning policy and strategy have been formulated, including blended learning. The University also has a study grant schedule open to all full-time faculty members who can experiment with innovative approaches to enhance student preparedness. Blended learning in each grant is prescribed as the main learning model. In particular, in 2013-2014 as part of the grants, 13 blended learning projects were funded[24].

In 2016-2019, the project "Blended learning courses for teacher educators between Asia and Europe" was implemented (Erasmus + program). The goal of the project was the professional development of teachers in the field of blended learning based on innovative constructivist theories. The project employed specialists from eight countries: four

[20] P. Galena, "Strategies for Pan-European Implementation of Blended Learning for Innovation and Entrepreneurship (I&E) Education", Journal of Science Education, num 9 Vol: 124 (2019): 1–13.
[21] J. Bowyer y L. Chambers, "Evaluating blended learning: Bringing the elements together", Research Matters: A Cambridge Assessment publication, num 23 (2017): 17-26.
[22] A. Norberg, Blended Learning and New Education Logistics in Northern Sweden. Game Changers: Education and Information Technologies. EDUCAUSE. 2012. 327-330.
[23] Jun Le, The Policy and Strategy for Blended Learning in a Chinese Open University. International Conference on Hybrid Learning (ICHL). 2012. 339-350.
[24] C. P. Lim, L. Wang, Blended learning for quality higher education: selected case studies on implementation from Asia-Pacific (UNESCO: Bangkok Office, 2017).

European (France, Belgium, Denmark, Estonia) and four Asian (Malaysia, Bangladesh, Bhutan, Pakistan) countries[25].

Thus, the analysis of foreign experience has shown that blended learning is a promising direction in the organization of the educational process and helps to improve the quality of education. The experts say that blended learning allows to improve learning using a number of technologies and to rationally use material and technical resources. An important aspect of the introduction of blended learning is the organization of both internal and external international projects, which make it possible to study the state and prospects of introducing blended learning and to carry out targeted integration of information technologies in the educational sector.

Conclusions

The introduction of computer-based learning and, as a result, blended learning will accelerate significantly due to the innovative activity of educational and scientific entities, the constant updating of innovative and technological support for all spheres of human activity, and the active use of digital technologies and the Internet.

The leading trend in the field of education remains blended learning, which is defined as a focused process of transferring and assimilating knowledge, skills, and methods of human cognitive activity, based on a combination of traditional, computer-based, and distance learning technologies. Blended learning involves the rational use of class time, the adaptation of the educational process to the individual needs of the student, the diversification of sources of knowledge, the use of flexible diagnostic tools and monitoring of academic achievements, the organization of feedback, and, as a result, increasing the productivity of the student's learning activities.

Using the network capabilities of learning allows to make the transition from the objective principle of constructing the content of education to the creation of integrated learning courses. Such courses combine the means of various educational technologies and contribute to the improvement of specialist training and the formation of their competence, which implies not only the ability to work with information, but also to make independent informed decisions. Therefore, today's modernization of education should be aimed at the implementation of blended learning, the use of new ICT tools and the creation of electronic resources to ensure the educational process using blended learning methodology.

References

Journal articles

Adas, D. y Bakir, A. "Writing difficulties and new solutions: Blended Learning as an approach to improve writing abilities". International Journal of Humanities and Social Science, num 3 Vol: 9 (2013): 254-266.

[25] A. V. Lobuteva, L. A. Lobuteva, O. V. Zakharova, S. A. Krivosheev, A. D. Yermolaeva. Specifics of problem-based learning in the pharmaceutical education process. Journal of Advanced Pharmacy Education & Research, 9(2) (2019): 131-136.

Auster, C. J. “Blended learning as a potentially winning combination of face-to-face and online learning: An exploratory study”. Teaching Sociology, num 44 (2016): 39–48

Bernard, R. M.; Borokhovski, E.; Schmid, R. F.; Tamim, R. M. y Abrami, P. C. “A meta-analysis of blended learning and technology use in higher education: From the general to the applied”. Journal of Computing in Higher Education, Vol: 26 num 1 (2014): 87–122.

Bonk, C. J. y Graham C. R. The handbook of blended learning environments: Global perspectives, local designs. San Francisco: Jossey-Bass/Pfeiffer. 2006.

Bowyer, J. y Chambers, L. “Evaluating blended learning: Bringing the elements together”. Research Matters: A Cambridge Assessment publication, num 23 (2017): 17-26.

Dangwal, K. L. “Blended Learning: An Innovative Approach”. Universal Journal of Educational Research, Vol: 5 num 1 (2017): 129-136.

Dziuban, C.; Hartman, J.; Cavanagh, T. y Moskal, P. Blended courses as drivers of institutional transformation. A. Kitchenham (Ed.), Blended learning across disciplines: Models for implementation. Hershey: IGI Global. 2011.

Dziuban, C. y Moskal, P. “A course is a course is a course: Factor invariance in student evaluation of online, blended and face-to-face learning environments”. The Internet and Higher Education, Vol: 14 num 4 (2011): 236–241.

Galena, P. “Strategies for Pan-European Implementation of Blended Learning for Innovation and Entrepreneurship (I&E) Education”. Journal of Science Education, num 9 Vol: 124 (2019): 1–13.

Garrison, D. R. y Kanuka, H. “Blended learning: Uncovering its transformative potential in higher education”. The Internet and Higher Education, num 7 (2004): 95–105.

Graham, C. R. Emerging practice and research in blended learning. M. G. Moore (Ed.), Handbook of distance education. New York: Routledge. 2013.

Launer, R. “Five assumptions on blended learning: What is important to make blended learning a successful concept?”. Hybrid Learning Lecture Notes. Computer Science, Vol: 62 num 4 (2010): 9-15.

Le, Jun. The Policy and Strategy for Blended Learning in a Chinese Open University. International Conference on Hybrid Learning (ICHL). 2012. 339-350.

Lim, C.P. y Wang, L. Blended learning for quality higher education: selected case studies on implementation from Asia-Pacific. UNESCO Bangkok Office. 2017.

Lim, D. H. y Morris, M. L. “Learner and instructional factors influencing learner outcomes within a blended learning environment”. Educational Technology & Society, Vol: 12 num 4 (2009): 282–293.

Lowe, D. “Roadmap of a blended learning model for online faculty development”. Distance Education Report, Vol: 17 num 6 (2013): 121-133.

Napier, N.; Dekhane, S. y Smith, S. “Transitioning to blended learning: Understanding student and faculty perceptions”. Journal of Asychronous Online Learning, Vol: 15 num 1 (2011): 20-32.

Norberg, A. Blended Learning and New Education Logistics in Northern Sweden. Game Changers: Education and Information Technologies. Ed. by Diana G. Oblinger, EDUCAUSE. 2012. 327-330.

Osipova, S. I.; Baranova, I. A. y Ignateva, V. A. “Informatizatsiia obrazovaniia kak obekt pedagogicheskogo analiza”. Fundamentalnye issledovaniia, Vol: 12 num 3 (2011): 506-510.

Oswal, S. K. y Meloncon, L. “Paying Attention to Accessibility When Designing Online Courses in Technical and Professional Communication”. Journal of Business and Technical Communication, Vol: 28 num 3 (2014): 271-300.

Poon, J. “Blended learning: An institutional approach for enhancing students' learning experiences”. Journal of Online Learning and Teaching, Vol: 9 num 2 (2013): 271-288.

Internet publications

Akhmetova, M.; Kunanbayeva, S. S. y Kassymbekova, M. “Development of Metalanguage Competence through Content and Branch Training”. Rupkatha Journal on Interdisciplinary Studies in Humanities, Vol: 11 num 2 (2019): 1-11.

Kondratiev, S. V.; Andreev, A. N.; Baranova, E. A.; Reva, T. N. y Petrova, E. S. “Information educational systems for testing and monitoring students’ knowledge”. Revista Inclusiones, num 7 (2020): 144-157.

Lobuteva, A. V.; Lobuteva, L. A.; Zakharova, O. V.; Krivosheev, S. A. y Yermolaeva, A. D. “Specifics of problem-based learning in the pharmaceutical education process”. Journal of Advanced Pharmacy Education & Research, Vol: 9 num 2 (2019): 131-136.

Muhammad, L.; Persiyanova, S.; Karadzhev, B. y Levina, V. “Teaching foreign students to develop a monologic discourse based on cataphoric means”. Amazonia inve stiga, num 8 Vol: 23 (2019): 17-26.

Petrova, S. M. “Proprietary Methodology of Teaching Russian as a Foreign Language”. Opción, Vol: 35 num 88 (2019): 2337-2365.

Pivneva, S.; Denisova, D.; Vitkovskaya, N.; Zakieva, R.; Muraya, E. y Ushakova, G. “Advanced Information Technology: Automated and Individual Learning Systems”. International Journal of Advanced Trends in Computer Science and Engineering, Vol: 8 num 6 (2019): 3481 – 3487.

Rusetskaya, M. N.; Rubleva, E. V. y Khekhtel, A. S. “The Use of Audiovisual Technologies in Teaching Russian as a Foreign Language (As Exemplified by Podcasts)”. Amazonia, num 8 Vol: 20 (2019): 582-595.

Sarycheva, Y. A. y Yakushev, V. V. "Forms and Methods of Knowledge Check of International Students at the Initial Stage of Training". JARDCS, num 11 (2019): 104-108. Available at: http://www.jardcs.org/abstract.php?id=2947

Soroko, A. V.; Shemonchuk, D. S.; Bondaletov, V. V.; Baklanov, P. A. y Zvezdina, E. A. "Scenario modeling as method of staff training in the organization". Espacios, Vol: 39 num 21 (2018).

CUADERNOS DE SOFÍA
EDITORIAL