UDC 378.6:615.8:37.046-021.64:37.018.43-025.13
https://doi.org/10.31612/2616-4868.2.2026.14

DISTANCE LEARNING MODEL FOR FUTURE BACHELOR OF THERAPY AND REHABILITATION DURING FUNDAMENTAL TRAINING AT A MEDICAL UNIVERSITY

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Abstract

Introduction. Modern higher medical education in Ukraine is constantly developing and updating in accordance with current requirements. One of the key areas of its development is the training of bachelor of therapy and rehabilitation in the specialization 227.02 Occupational Therapy, who possess the necessary skills to effectively perform professional duties.
Aim. The aim of the study is to develop and experimentally test the effectiveness of a distance learning model for future bachelor of therapy and rehabilitation during fundamental training at a medical university.
Materials and methods. The experiment was carried out in the period from 2023-2024 on the basis of Poltava State Medical University. The experiment was conducted with the involvement of higher education applicants of the second (master's) level of higher education in the specialty 227 Therapy and Rehabilitation specialization 227.02 Occupational Therapy branch of knowledge 22 Health care educational qualification: Bachelor of Therapy and Rehabilitation in the specialization 227.02 Occupational Therapy (70 people); as well as 26 teachers who provide teaching of disciplines of the relevant educational program. Research methods: theoretical, empirical, and statistical data processing methods.
Results. To assess the quality of the specified didactic conditions, we developed a qualimetric model: three areas of activity of the medical university were identified, which were conditionally accepted as factors. These factors were matched with content criteria that served as indicators of the scope of each area of activity.
Conclusions. The results of the pedagogical experiment demonstrated the effectiveness of the distance learning system for future bachelor of therapy and rehabilitation during fundamental training, the model of which consists of methodological-targeted, didactic-technological and reflective-resultative blocks.

Keywords: **distance learning, didactic conditions, model, bachelor of therapy and rehabilitation, occupational therapy, online learning, information and digital tools**

INTRODUCTION

Modern higher medical education in Ukraine is constantly developing and updating in accordance with current requirements. One of the key areas of its development is the training of bachelor of therapy and rehabilitation in the specialization 227.02 Occupational Therapy, who possess the necessary skills to effectively perform professional duties. They must be able to carry out the professional activities of an occupational therapist, solve research and innovative problems related to occupational therapy for the development and improvement of rehabilitation departments and centers, and act as professionals of a new formation who operate on the principles of intellectual freedom and diversity, tolerance and humanism, and who are democratic and nationally conscious individuals. In addition, an important aspect is the readiness of future bachelor for continuous professional development and improvement, and the ability to independently master new knowledge using distance learning technologies [1-5].

During martial law, the educational community is actively using elements and forms of distance learning to effectively organize the educational process in medical institutions of higher education, implementing

various blended format models. Medical university teachers are actively mastering and applying new digital technologies to interact with students in distance learning environments. Medical universities today are becoming powerful platforms for the development of distance learning technologies, as they are entrusted with the mission of preparing a modern higher education student capable of studying under any conditions.

The issues of training future specialists in therapy and rehabilitation have been studied in the works of many scientists from various aspects: features of practical training of specialists in physical therapy at Danish universities [6]; organizational and methodological aspects of training bachelors of physical rehabilitation in Canada [7, 8]; features of training future physical therapists for professional activity in the context of reforming the medical rehabilitation system in Ukraine [9]; conditions for the formation of motivation for successful professional activity of future physical rehabilitation specialists [10]; system of professional training of future specialists in physical rehabilitation (physical therapy and occupational therapy) at US universities [11]; clinical education models for future physiotherapy professionals [1]; assessing self-efficacy of physiotherapy students [5].

However, despite the significant number of publications devoted to the training of future therapy and rehabilitation specialists, as well as distance learning [12-18], in our opinion, insufficient attention has been paid to the possibilities of organizing distance learning for future therapy and rehabilitation specialists during fundamental training at a medical university.

AIM

The aim of the study is to develop and experimentally test the effectiveness of a distance learning model for future bachelor of therapy and rehabilitation during fundamental training at a medical university.

MATERIALS AND METHODS

The course of the experimental work is determined by the goal and objectives of our research and primarily involves testing the hypothesis. The experiment was carried out in the period from 2023-2024 on the basis of Poltava State Medical University. The experiment was conducted with the involvement of higher education applicants of the second (master's) level of higher education in the specialty 227 Therapy and Rehabilitation specialization 227.02 Occupational Therapy branch of knowledge 22 Health care educational qualification: Bachelor of Therapy and Rehabilitation in the specialization 227.02 Occupational Therapy (70 people); as well as 26 teachers who provide teaching of disciplines of the relevant educational program of Poltava State Medical University. A number of fundamental training disciplines were selected for the experiment: «Digital Technologies in Healthcare», «Integrated Course: Philosophy, Medical Ethics and Deontology», «Fundamentals of Practical Activity in Therapy and Rehabilitation (introduction to the specialty)», «Fundamentals of the Theory and Methodology of Physical Exercises», «Therapeutic Exercises».

To solve the tasks set, a set of the following research methods was used: analysis, synthesis, comparison, juxtaposition (to study literary sources, regulatory documents, experience in implementing distance learning; determination of methodological approaches to solving the problem of implementing distance learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university); pedagogical modeling – to develop a model of distance learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university; questionnaires, conversations, surveys, narratives, observations; pedagogical experiment (to test the effectiveness of the distance learning model for future bachelor of therapy and rehabilitation during fundamental training at a medical university); qualimetric models (to determine the effectiveness of didactic conditions).

RESULTS

In an attempt to solve the problem of distance learning effectiveness, we have developed a model of a distance learning system for future bachelor of therapy and rehabilitation during fundamental training at a medical university, which consists of methodological-targeted, didactic-technological, and reflective-resultant blocks.

Methodological and target block of the model is defined by the goal, methodological approaches (competence-based, environmental, personality-oriented, resource-oriented, integrative, communicative, project-based, creative), which serve as a guide in achieving this goal.

According to the specifics of the fundamental training of future bachelor of therapy and rehabilitation (acquisition of universal knowledge and general competencies; concepts, theories and methods of implementing the occupational therapy process based on the principles of occupation-oriented and client-centered practice, taking into account and influencing client factors, his/her occupational activity and environment (school, community, etc.), management, teaching and research in occupational therapy), *didactic principles* (scientificity, accessibility, clarity, conformity to nature, systematicity and consistency, awareness and activity of learning, solidity of knowledge, emotionality, connection of theory and practice) become of key importance, which it is advisable to focus on when implementing the model, as well *as specific principles* of distance learning for future bachelor of therapy and rehabilitation (humanitarianization and humanization of learning, individualization of learning, variability, interactivity, mobility, continuity, openness, flexibility, freedom of choice), which are also included in this block of the model.

The **didactic and technological block** includes didactic conditions for distance learning of future bachelor of therapy and rehabilitation during fundamental training at a medical university:

1) organization of advanced training courses for medical university teachers under the program «Effective distance learning: a workshop on modern technologies»;

2) resource orientation when choosing forms of organizing training for future bachelor of therapy and rehabilitation during fundamental training at a medical university based on modern digital technologies and services;

3) application of project-based learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university.

The block includes *didactic technologies* that were used during their implementation (contextual learning, resource-based learning, person-centered technologies, digital technologies, project technologies, virtual and augmented reality), the content of the training reflected in the educational components of the educational program Physical therapy, occupational therapy specialization 227 Therapy and Rehabilitation (specialization 227.02 Occupational Therapy).

This block of the model also complements the information and digital tools of the distance educational process of future bachelor of therapy and rehabilitation during fundamental training at a medical university, which teachers, based on the principles of variability and freedom of choice, can choose for distance communication in learning and independent work (Fig. 1).

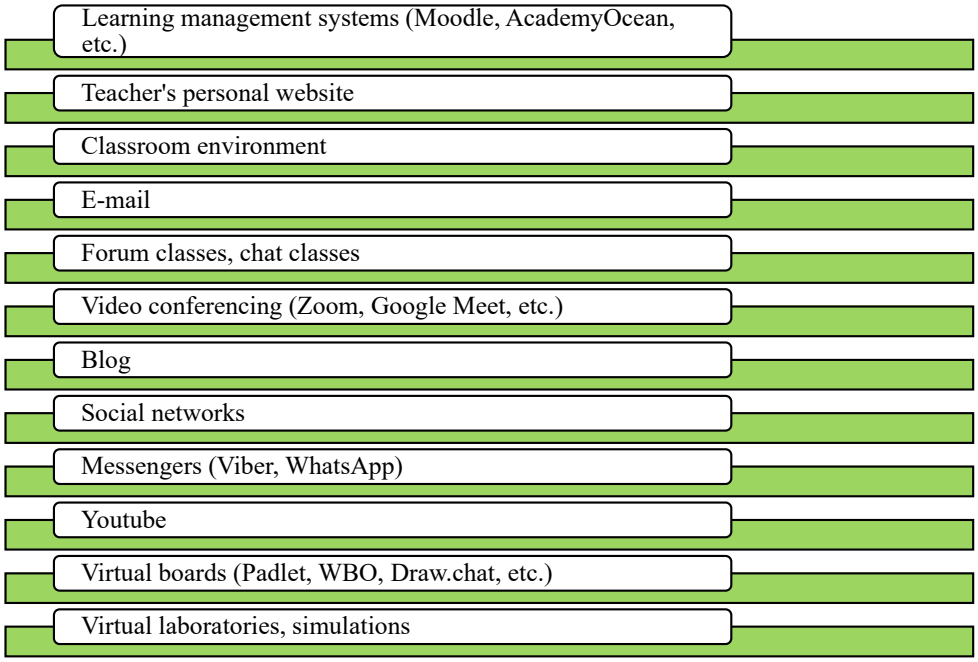

Figure 1. Information and digital tools for the distance education process of future bachelor of therapy and rehabilitation during fundamental training at a medical university.

Reflective-resultative block of the model contains reflection techniques, thanks to which teachers carry out the reflective stage of distance learning with students. Examples of methods:

Reflective online lesson «*Say it in one sentence*»*:* «Today in class I learned», «I learned», «I completed the tasks», «I was able to», «I liked…», «It was difficult…», «I understood», «Now I can…», «It was interesting…», «It was difficult for me», «I was surprised…», «Now I know that…», «I didn't understand…», «I wanted to know why…».

Reflective technique «*Microphone: knowledge gain*». The technique is used to determine the level of growth in the assimilation of the content of the educational material: «I liked what we did in the online class because…», «The information received will be useful because…», «I didn't know this, now I know…», etc.

Reflective technique «*Notes*». Using Padlet's Pinned Note tool, students record their personal achievements in class, demonstrating not only knowledge but also the ability to use digital services.

Reflective technique «*plus-minus-interesting*». This exercise, using the Padlet service, allows the teacher to look at the lesson through the eyes of the students, and analyze it from the point of view of its value for each student.

In the column «P»/ «plus»/- put a mark and write everything that you liked in the lesson, that seemed interesting and useful.

In the column «M»/ «minus»/- write everything that you did not like, or that seemed difficult, incomprehensible.

In the column «I»/ «interesting»/- write the facts that you learned in the lesson, what else you would like to know.

Reflection technique «Smiley». Students use emoticons to signal to the teacher during video lessons, for example, in Zoom or Google Meet, «Everything is clear», «Question» or «Need help», etc.

The model block also includes individual/ group reflection on the effectiveness of online classes (conversations, narratives, focus group interviews), as well as student surveys.

Result from the implementation of the model: the formation of competencies defined by the educational components of the educational program Physical therapy, occupational therapy (specialization 227.02 Occupational Therapy).

The model of the distance learning system for future bachelor of therapy and rehabilitation during fundamental training at a medical university is presented in Figure 2.

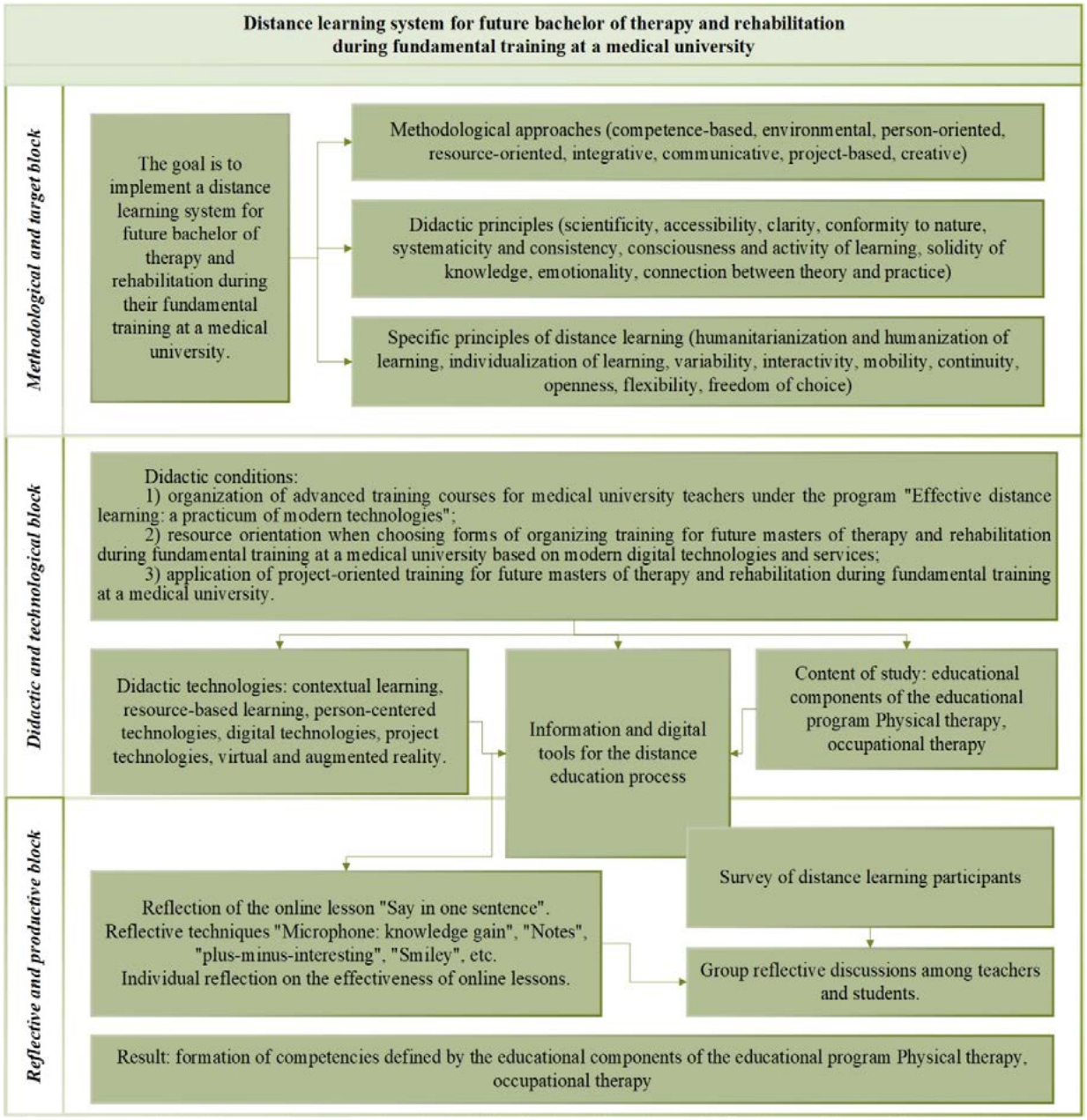

Figure 2. A model of distance learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university.

To test the effectiveness of the distance learning model for future bachelor of therapy and rehabilitation during fundamental training at a medical university, the following fundamental disciplines were selected: «Digital Technologies in Healthcare», «Integrated Course: Philosophy, Medical Ethics and Deontology», «Fundamentals of Practical

Activity in Therapy and Rehabilitation (introduction to the specialty)», «Fundamentals of the Theory and Methodology of Physical Exercises», «Therapeutic Exercises».

These disciplines directly ensure that students acquire universal knowledge and skills for future bachelor of therapy and rehabilitation and a clear orientation towards lifelong education.

The organization of distance learning for the above-mentioned educational components was carried out on the Classroom platform. Online classes were conducted using Google Meet and streams via social networks.

Within the framework of the model implementation, *didactic conditions* for implementing distance learning were tested:

1) organization of advanced training courses for medical university teachers under the program «Effective Distance Learning: A Workshop on Modern Technologies»;

2) resource orientation when choosing forms of organizing training for future bachelor of therapy and rehabilitation during fundamental training at a medical university based on modern digital technologies and services;

3) application of project-based learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university.

In order to improve the quality of the distance education process, an online advanced training course was held for teachers under the program «Effective Distance Learning: Modern Technologies Workshop» (author of the online course is Nataliia Kononets), the educational and thematic plan of which is presented in Table 1.

Table 1

Educational and Thematic Plan of Advanced Training Courses for Medical University Teachers Under the Program «Effective Distance Learning: a Workshop on Modern Technologies»

№	Topic name	Distribution of hours			
		Online lectures	Online practice	Independent work	Total
Content module 1. Distance learning: Ukrainian and foreign experience					
1.	Modern distance learning: features and challenges.	2	2	2	6
2.	Distance learning course: examples, functionality, methodological online support.	2	2	2	6
3.	Distance learning course on the Moodle platform.	2	2	2	6
4.	Distance learning course on the Salesforce platform.	2	2	2	6
5.	Distance learning course on the Google Classroom platform.	2	2	2	6
6.	Cloud technologies for distance learning.	2	2	2	6
7.	We create a personal information and educational environment.	2	2	2	6
Content module 2. Criteria for assessing the quality of distance learning					
8.	Criteria for evaluating the conditions for implementing the distance education process.	2	2	2	8
9.	Criteria for assessing the quality of distance learning courses.	2	2	2	8
10.	Criteria for evaluating students' distance learning results.	2	2	2	8
Content module 3. Ensuring interactive communication during distance learning					
11.	Interactive tools for distance learning.	2	2	2	6
12.	Creating and using virtual boards.	2	2	4	8
13.	We conduct interactive video lectures.	2	2	4	8
14.	We conduct online trainings, video tours, workshops, networking sessions.	2	2	4	8
	Total hours	28	28	34	90

Resource orientation when choosing forms of organizing training for future bachelor of therapy and rehabilitation during fundamental training at a medical university based on modern digital technologies and services during the experiment is ensured by: conducting various types of online lectures (lecture-discussion, problem lecture, lecture-brainstorming, press conference), webinars, networking sessions, virtual excursions, online master classes and workshops; using Internet services to perform practical tasks and communicate (Fig. 1).

The application of project-based learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university within the framework of the experiment was implemented using a number of network projects (individual and group) that students performed during distance learning of selected disciplines. For example: «Occupational Therapist Blog», «Effective Occupational Therapy», «We Will Help», «Adaptive Technologies in Occupational Therapy», «Innovations in Physical Therapy and Rehabilitation»,

«Successful Occupational Therapy Practices», «The Right to Rehabilitation», «Occupational Therapist Job Description», «Occupational Therapy and Traditional Medicine», «Modern Fitness Technologies», etc.

In this way, competency-based, environmental, personality-oriented, resource-oriented, integrative, communicative, project-based, and creative approaches to distance learning for future bachelor of therapy and rehabilitation have been implemented.

When assessing the effectiveness of advanced training courses for medical university teachers under the program «Effective distance learning: a workshop on modern technologies», the impact of the content of the course modules and didactic technologies used for teaching (online lectures, webinars, workshops, master classes, consultations, etc.) on the readiness of teachers to organize effective distance learning was determined.

The readiness of teachers to organize effective distance learning is determined by their mastery of theoretical knowledge (content modules 1-3) and practical skills in organizing distance learning and is assessed at three levels: *high, medium, and low*.

A computer test was administered before and after the course «Effective Distance Learning: Modern Technologies Workshop». The key questions of the test concerned aspects of organizing distance learning (what platforms and cloud resources do teachers use, whether they know how to create distance courses on the Moodle/ Salesforce/Google Classroom platforms; what personal information and educational environment is, what distance learning courses can be considered high-quality, what tools are best used to assess student learning outcomes in distance learning environments; how to create didactically appropriate and attractive educational content; what interactive tools for distance learning do teachers know and use in their work, etc.).

The results of computer testing before and after the online advanced training course for medical university teachers under the program «Effective distance learning: a workshop on modern technologies» are presented in Table 2.

The dynamics of changes in the levels of readiness of teachers to organize effective distance learning (before and after the experiment) is shown in Figure 3.

Table 2

Teachers' Readiness to Organize Effective Distance Learning (Before and After the Experiment)

Content modules	Content module 1. Distance learning: Ukrainian and foreign experience		Content module 2. Criteria for assessing the quality of distance learning		Content module 3. Ensuring interactive communication during distance learning	
Levels of knowledge and skills (%)	Before the experiment	After the experiment	Before the experiment	After the experiment	Before the experiment	After the experiment
Low	65.38	11.54	73.08	30.77	46.15	3.85
Medium	26.92	53.85	23.08	50.00	42.31	61.54
High	7.69	34.62	3.85	19.23	11.54	34.62
Total teachers	100.00	100.00	100.00	100.00	100.00	100.00

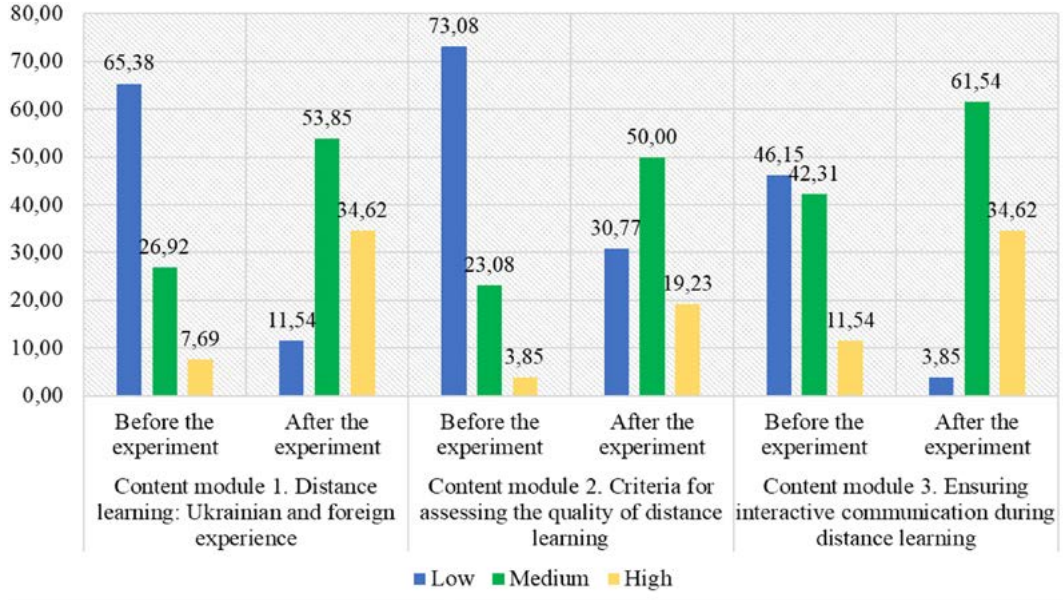

Figure 3. Teachers' readiness to organize effective distance learning (before and after the experiment).

Analysis of the data obtained shows that for content module 1, the number of respondents with a low level of teacher readiness to organize effective distance learning significantly decreased (by 53.85%), while the number of teachers with medium (increased by 26.92%) and high (increased by 26.92%) levels of readiness increased. According to content module 2, the number of respondents with a low level of teacher readiness to organize effective distance learning significantly decreased (by 42.31%), while the number of teachers with medium (increased by 26.92%) and high (by 15.38%) levels increased. According to content module 3, the number of respondents with a low level of teacher readiness to organize effective distance learning significantly decreased (by 42.31%), while the number of teachers with medium (increased by 19.23%) and high (increased by 23.08%) levels increased.

During the experiment, it was discovered that for effective organization of distance learning it is not enough to simply transfer classes to an online format without changing methods and approaches. Teachers actively used information and digital tools of the distance education process, freely used modern electronic educational resources, organized work, motivated students to study, established feedback and monitored the results of distance learning. Online classes were aimed at developing students' skills of independent educational work and the formation of competencies defined by the educational program, as well as the formation of digital competence of future bachelor of therapy and rehabilitation.

It was found that the specifics of online learning based on digital technologies, Internet resources and services affect the methods of selecting and structuring content, as well as the methods and organizational forms of learning. This significantly affected the functioning of the entire system of fundamental training for bachelor of therapy and rehabilitation. Students independently selected and processed information, put forward hypotheses, and made decisions based on their own reflections and vision of the problem. At the center of the cognitive process was a problem that required the work of thought, creativity, and digital technologies to solve it. The students' cognitive and thinking activities allowed them to go beyond the information they received and create new knowledge.

The role of the online teacher was to help students, stimulate them to independent reflection, discoveries and new perspectives on the phenomenon or subject under study. Teachers and students remained active participants in the dialogical learning process. Digital services have been used to establish feedback between teachers and students, which is a prerequisite for successful distance learning. The effectiveness of teachers' distance work is confirmed by posts on social networks and coverage on the university website.

The most interesting forms of training organization during distance learning of educational components, as noted by students, were online master classes and workshops, which were held for them by information technology specialists (within the framework of studying the discipline «Digital Technologies in Healthcare»), Doctor of Pedagogical Sciences, Professor of the Department of Pedagogical Mastery and Management, Poltava V. G. Korolenko National Pedagogical University (within the framework of studying the discipline «Integrated Course: Philosophy, Medical Ethics and Deontology»), practicing occupational therapists (within the framework of studying the disciplines «Fundamentals of Practical Activity in Therapy and Rehabilitation (introduction to the specialty)», «Fundamentals of the Theory and Methodology of Physical Exercises», «Therapeutic Exercises»).

Confirmation of successful results of self-education for students is participation in conferences with receipt of certificates, publication of abstracts in collections of student scientific works, as well as coverage of activities on social networks. Students also had the opportunity to familiarize themselves with materials from the experience of practicing physical rehabilitation specialists and occupational therapists, with innovations in their professional activities (study of personal websites, blogs, pages on social networks) and monitored resources for non-formal/informal education of therapy and rehabilitation specialists.

Evaluating the effectiveness of other didactic conditions (resource orientation when choosing forms of organizing training for future bachelor of therapy and rehabilitation during fundamental training at a medical university based on modern digital technologies and services; application of project-oriented training of future bachelor of therapy and rehabilitation during fundamental training at a medical university), a survey was conducted among the students who participated in the experiment, the results of which revealed that: the effectiveness of distance learning, according to future bachelor of therapy and rehabilitation, depends on the distance course (87%), teacher competence (56%), organization of distance classes (97%), high-quality educational and methodological materials (71%), student motivation (81%) (Fig. 4).

During the survey, students noted which forms of distance learning organization they liked the most when studying the fundamental disciplines selected for the experiment: 40% noted online lectures (lecture-discussion, problem lecture, lecture-brainstorming, press conference), 53% chose webinars; 85% of respondents are impressed by networking sessions; 90% – virtual excursions; 94% – online master class, workshop (Fig. 5).

Before and after the experiment, a qualimetric model was applied to assess the effectiveness of didactic conditions for implementing distance learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university. Table 3 demonstrates a qualimetric model for assessing the effectiveness of didactic conditions for implementing distance learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university, the content of which reflects the data obtained after the experiment.

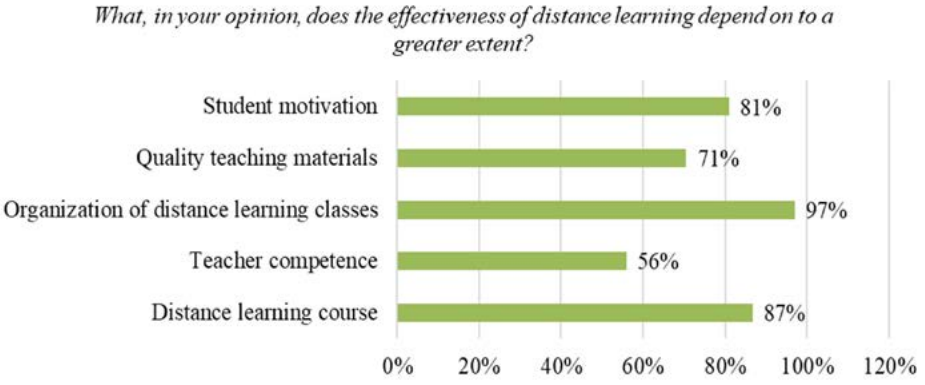

Figure 4. Effectiveness of distance learning (students' position).

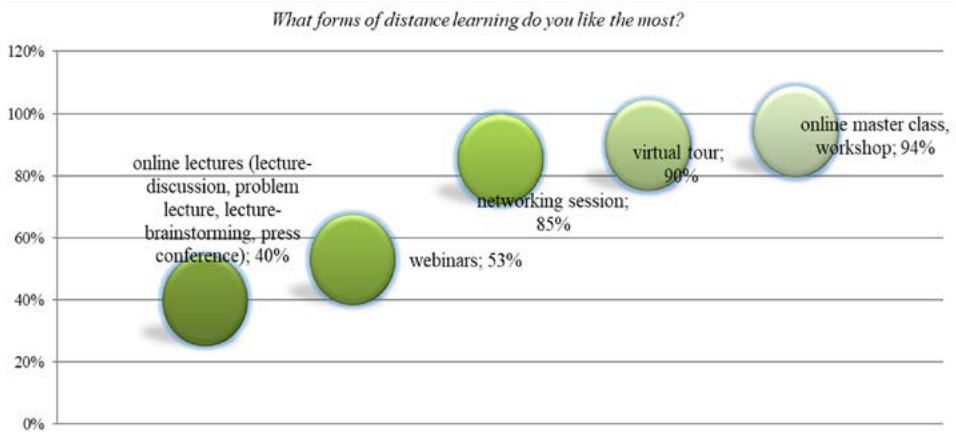

Figure 5. Effective forms of organizing distance learning (students' position).

Table 3

Qualimetric Model for Assessing the Effectiveness of Didactic Conditions for Implementing Distance Learning for Future Bachelor of Therapy and Rehabilitation During Fundamental Training at a Medical University

Factors	Weight of factors	Criteria	Weight of criteria	Degree of manifestation of criteria	Degree of manifestation of factors
Organization of advanced training courses for medical university teachers under the program «Effective distance learning: a workshop on modern technologies»	0.51	Master classes on the use of information and digital tools for the distance education process	0.37	0.75	0.304725
		Information and digital tools for the distance education process	0.18	0.25	
		Quality of teaching content of the program «Effective Distance Learning: Modern Technologies Workshop»	0.31	0.5	
		Educational and methodological support for the program «Effective distance learning: a workshop on modern technologies»	0.24	0.5	
Resource orientation when choosing forms of organizing training for future bachelor of therapy and rehabilitation during fundamental training at a medical university based on modern digital technologies and services	0.35	Video classes and chat classes	0.41	0.75	0.207375
		University website	0.14	0.25	
		Classroom environment	0.42	0.5	
		Digital interactive whiteboards	0.16	0.25	
Application of project-based learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university	0.44	Interactive teaching methods	0.43	0.5	0.3113
		Master classes, individual and group projects, etc	0.47	0.75	
		Online consultations	0.22	0.5	
		Communication via messengers and social networks	0.12	0.25	
Result					**0.82**

The model presented in Table 3 is indicative and variable, as it can be adapted to local conditions based on the specification of criteria and indicators of their manifestation. To assess the quality of the specified didactic conditions, we developed a qualimetric model: three areas of activity of the medical university were identified, which were conditionally accepted as factors. These factors were matched with content criteria that served as indicators of the content of each area of activity. In our research model, factors 1-3 are didactic conditions. The identified factors reveal the criteria: master classes on the use of information and digital tools for the distance education process; quality of teaching content of the program «Effective Distance Learning: Modern Technologies Workshop»; Educational and methodological support for the program «Effective Distance Learning: modern Technologies Workshop»; Video classes and chat classes; University website; Classroom environment; Digital interactive whiteboards; Interactive teaching methods; Master classes, individual and group projects, etc.; Online consultations; Communication via messengers and social networks.

The importance of factors and criteria was determined by the ranking method according to of G. Yelnikova; the degree of manifestation of the criteria was determined by expert or index assessment: by calculating the index of the current state relative to the desired one (the number of requirements manifested in the activity is related to the total number of requirements). In this case, the established scale was relied on [19]:

0.00 – the criterion is practically not manifested;

0.25 – the criterion is insignificantly manifested;

0.50 – the criterion is manifested within 40%–60% of the requirements;

0.75 – the criterion is manifested within 61%–75% of the requirements;

1.00 – the criterion is manifested within 76%–100% of the requirements.

To determine the level of activity of a medical university in the context of organizing distance learning, which indicates the effectiveness of the developed model, the following scale was used:

up to 0.5 points – inactivity or activity does not meet current requirements;

0.5 – the level of activity is critical;

0.5-0.75 – the level of activity is acceptable (current requirements are taken into account);

0.75-1.0 – the level of activity is optimal (transitions to self-development mode).

According to the results of the calculations, we obtained the value of the resulting indicator – 0.82 (before the experiment, this indicator was 0.64), which allows us to assert that the level of activity in implementing the distance learning system for future bachelor of therapy and rehabilitation during fundamental training is optimal, that is, not only does it take into account the requirements of the present, but it has also entered a self-development mode.

DISCUSSION

Modern society places high demands on specialists who need universal knowledge and skills, as well as the ability to quickly adapt to new specializations in professional activities. An important component of the development of a new generation of specialists has become the ability and natural desire of the graduate to constantly acquire new knowledge, expand their professional horizons, and quickly master new technologies and areas of activity. Current realities mean that education «for life» is transforming into education «throughout life». The essence of fundamental education lies in the acquisition of universal knowledge and skills and a clear orientation towards education throughout life [20]. Therefore, fundamental education primarily provides knowledge that enables an individual to orientate themselves in any new environment, in particular, a professional one, and is universal in nature.

Therefore, the main task of the fundamental training of future bachelor of therapy and rehabilitation at a medical university is to create conditions for the development of modern scientific thinking, the formation of an internal need for self-development and continuous self-education throughout life. And the development and implementation of a distance learning model for future bachelor of therapy and rehabilitation during fundamental training at a medical university will contribute to solving this problem.

Distance learning is a form of organization and implementation of the educational process in which participants (the object and subject of learning) interact mainly at a distance. This means that participants do not have direct contact with each other, i.e., are in different locations and are not necessarily present in the training premises [17].

A practical guideline for the implementation of distance learning in higher education institutions is the «Regulations on Distance Learning», which establishes the general principles of organizing this process. The document defines key concepts such as asynchronous and synchronous modes of interaction between participants in the educational process, educational web resources, distance courses, web environment for distance learning, information and communication and psychological and pedagogical technologies for distance learning, a distance learning and web resource management system, subjects of distance learning, etc. The regulation also provides for the possibility of using distance learning in educational institutions of various levels, including higher education, its use as an independent form or as support for other

forms of learning, as well as the creation of distance learning centers as separate structural units. At the same time, the practice of training students in distance learning conditions shows that its effectiveness depends not only on resources and digital technologies, but also on the sustainable motivation of those who study [15].

Distance learning at medical universities includes various types of classes, such as independent work, training sessions (lectures, seminars, practical and laboratory classes, consultations), which are implemented using synchronous or asynchronous online technologies, as well as practice and control. For distance laboratory classes, it is envisaged to use both simulations, appropriate virtual simulators (virtual reality VR and augmented reality AR), and the possibility of their implementation in university laboratories, i.e., a combination of distance learning with face-to-face learning, which ensures the implementation of various blended learning models [20, 21].

CONCLUSIONS

Thus, the results of the pedagogical experiment demonstrated the effectiveness of the distance learning system for future bachelor of therapy and rehabilitation during fundamental training, the model of which consists of methodological-targeted, didactic-technological and reflective-resultative blocks, which was confirmed by qualimetric modeling student and teacher surveys of Poltava State Medical University.

The hypothesis of the university-based study was confirmed: distance learning was effective when didactic conditions were implemented: 1) organization of advanced training courses for medical university teachers under the program «Effective distance learning: a workshop on modern technologies»; 2) resource orientation when choosing forms of organizing training for future bachelor of therapy and rehabilitation during fundamental training at a medical university based on modern digital technologies and services; 3) application of project-based learning for future bachelor of therapy and rehabilitation during fundamental training at a medical university.

Perspectives for further research. We see prospects for further research in improving didactic tools for implementing certain conditions for distance learning for future bachelor of therapy and rehabilitation during fundamental training, in particular, by developing and testing digital learning resources, interactive clinically-oriented modules, and virtual simulations that ensure the integration of fundamental biomedical knowledge with future professional activities. It is expected that the results of such studies will contribute to the formation of clinical thinking, increasing the readiness of students to work in multidisciplinary rehabilitation teams and will also create a basis for the implementation of innovative approaches in clinical practice, telerehabilitation, and physical therapy and occupational therapy programs, which is important for the development of a modern healthcare syste

Limitations of the study. The main limitations of the study included the quantitative and qualitative characteristics of the sample, the limited time frame of the study, and the localization of the study within the city of Poltava. In addition, the results of the study are influenced by subjective factors related to the personal judgments, experiences, and professional attitudes of the respondents. Despite the aforementioned limitations, adherence to bioethical principles, consideration of limitations, and clear definition of exclusion criteria ensured scientific correctness, ethical safety, and reliability of the research results.

Primary data and materials. The authors of the manuscript consciously certify that primary medical documentation and statistical databases were not used in the work. All statements and generalizations are supported by references to primary sources, available in the public domain or through scholarly library resources. Additional materials relating to the source selection process or detailing the analysis methodology may be provided by the corresponding author upon reasonable request.

COMPLIANCE WITH ETHICAL REQUIREMENTS

The research was performed in accordance with the Declaration of Helsinki and in agreement with the Bioethics Committee of Poltava State Medical University.

Declaration of the use of generative AI in manuscript preparation. No artificial intelligence was used to generate text, analyze data, or generate illustrations in the preparation of this manuscript. All content was created by the authors, who are fully responsible for accuracy, originality, and academic integrity.

FUNDING AND CONFLICT OF INTEREST

The authors declare that they have no conflict of interest in relation to this research – whether financial, personal, authorship, or otherwise – that could affect the research and the results presented in this article. No external financial support was provided to the study. All authors have consented to the publication of this manuscript.

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Резюме

МОДЕЛЬ ДИСТАНЦІЙНОГО НАВЧАННЯ МАЙБУТНІХ БАКАЛАВРІВ З ТЕРАПІЇ ТА РЕАБІЛІТАЦІЇ ПІД ЧАС ФУНДАМЕНТАЛЬНОЇ ПІДГОТОВКИ В МЕДИЧНОМУ УНІВЕРСИТЕТІ

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Вступ. Сучасна вища медична освіта в Україні постійно розвивається та оновлюється відповідно до сучасних вимог. Одним із ключових напрямків її розвитку є підготовка бакалаврів терапії та реабілітації за спеціалізацією 227.02 Ерготерапія, які володіють необхідними навичками для ефективного виконання професійних обов'язків.

Мета. Метою дослідження є розробка та експериментальна перевірка ефективності моделі дистанційного навчання майбутнього бакалавра терапії та реабілітації під час фундаментальної підготовки в медичному університеті.

Матеріали та методи. Експеримент проводився у період з 2023-2024 років на базі Полтавського державного медичного університету. Експеримент проводився за участю здобувачів вищої освіти другого (магістерського) рівня вищої освіти за спеціальністю 227 Терапія та реабілітація, спеціалізація 227.02 Ерготерапія, галузь знань 22 Охорона здоров'я, освітньо-кваліфікаційний рівень: бакалавр терапії та реабілітації за спеціалізацією 227.02 Ерготерапія (70 осіб); а також 26 викладачів, які забезпечують викладання дисциплін відповідної освітньої програми. Методи дослідження: теоретичні, емпіричні, методи статистичної обробки даних.

Результати. Для оцінки якості заданих дидактичних умов нами було розроблено кваліметричну модель: було визначено три напрямки діяльності медичного університету, які умовно прийнято як фактори. Цим факторам було зіставлено змістовні критерії, що слугували індикаторами змісту кожного напрямку діяльності.

Висновки. Результати педагогічного експерименту продемонстрували ефективність системи дистанційного навчання майбутніх бакалаврів терапії та реабілітації під час фундаментальної підготовки, модель якої складається з методологічно-цільового, дидактико-технологічного та рефлексивно-результативного блоків.

Ключові слова: **дистанційне навчання, дидактичні умови, модель, бакалавр терапії та реабілітації, ерготерапія, онлайн-навчання, інформаційно-цифрові інструменти**

Received: 8.12.2025
Accepted: 13.02.2026