

Blender training as an integration of online and the traditional method of training by professional competences of medical students

S. T. KIZATOVA¹ ✉, TULEUOVA GULIMZHAN KUATKYZY², V. V. KURILOVA¹, L. M. MATAYEVA², T. A. KIRYANOVA¹, R. E. ZETPISBAEVA¹, K. A. KENZHEBAEVA¹, R. A. NIYETBAEVA¹

¹Department of Pediatrics and Neonatology, NC JSC "Medical University of Karaganda", Karaganda, Kazakhstan

²Department of Emergency Medicine, NC JSC "Medical University of Karaganda", Karaganda, Kazakhstan

ABSTRACT

Distance learning as an innovative teaching method is becoming more widespread in the modern educational space. This form of training opens wide opportunities for students: getting education at leading world universities remotely, a wide selection of distance education programs, saving time and money, a flexible schedule and individual study planning. Using the possibilities of distance learning, "blender training" provides additional opportunities in high-quality and optimal training of professionals in the medical field. Given the high level of effectiveness of "blender training," we have implemented this method in the pedagogical process in the Qaraghandy Medical University for the development of professional competencies of students.

Keywords: Blender training; Professional skills; Blended training; Hybrid training; Training supported by web technologies; Online training.

Cite this article as:

Kizatova, S.T., Kuatkyzy, T.G., Kurilova, V.V., Matayeva, L.M., Kiryanova, T.A., Zetpisbaeva, R.E., Kenzhebaeva, K.A., & Niyetbaeva, R.A. (2021). Blender training as an integration of online and the traditional method of training by professional competences of medical students. *Journal of Human Sport and Exercise*, 16(4proc), S1833-S1841. <https://doi.org/10.14198/jhse.2021.16.Proc4.30>

✉ **Corresponding author.** Department of Pediatrics and Neonatology, NC JSC "Medical University of Karaganda", Karaganda, Kazakhstan.

E-mail: litoov.ev@yahoo.com

Abstract submitted to: Spring Conferences of Sports Science. [Costa Blanca Sports Science Events](#), 21-22 June 2021. Alicante, Spain.

JOURNAL OF HUMAN SPORT & EXERCISE ISSN 1988-5202.

© Faculty of Education. University of Alicante.

doi:10.14198/jhse.2021.16.Proc4.30

INTRODUCTION

The integration of information and communication technologies (ICT) has significantly improved the quality of education and has enabled many educational institutions to provide educational services at the international level. An innovative form of ICT is distance learning - distance learning, based on the interaction of teachers and students and implemented using Internet technologies. Distance learning includes all the components of the educational process: goals, content, methods, organizational forms, teaching aids.

A distinctive feature of distance learning is the use of synchronous and asynchronous remote methods. Synchronous learning involves a fixed schedule and interaction of students and teachers online according to this schedule, as well as a regulated schedule of work. Synchronous training includes webinars, web conferences, educational and training television, direct satellite broadcasting, Internet, radio, telephone. Synchronized learning also uses proxy robots, allowing students to attend classes remotely. As for asynchronous learning, students study according to their individual schedule and are not limited in time. If necessary, they can also extend their studies. In asynchronous learning, students receive materials online and by mail, have access to video and audio recordings. Asynchronous training also includes email correspondence, forum discussions, voice mail, and fax. In addition to synchronous and asynchronous training, it is also worth highlighting a step-by-step training program (paced program) and a self-training program (self-paced program). A feature of step-by-step training is the strict organization of the educational process: a certain load on teachers, semester planning, deadlines for tuition fees, exam schedules and other administrative work supervised by the educational institution. The self-study program includes continuous enrolment in studies and a flexible study schedule. The end of the course depends on the readiness of the student. Self-study programs are always asynchronous, step-by-step training can be presented both synchronously and asynchronously. Each training model has its pros and cons for students, teachers and educational institutions.

In connection with the recognition of the importance of intellectual resources as a factor in the competitiveness of the state, our education system has set the goal to provide a competitive advantage in the world market by raising the level of higher education and developing the country's intellectual resources.

Due to increased competition and the economic situation on the market, employer requirements for graduates of educational institutions have grown. University graduates are considered as an intellectual resource that ensures competitiveness through the implementation of the necessary working algorithms (Basic Medical Education WFME Global Standards for Quality Improvement. The 2012 Revision, 2012; Bell, 2010).

Increased demands from employers have reflected in changing the requirements of consumers of educational services, who consider education as the key to a professional career and personal growth.

In connection with such transformations in society, educational institutions faced the need to increase the efficiency and quality of education, as well as to adapt it to the emerging requirements of society (Tolstoukhova, 2016).

Educational institutions need to focus on the requirements and expectations of consumers, while maintaining the standards established by the Ministry of Education and Science. The result of the services provided is the totality of the professional competencies of university graduates, which is subsequently evaluated by the employer. Therefore, universities are currently expected to be more involved in the life of students, providing

not only quality-rich disciplines in terms of information volume, but also a set of educational elements that develop students in a personal and social sense.

And one of the solutions to this problem was the development and implementation of modern pedagogical technologies, including distance learning.

There are three types of distance learning technologies - case technology, television-satellite technology and network technology, or Internet learning. Today, distance education most often can include all three technologies in different proportions. Currently, universal knowledge comes to the fore, which helps to predict and design the development of professional activity, as a result of which the methods and forms of teaching, the structure of teaching, the functions of teachers and their professional training are changing (Tolstoukhova, 2016).

"*Blender training*" is an educational program that combines standard teaching methods and computer management of the student's activities. As part of this educational program, the student receives part of the educational content and instructions through online support, while simultaneously having the ability to independently control the time, place, methods and pace of work (Strauss, 2012).

According to supporters, this educational strategy creates a more integrated (optimal) approach for both teachers and students (Jacob, 2012). In the modern literature, the terms "*blended*," "*hybrid*," "*technology-mediated instruction*," and "*training supported by web technologies*" are used and used interchangeably. ("*web-enhanced instruction*") and "*learning through mixed methods*" ("*mixed-mode instruction*") (Martyn, 2003).

This pedagogical model is widely used by the USA. Using the capabilities of distance learning, "*blender training*" can provide additional opportunities for high-quality and optimal training of professionals in the development of professional competence (Serbin, n.d.; Devterova, 2010). Given the high level of effectiveness of "*blender training*," we have implemented this method in the pedagogical process in the Qaraghandy Medical University to develop professional competencies of students.

Using the possibilities of distance learning, taking into account the peculiarities of communicative skills training, "*blender training*" can provide additional opportunities for high-quality and optimal training of medical professionals.

"*Blender Learning*" is an educational program that combines standard classroom teaching methods and computer management of the student's activities. As part of this educational program, the student receives part of the educational content and instructions through online support, while simultaneously having the ability to independently control the time, place, ways and pace of work. Thus, the traditional school structure of the so-called classical face-to-face learning is combined with computer-controlled activities. The "*blender learning*" methodology includes classical (traditional) school education, mobile education and the possibility of obtaining online education. This pedagogical model is widely used by the USA.

Some of the benefits of distance learning are fairly obvious to both the educational institution and students. For the university, this is primarily economic efficiency. In the context of a steadily increasing number of students, the need for classrooms is no longer necessary, curriculum development is more flexible, and it becomes possible to constantly and quickly update teaching materials. The great advantage of online classes is the heterogeneity of students in the class (by place of residence, age, social status, etc.). When, for

example, in my online class, I dealt with federal students and state policies on health issues with students, we had very interesting and heated discussions, as students brought to discussion their experience of living and working in different states.

For students, the benefits of online learning are also obvious. I will list only some of them. This is the availability of training, regardless of place of residence and workload or family obligations; social equality (since online education is somewhat cheaper than traditional); flexibility in scheduling; access to world resources and fresh teaching materials; economic efficiency due to the lack of the need to use transport, living in a foreign city and skipping work; the absence of certain psychological barriers felt by some students in the traditional classroom. In addition, studies have shown that the percentage of students who do not drop out is higher among students studying remotely. This is probably due to more developed intrinsic motivation and discipline (or their development) among those students who prefer distance learning to traditional.

Distance learning is actually the further development of correspondence education, which is well known to us, but is devoid of its main shortcomings, such as the intermittent learning process, when students storm the study material before sessions with an emergency; lack of feedback between the teacher and the student; and difficult access to resources. There is a wide variety of computer programs - class management systems (paid and free), such as Blackboard, CourseWork, Moodle, Sakai and Desire2Learn. If necessary, some classes can be built according to the type of interactive class, with the implementation of two-way audio and video messages between the teacher and students in real time (for example, the Wimba program). For students who were not able to “attend” the class during the lesson, the lesson can be recorded for later viewing.

Distance learning is increasingly becoming part of the curriculum of universities around the world. Since the introduction of online classes in the near future is inevitable, it is better to “occupy” this as yet empty niche in our education wake in order to increase the competitiveness of the university (Almagambetova, 2013).

In the Soviet period (and even now) the administration and management of medical institutions had a very characteristic difference from that of many developed countries. Administrators of medical institutions and health departments, for example, chief physicians, appoint people with a purely medical education, while abroad this position is occupied by trained specialists in this field - managers, managers, financiers. Undoubtedly, the “Soviet” approach to this issue has its advantages. However, such administrators had to develop their approaches and skills in this work by trial and error, as the lack of knowledge and formal education in the field of management, management and finance often made itself felt. In modern conditions, when market relations are increasingly being introduced into the sphere of medical services, administrators of medical institutions required to have knowledge and skills in management, management and finance. Distance classes provide an excellent opportunity for medical students to get education within the university walls not only in their specialty, but also more in-depth knowledge (compared to what they are currently receiving) in management, management, healthcare organization and other related fields. This would enhance the competitiveness of medical graduates. In most universities abroad, along with their specialty, students have the opportunity to receive additional certificates during the training process in those areas of activity that they would like to study in the future. The certificate is a combination of the five or six most significant and in-depth subjects for a particular specialization that a student must complete in addition to his program. For example, in the department of public health, such specializations for medical students can be management and management in hospitals, human resources management in healthcare, healthy lifestyles, gerontology, research methods, economics and finance in healthcare, analysis of health care policies and

others. Subsequently, such certificates could also be claimed by practitioners planning a transition from medical to administrative activities, which would bring additional funds to the university.

The aim of the study was to determine the effectiveness of the level of mastery of practical and theoretical knowledge, professional competencies in blender training and traditional training of medical students.

MATERIALS AND METHODS

From 10/07/2019 to 12/07/2019 ten groups of interns of the 7th year of the direction of training "Pediatrics" were in the internship on departure for the discipline "Children's Diseases" and "Emergency Medical Care." In each group, 5-6 people study, a total of 57 students.

In the city of Karaganda, 20 internships (35%) took place at family clinics No. 1,3,4,5,8, Miras, Children's Polyclinic No. 1, and Hippocrates for family reasons. In the Karaganda region, 16 people were interned (28%) in Temirtau at Polyclinic No. 4, in the central district hospitals of Aktas, Sarani, Abay, Shakhtinsk, and the regional centres of Osakarovka and Botakara. In total, 36 interns were held in the city of Karaganda and the Karaganda region, which accounted for 63% of all students.

19 people (37%) left the place of residence in the North Kazakhstan region – 4, in Turkestan region – 7, in Kostanay region – 4, in the city of Taldykorgan – 1, in the city of Pavlodar – 1, in the city of Nur-Sultan – 1, in the city of Kyzylorda-1.

The on-site internship included daily practical work of students at the workplace in the amount of at least 0.5 doctor's rate under the supervision of clinical mentors and an analysis with an assessment of their activities, an assessment of the theoretical training of students of the faculty of the university based on the use of the Moodle information server.

RESULTS AND DISCUSSION

The student's assessment in the field internship consisted of his practical activities and theoretical training. The practical activities of interns included the doctor's appointment, maintenance of assets, calls, and duty once a week. Upon completion of the loan, students provided a report on their activities according to pre-developed checklists (evaluation sheet for examining the patient in the clinic, evaluation sheet for day or night duty), sending it to their teaching staff on corporate mail. As a result, the reorientation of traditional education, the role of the student has changed, and he has become an active participant in the educational process.

Theoretical training included finding out the level of basic training, ongoing training based on the Moodle (Modular Object-Oriented Dynamic Learning Environment) e-learning software package, also known as a virtual learning environment. We used a technique for assessing the adaptive potential of students in the form of test tasks and an electronic case (Traynev, 2012; Bobrova, 2009). The case-study method made it possible to apply theoretical knowledge to solving practical problems. The network method of distance learning provided the student with access to the educational-methodical complex of the discipline, available on the website of the Qaraghandy Medical University.

In connection with the introduction of distance learning, it became necessary to change the working methods of teachers, especially in the field of building the educational process, methods to ensure the quality of teaching and assessment of training (Lebedev, 2009; Olnev, 2011; Rausch, 2012). The professionalism and

competence of the teacher has an important role in this process, since distance learning methods significantly expand and update his role, make him a mentor coordinating the cognitive process, make him constantly improve the courses he teaches, increase creative activity, professional competence and qualifications in accordance with innovative training technologies (Jautikova, 2016).

The teacher conducting distance learning should not only be responsible for the content of teaching materials in the relevant discipline, but also provide direct methodological guidance to the educational process, namely, answer questions of students arising from them in the process of mastering the material, verify their knowledge and analysis of the entire learning process as a whole to further adjust the learning process.

The teacher should be ready to form feedback with students. That is why the personal qualities of a teacher are especially important in the distance education system. The necessary components in distance learning are the promotion of self-realization of students, the disclosure of their internal potential, systematic training and individual approach.

The department trained the faculty, as a result, each group of 5-6 interns was assigned a mentor from the department, who had been in touch with students all this time, advised if necessary, regularly monitored the activities of students through the complex medical information system (CMIS), monitored compliance of student records with protocols diagnosis and treatment of the Ministry of Health of the Republic of Kazakhstan.

Electronic teaching aids used in distance learning in the form of structured forms made it possible to solve many specifically posed educational problems in a simple and affordable way. And the creation of an electronic case is one of the promising means of distance learning. It is a functionally completed form of the educational and methodological complex of the program described on an electronic information carrier.

In addition, the transfer of information on electronic media on the attached teaching materials in the order of independent development of the material provides an opportunity to choose forms and means of training in accordance with the set educational and practical goals.

In distance learning, students themselves regulate the time required for them to master the training material, testing, independent work within the allotted training period. Distance learning is designed to motivate students to independent and creative work. Moreover, the remote control of the educational process by the teacher is a daily monitoring of the learning process and its timely adjustment. Types of test control allow you to diagnose the initial level of knowledge, and subsequently in the learning process. To implement this task, a bank of test questions has been created. Testing data is recorded in the electronic journal of the teacher. Such an approach to learning completely eliminates the possibility of creating "gaps" in mastering the course. The availability of new materials is possible only after tracking the results of each section passed by the teacher.

Testing data is visible to the student and is reflected in the electronic journal of the teacher. The teacher, taking into account the results of the current testing, has an idea of the degree of preparedness of each student, the examination score becomes more predictable, the probability of a random result and the appearance of elements of subjectivity is reduced. If the results are satisfactory, then the student, subject to protected work, was allowed to protect the portfolio.

The practical part of the students' work is the solution of situational problems. The written response, in the blender form of training, is a document confirming logical thinking, theoretical knowledge, communication skills, clinical skills of the student. During the study of the material on-line, the student must dwell in detail on the information block that he needs to argue his opinion. With blender training, the process of studying the same information as with traditional training, but at a higher and more complex level of weighted learning outcomes, takes place.

Much attention in the process of increasing professional competence is given to the independent creation of situational tasks using personal data from personal experience, which allows us to share our experience and improve critical thinking skills.

Being an interactive teaching method, the case-study method has won a positive attitude from students, providing the development of theoretical principles and mastering the practical use of the material; it affects the professionalization of students, promotes their maturation, forms interest and positive motivation in relation to study.

Interactivity is achieved through communication between the teacher and the student, both using the resources of the distance learning program and by email. This allowed for constant contact between the student and the teacher. Distance learning makes the assessment of knowledge objective and independent of the teacher, motivates students to independently search for their tasks using Internet resources, contributes to their professional mobility, broadens their horizons and increases their level of self-awareness. Distance learning allows you to implement for the student an individual type of curriculum and independently choose the sequence of study and the pace of development of the material provided.

The results of questionnaires of students showed a high demand for the “*electronic case*” in distance learning (75.4%), which gives reason to recommend the expanded use of this tool for training and self-education of healthcare workers.

The need for a field internship was expressed by 93% of students, so 50.8% of them were able to improve communication skills, 50% - practical skills, 19.3% - improved theoretical knowledge, 15.8% were able to assess their strength and knowledge in practice, 15.8% - expanded their understanding of the work of the local doctor and 12.3% - of the work of the clinic, 15.7% - improved clinical thinking, 14% - improved their skills in preparing medical documentation at the CMIS, and 12.3% - confidence and courage in their actions increased, 10.5% received a complete picture of the healthcare system Republic of Kazakhstan, 5.2% - recognized responsibility for their words and actions, 3.5% - confirmed the choice of profession.

Field internship gave independence in decision-making during the management of patients and 82.4% of students expressed their willingness to work independently.

Among the difficulties, students noted problems in working with KIIS, problems with communication with colleagues, parents, lack of knowledge, lack of time, difficulties in organizing their working day, lack of full control from the department. 14% of students did not experience any difficulties at work.

Among the wishes of the students, they noted that it is desirable to shorten the terms of the on-site internship, conduct practical classes and lectures before and after the practice, transfer it to summer practice after the 6th course, replace it with an internship after completing the internship, since there was not enough live communication with faculty, theoretical training, due to the difficulties of self-study material.

Note that all types of digital technologies do not conflict with traditional forms of education. They complement, change it qualitatively, give a new vector of development and the formation of innovative approaches, where mixed options for the use of educational technologies are also possible.

The main component in learning using distance learning is independent activity - it is an active cognitive and research activity, during which students chose clinical material for writing articles and abstracts describing rare and interesting clinical cases with their publication in rating journals (RSCI, Scopus), participation in conferences of different levels with the presentation of the results, which is also an important component of the scientific competence of a graduate of a medical university.

Practical healthcare positively assessed the introduction of this method into the pedagogical process in the Qaraghandy Medical University for the development of students' professional competencies, which was reflected in the form of 21 (36.8%) letters of appreciation addressed to the rector, 6 (10.5%) addressed to the department and 2 (3.5%) in the name of students.

Modern educational institutions using distance technologies are currently in the conditions of the need to establish mutually beneficial social interaction that will help achieve strategic goals. Formation of constructive partnerships aimed at reorienting activities in accordance with the needs of subjects of cooperation in e-education will help to maintain and strengthen their competitive advantages.

The choice of modern teaching aids must be approached very thoroughly, since this is an important moment in teaching. The pedagogical technology used in the work is aimed at solving certain didactic problems.

Therefore, it is necessary to reasonably and creatively evaluate the capabilities of a particular training technology, to know its strengths and weaknesses, and to know where it is best applied.

CONCLUSION

The main component in teaching medical interns using distance learning is independent activity - it is an active cognitive and research activity that requires an independent search for answers to questions that arise during everyday professional activity, advanced training, as well as analysis of one's own medical activity.

In the implementation of innovative activities, namely distance learning, the nature of the management of the educational process changes, where the routine memorization becomes a form of search-thinking activity based on research and discussion under the guidance of a teacher to improve professional training and systematize existing experience and knowledge.

Distance learning has allowed to increase the effectiveness of training and the quality of educational services, their accessibility, to develop the personality of the learner and adapt it to apply existing knowledge, skills in modern living conditions.

REFERENCES

- Almagambetova, N. (2013). Opportunities for distance learning in medical education. Bulletin of the Kazakh National Medical University, no (4-2), pp. 15-17.
- Basic Medical Education WFME Global Standards for Quality Improvement. The 2012 Revision. (2012). Denmark: WFME Office. University of Copenhagen.

- Bell, T. (2010). Collaborative inquiry learning: Models, tools, and challenges. *International Journal of Science*, Vol. 3(1), pp. 349-377. <https://doi.org/10.1080/09500690802582241>
- Bobrova, I.I. (2009). The methodology of using electronic educational and methodological complexes as a way of transition to distance learning. *Informatika I obrazovanie*, no 11, pp. 124-125.
- Devterova, Z.R. (2010). Modern approaches to the organization and management of distance learning. *Gumanizatsiya obrazovaniya*, no 1, pp. 58-63.
- Jacob, A.M. (2011). Benefits and Barriers to the Hybridization of Schools. *Journal of Education Policy, Planning and Administration*, no 1(1), pp. 61-82.
- Jautikova, S.B. (2016). Experience in the application of innovative teaching methods in KSMU. *Medicine and Ecology*, no 2, pp. 106-108.
- Lebedev, V.E. (2009). The experience of using the electronic educational resource in the discipline. *Dstantsionnoye i virtual'noye obucheniye*, no 8, pp. 10-22.
- Martyn, M. (2003). The hybrid online model: Good practice. *Educause Quarterly*, pp. 18-23.
- Olev, A.S. (2011). The use of new technologies in distance learning. *Actual problems of modern science*, no 1.
- Rausch, L.I. (2012). Computer as a tool of self-realization and self-development of a person. *Secondary education: management, methodology, innovation*, no 1, pp. 71-77.
- Serbin, V. (n.d). Technology for creating animated projects and interactive multimedia applications used in the development of electronic educational and methodical complexes in the educational process. Retrieved from <http://www.serbinv.narod.ru/publish/eu.htm> (in Russian).
- Strauss, V. (2012). Three fears about blended learning. *The Washington Post*.
- Tolstoukhova, I. V. (2016). Distance Learning as a Modern Pedagogical Technology. *Man and Education*, no 2(47), pp. 98-100.
- Traynev, V.A. (2012). *Distance Learning and Its Development*. Moscow: Dashkov i Ko.

