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## Advantages and disadvantages of distance learning at a medical university

The article is devoted to the description of the strengths and weaknesses of the distance learning format at a medical university using the example of Karaganda Medical University. A survey on students' satisfaction with the new format of education, as well as on identifying the positive and negative aspects of distance learning, was conducted among 1st-5th-year medical students. 302 respondents took part in the survey. Having analyzed the results of the survey, the author of the article came to the conclusion that the distance learning format had more advantages than disadvantages; among which the following positive aspects of the distance learning format were the most significant: saving resources (for example, time, money, etc.), the possibility to download and view educational materials at a convenient time. As critical disadvantages of the distance learning format, the respondents noted the lack of interaction between the teacher and students, as well as the lack of practice necessary for medical students. Technical problems also deserve special attention, among which the low speed of the Internet is in the lead. The identified disadvantages of the new form of education can be eliminated or minimized thanks to the recommendations outlined in the article for improving the distance learning process.

*Keywords:* COVID-19 pandemic, form of education, distance learning, traditional format of education, medical university, quality of education, distance learning platforms, the latest technologies.

### Introduction

Due to the fact that on March 11, 2020, the World Health Organization announced the COVID-19 pandemic [1], all educational institutions (including medical universities) were forced to switch to a distance learning format [2].

Distance learning is a type of training in which information and telecommunication technologies are used for indirect interaction between a teacher and student [3]. In higher educational institutions in Kazakhstan, the distance learning format has been practiced for a long time. The only exceptions were medical universities, the specifics of which did not allow distance learning. Therefore, the conditions of quarantine have put medical universities in a rather difficult educational situation, namely, the need to use a new format of training for students of multifaceted medical specialties.

In this regard, *the purpose of this study* is to identify the strengths and weaknesses of the distance learning format at Karaganda Medical University, as well as to assess the overall degree of student satisfaction with the new (forced) type of training.

Thus, the study identifies problems and perspectives of distance education. The findings will have implications not only on teaching and learning practice but also on strategy for organizing the distance educational process in a higher educational institution, including a medical university.

### Literature Review

Nowadays, there are a lot of scientific works devoted to distance learning. However, there is no consensus among scholars regarding terminology — there are a huge number of terms defining “distance learning” in the pedagogical theory and practice, which are closely linked. Among them, there are “e-learning”, “distance learning”, “online learning”, and others. The OECD emphasizes that e-learning, online learning, and distance learning are interchangeable concepts [4]. S. Dhawan considers that online education includes e-learning, web-learning, computer learning, mobile learning, etc.; in other words, it is education with the use of a device connected to the Internet, offering a space for distance learning [5].

Regarding the choice of online or offline learning, the opinions of scientists differ significantly. For example, N. Kemp and R. Grieve believe that both face-to-face and distance learning can lead to the same academic results [6]. In contrast, D. Xu and S.S. Jaggars are sure that the difficulty of adapting to online learning can negatively affect student achievements [7]. K. Almendingen et al. report that students experienced a decrease in motivation to learn when distance learning was introduced [8].

However, scientists agree on the advantages and disadvantages of distance learning. For example, among the positive aspects of online learning in pedagogical works, the possibility of professional growth of teachers [9] and the flexibility of working in a remote format [6] are emphasized. As for the negative aspects of the online format, among the main problems, scientists highlight the lack of resources and poor national digital infrastructure [10, 11].

Regarding the use of distance learning in medical education, the work of Khalil et al. is of critical importance for our study, which states that if online learning is well-synchronized, then it will be attractive to medical students [12].

### Experimental

A cross-sectional survey through a questionnaire with closed and open-ended questions (in a total of 13 questions) was selected as the *leading research method*, as it ensured the quality of the research study and the reliability of findings.

This cross-sectional survey was conducted among the 1<sup>st</sup>-, 2<sup>nd</sup>-, 3<sup>rd</sup>-, 4<sup>th</sup>-, 5<sup>th</sup>-year students of the specialties “General Medicine”, “Dentistry”, “Biomedicine”, “Technology of Pharmaceutical Production”, “Pharmacy”, “Public Healthcare”, “Nursing” of NC JSC “Medical University of Karaganda” (302 participants).

The survey results were processed using mathematical and statistical methods for analyzing digital data.

Regarding ethical considerations, students were got acquainted with the purpose of the study, voluntariness and anonymity of participation in the study were emphasized.

### Results and Discussion

1<sup>st</sup>-, 2<sup>nd</sup>-, 3<sup>rd</sup>-, 4<sup>th</sup>-, 5<sup>th</sup>-year students took part in the survey. Figure 1 illustrates the distribution according to the years of study.

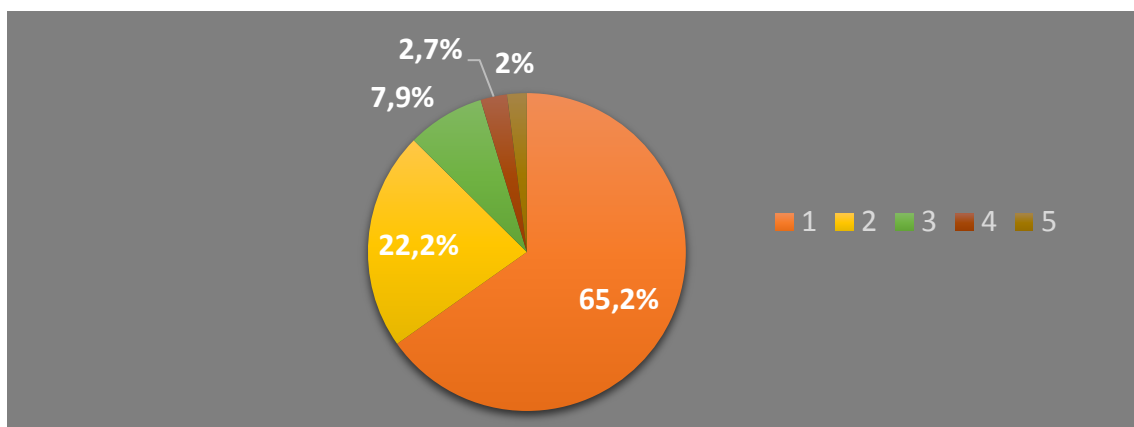


Figure 1. Distribution of students according to the years of study

Students of the specialty “General Medicine” made up 47,4 % of the total number of respondents, students of the specialty “Technology of Pharmaceutical Production” — 29,1 %, “Dentistry” — 13,2 %, “Pharmacy” — 3,6 %, “Public Healthcare” — 3,3 %, “Nursing” — 2 %, “Biomedicine” — 1,4 %.

At the same time, 72,2 % of respondents study distantly, 27,8 % have a mixed form of education.

Answering the question “What form of education do you consider to be more “suitable” for your specialty?” 40,1 % of students indicated traditional education, 34,1 % — mixed form, 25,8 % — distance learning.

Answering the question “How did you adapt to the new form of education?”, 52 % of students pointed out that they had some difficulties, 42 % adapted easily, and 6 % of students still cannot get used to the new format of education.

Most of the respondents like to study distantly — 63,2 %. At the same time, 69,5 % of respondents believe that the distance format saves time, which one used to spend for dressing up and going to university, etc. 62,6 % note the opportunity to study anywhere, 42,1 % indicate a low risk of getting infected with COVID–19 as positive aspects of distance learning. For 34,8 %, it became convenient to archive training materials, download and view them at any time. 27,8 % of students can work in parallel with their studies, 17,2 % of students can choose their own pace of learning, 16,6 % of students like to use the latest technolo-

gies for learning, and 8,6 % believe that the distance format improves the quality of learning. The respondents also supplemented the list with their own options for the benefits of distance learning. For example, 0,3 % like that now, one does not need to write notes in notebooks but has an opportunity to create electronic documents, 0,3 % value comfort in learning in the form of stress reduction. Only 0,3 % find it difficult to identify positive aspects of distance learning (Figure 2).

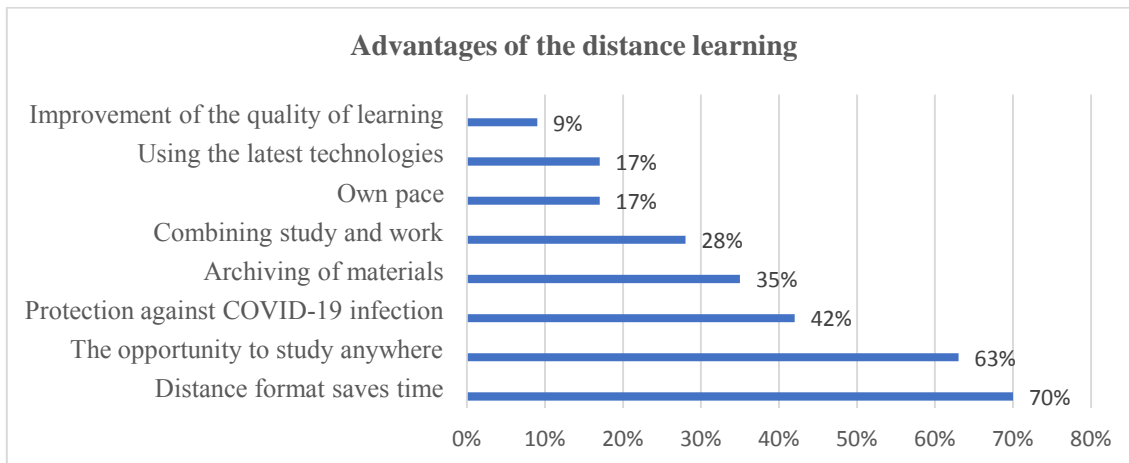


Figure 2. Advantages of the distance learning

Regarding the negative aspects of distance learning, the respondents gave the following answers: Half of the students (54,6 %) noted a lack of direct contact between a teacher and student, 46,7 % of respondents believe that specialized disciplines require the student to be present at university/clinic/laboratory, 45,1 % indicated a large volume of tasks, 33,8 % of students mentioned difficulties with completing tasks independently, 30,1 % chose the option “insufficient amount of materials for distance learning”, 25,8 % of respondents consider the payment for distance learning to be unreasonably high and outrageous, 1,8 % of students believe that distance learning has no weaknesses (Figure 3).

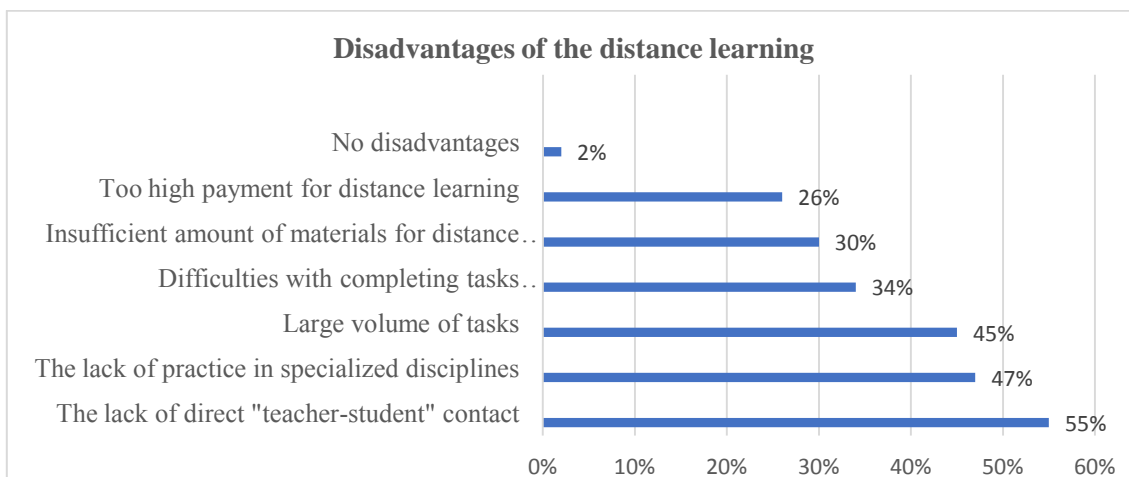


Figure 3. Disadvantages of the distance learning

Students' opinions were equally divided when answering the question about the workload during the distance learning period — 41,7 % of respondents indicated that the workload increased, 39,1 % mentioned that the workload did not change.

Motivation is an integral part of every student on the way to goal achievement. 45,7 % of respondents believe that their level of motivation during distance learning has not changed, 27,8 % have their motivation increased, and 26,5 % — decreased one.

Figure 4 demonstrates the most popular distance learning platforms used at Karaganda Medical University (KMU).

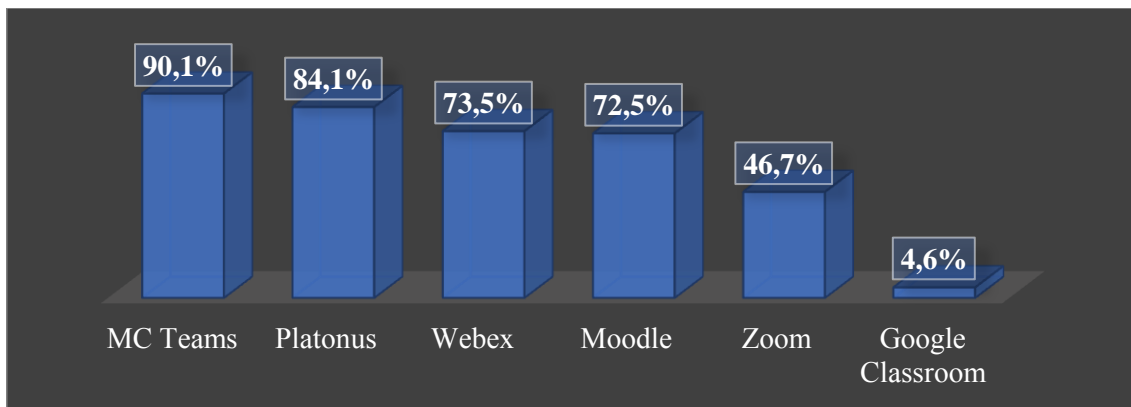


Figure 4. Platforms used for distance learning at KMU

All of the above-mentioned platforms were used by 9,3 % or 28 out of the 302 respondents. Figure 5 shows the types of devices used by students in the framework of distance learning.

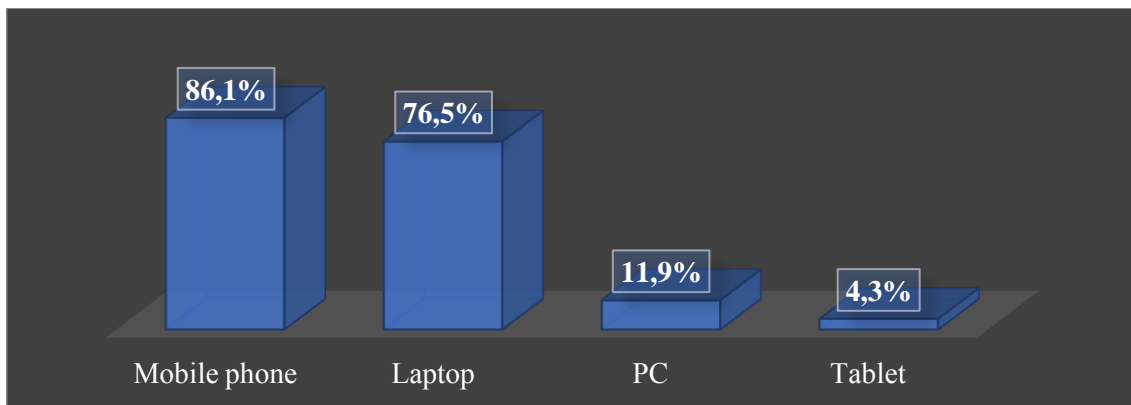


Figure 5. Types of devices used for distance learning by the students of KMU

All of the above-mentioned types of devices were used by 5,6 % or 17 out of the 302 respondents.

The availability of communication facilities, technical equipment, excellent Internet — all these provides an ideal education outside the university, but the number of students who did not have any difficulties during the period of distance learning was only 22,9 %. Among the technical difficulties, the students noted low Internet speed — 55,6 %, technical problems during material demonstration — 46,7 %, lack of the Internet access — 25,5 %, frequent power outages at the student's place of residence — 21,5 % (Figure 6).

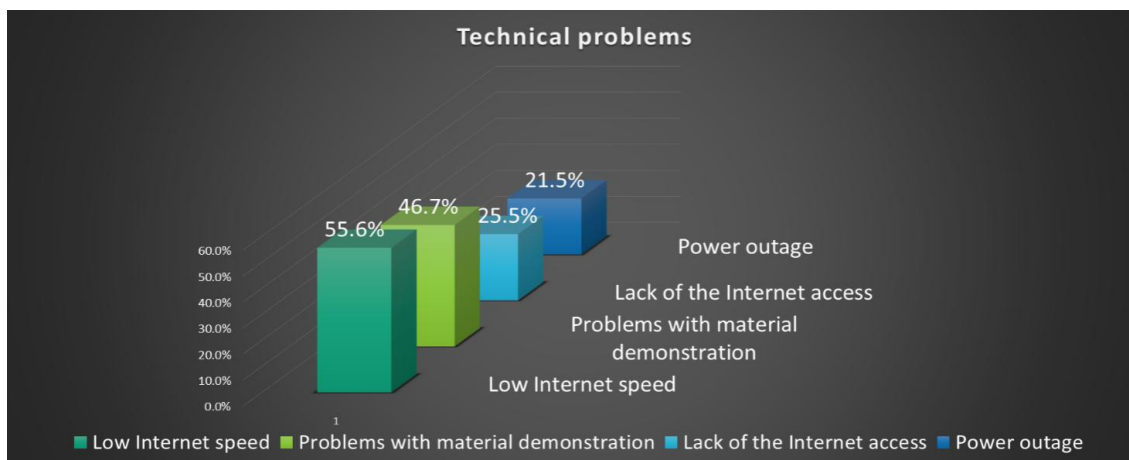


Figure 6. Technical problems

In conclusion, the respondents were given the opportunity to express their wishes for improving the quality of distance learning. Having analyzed the answers, we divided them into the following groups:

- returning of traditional education with the elements of distance learning (mixed type of training);
- equipping the teaching staff with the necessary high-quality (in working condition) devices (PC, laptops, etc.);
- improving the quality of the Internet connection;
- condescendingly and understandingly treating the students who have technical problems during classes (low Internet speed, power outage, etc.);
- improvement of the Platonus, Moodle platforms (the material sent by students is problematic to download);
- improvement of the examinational platform Session (clicking on an empty space or closing the notification shows that the student “left” the site);
- improvement of the Webex platform — there is slow broadcast speed and hang-up of the Webex program, which do not always depend on the quality of the Internet;
- necessity of license update of the MC Teams program, which was considered by the respondents as the most acceptable and convenient platform for distance learning.

### *Conclusions*

According to the survey results, it has been revealed that distance learning has more advantages than disadvantages. Thus, most of the respondents prefer to study online — 63,2 %. We attribute this to the fact that saving resources (time, money, etc.) is the most attractive advantage of distance learning for students — 69,5 % (210 out of 302 respondents). However, when answering the question “What do you like about distance learning?” the least number of the students has chosen the option of improving the quality of education. Therefore, students do not believe that distance learning can be effective at a medical university. This is also confirmed by the fact that most of the respondents have supported the return of the traditional format of education (full-time education) as the most suitable for medical specialties (40,1 %) or at least its mixed form (34,1 %).

As the most serious disadvantage of distance learning, students consider the loss of connection between a teacher and student — it was the most popular answer — 54,6 % (165 out of 302 respondents). During online classes, there are almost no nonverbal signals: facial expressions, gestures, eye contact, etc. It is problematic to explain and understand complex diagrams, pictures, schemes, and tables through a screen demonstration. Also, during online classes, the student may be distracted from the conversation, lecture, because of which misunderstandings arise in the future. The necessity to be present at university/clinic/laboratory, especially when studying specialized disciplines, was considered a disadvantage of distance learning by 46,7 % of respondents. It is impossible to learn a specialty sitting at home, watching training videos all the time. Practice is necessary every day, especially for a medical specialty.

When discussing the problematic aspects of distance learning, one should not forget about technical problems, among which the largest percentage belongs to the low Internet speed (55,6 %), which, in its turn, negatively affects the effectiveness and efficiency of the educational process.

Summing up, it should be noted that despite the negative aspects of distance learning in relation to medical education, it makes sense to leave some elements of it which caused a positive response among students and showed high efficiency after the removal of quarantine restrictions. If the problematic local issues (which were pointed out by the students) related to the implementation of distance learning at Karaganda Medical University are resolved, the educational process in a distant or mixed-format will be more effective.

Although the presented study is complete, it does not cover all aspects of the process of transition from face-to-face teaching and learning to online ones. The following areas could be regarded as areas for further research: problems of training teaching staff for the use of online teaching tools, features of the use of distance education in various types of educational institutions, and others.

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В.А. Бурмистрова

### Медициналық университетте қашықтықтан оқытудың артықшылықтары мен кемшіліктері

Мақала Қарағанды медицина университетінің мысалында медицина университетіндегі қашықтықтан оқыту форматының әлсіз және күшті жақтарын сипаттауға арналған. Медицина мамандықтарының 1-5 курс студенттері арасында оқытудың жаңа форматына қанағаттану, сондай-ақ қашықтықтан оқытудың оң және теріс аспектілерін анықтау бойынша сауалнама жүргізілген. Сауалнамаға 302 адам қатысты. Сауалнама нәтижелеріне талдау жасай отырып, мақала авторы қашықтықтан оқыту форматының кемшіліктерге қарағанда артықшылығы көп екенін, олардың арасында қашықтықтан оқытудың мына оң аспектілері маңызды екенін көрсеткен: ресурстарды үнемдеу (мысалы, уақыт, ақша және т.б.), оқу материалдарын ыңғайлы уақытта жүктеу және қарау мүмкіндігі. Қашықтықтан оқыту форматының маңызды кемшіліктері ретінде респонденттер оқытушы мен студенттер арасындағы өзара әрекеттестіктің жетіспеушілігін, сондай-ақ медициналық мамандықтар студенттері үшін қажет тәжірибенің жоқтығын және т.б. атаған. Оқытудың жаңа түрінің анықталған кемшіліктері қашықтықтан оқыту процесін жақсарту бойынша мақалада көрсетілген ұсыныстардың арқасында жойылуы немесе азайтылуы мүмкін.

*Кілт сөздер:* ковидтік пандемия, оқыту формасы, қашықтықтан оқыту, дәстүрлі оқыту форматы, медицина университеті, білім сапасы, қашықтықтан оқыту платформалары, жаңа технологиялар.

В.А. Бурмистрова

### Преимущества и недостатки дистанционного обучения в медицинском вузе

Статья посвящена описанию слабых и сильных сторон дистанционного формата обучения в медицинском университете на примере Медицинского университета Караганды. Был проведен опрос среди студентов 1–5 курсов медицинских специальностей на предмет удовлетворенности новым форматом обучения, а также выявления положительных и отрицательных аспектов дистанционного обучения. В опросе приняло участие 302 человека. Проведя анализ результатов опроса, автор статьи пришел к выводу, что дистанционный формат обучения имеет больше преимуществ, чем недостатков, среди ко-

торых наиболее значимы следующие положительные аспекты дистанционного формата обучения: экономия ресурсов (например, времени, денег и др.), возможность загрузки и просмотра учебных материалов в удобное время. В качестве критических недостатков дистанционного формата обучения респондентами были отмечены недостаток взаимодействия между преподавателем и студентами, а также отсутствие практики, столь необходимой для студентов медицинских специальностей, и пр. Особого внимания также заслуживают проблемы технического характера, среди которых лидирует низкая скорость Интернета. Выявленные недостатки новой формы обучения могут быть устранены либо же минимизированы благодаря обозначенным в статье рекомендациям по улучшению процесса дистанционного обучения.

*Ключевые слова:* ковидная пандемия, форма обучения, дистанционное обучение, традиционный формат обучения, медицинский университет, качество образования, платформы дистанционного обучения, новейшие технологии.

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