

Innovative Approaches to Higher Education: Blended Learning in Kazakhstan

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Abstract: The research problem is based on the study of the possibilities of expanding methodological approaches, educational technologies, and educational programs for the implementation of blended learning and increasing the level of its effectiveness in the educational system of Kazakhstan. This study aims to identify the best conditions for implementing blended learning that would meet the technical capabilities of the university, the educational programs, and the interests and needs of all participants of the educational process. For this, the following data collection methods were used: online surveys, quantitative and qualitative analyses, and facilitation tools, such as World Caf  Future

Search, ranking, and Spearman's correlation analysis. The results show that more than half of the students (58%) and teachers (65%) were not satisfied with the existing structure of blended learning at the university. This research suggests involving all participants in the educating process when adopting the blended mode of learning to enhance the efficacy of the blended learning program. The practical significance of this research lies in its determination of the optimal conditions for implementing blended learning in the university programs of Kazakhstan. The engagement of all stakeholders in the Learning pathway in decision-making regarding hybrid education, taking into account the technical capabilities of universities and the individual needs of students and instructors, aims not only to address current issues but also to enhance the quality of education and prepare graduates to meet the demands of the contemporary labor market. Such an approach to research and innovation implementation in Kazakhstan's education could foster the development of more flexible, adaptive, and effective educational systems that meet the requirements of the modern world.

Index Terms: blended learning, facilitation methods, facilitation sessions, organization of the educational process

1. Introduction

The outbreak of the COVID-19 pandemic has revealed the problems of the digitalization of higher education. The research admits that there is a need to search for alternative educational models without losing the quality of training faced with new challenges and threats [1]. Literature analysis and international experience have shown that the transformation of the traditional educational process to blended learning is the best solution for many educational institutions [2,3]. Blended learning is an effective education model that is widely adopted by many developed countries, including the USA, Great Britain, Germany, Singapore, etc. [4]. Blended learning fits best the current education and is in demand in developing countries, focused on the sustainable economic growth and social stability of the economy [5].

The research foundation of this article draws upon three categories of literature reviews on blended learning technology: 1) studies that have gone to great lengths to examine the difficulties that are associated with the learning environment and with the personality of a teacher or a student [6,7]. They used a variety of diagnostic tools, identified a number of factors that influence the occurrence of these difficulties, and provided opportunities to explore the challenges of implementing blended learning in specific organizational contexts. However, hybrid education, technology itself was not a specific topic of this review. 2) Another group of reviews addressed the perception of blended learning by the subjects of the educational process [8,9]. They contrasted different perspectives and focused more or less on teachers in the implementation of blended learning. However, they lacked a structured approach and depended on a narrow set of theories. 3) The last group of studies looked at the effectiveness of blended learning technology, assessing various independent variables such as achievement, satisfaction, behavior, critical thinking skills, student support, participation, interaction, etc. [10,11]. They utilized a systematic approach and examined the implementation of various essential conditions for the effective implementation of blended learning.

However, it should be noted that while these studies have contributed to the understanding of how blended learning is implemented and realized in education, the broad and disparate scope of the reviews means that they do not fully explain the specifics of the organization and implementation of blended learning technology in higher professional education. In particular, the use of facilitation methods in adapting the model of blended learning to the capabilities of the educational institution, as well as in determining the optimal conditions for its implementation, which would meet the interests and needs of all subjects of the educational process. In this regard, the issue of determining the optimal conditions for the implementation of blended learning, which would meet the interests and needs of all subjects of the educational process based on facilitation methods remains open both in theoretical terms and in practical implementation.

The importance of blended learning is undeniable, but the effectiveness of the educational process in universities is limited by inadequate implementation and a lack of resources at universities. There are different views on the problem of educational change in scientific literature. Blended learning increases the workload for teachers, causing overwork, worsens the academic performance of students, and puts limits on communication [12,13]. The research identified psychological problems in students with a low level of responsibility and self-regulation who were not ready to use the blended learning model [14].

The research reveals that all negative factors include ineffective methodological and regulatory framework, insufficient ICT proficiency of the teaching staff, poor adaptation of the content of educational programs to the blended learning model, underdeveloped self-organizational skills among students, and insufficient funding [15,16]. The effective implementation of blended learning in universities is affected by didactic misunderstanding and low awareness of changes in education. These processes are caused by the challenges of the digital age and the unwillingness of the teaching staff and students to use digital content.

Education in the Republic of Kazakhstan faces challenges on many fronts. On the one hand, teachers have introduced the blended learning approach in education, but on the other hand, they adhere to the traditional classroom approach [17]. Education means interaction between students (subject and object relations), knowledge acquisition

(teachers provide students with ready-made knowledge), the development of educational and methodological material (without taking into account the interests and needs of students), etc. These problems require a complex approach to be solved and it is not enough to introduce blended learning in the educational process of higher educational institutions. The adapted blended learning models should meet the technical capabilities of universities and the specifics of educational programs, the interests, and needs of all participants of the learning process.

In the context of researching the possibilities of implementing blended learning in the educational system of Kazakhstan, a scientific gap exists due to the limited volume of empirical studies aimed at examining specific aspects of this pedagogical approach within the unique conditions of the country. Existing research often fails to encompass the variability of technical resources in universities, the adaptability of educational programs to the needs of students and instructors, as well as the consideration of societal and cultural elements crucial for the effective implementation of blended learning within Kazakhstan's educational landscape [18,19].

This study holds theoretical importance as it systematically brings to light a range of specific factors determining the effectiveness of blended learning within the university environment of Kazakhstan. By analyzing technical, programmatic, and socio-cultural requirements, the research expands the theoretical basis necessary for further scientific inquiry into the implementation of innovative pedagogical approaches. Addressing this scientific gap is crucial for the development and optimization of strategies for implementing blended learning in Kazakhstan's universities, considering the peculiarities and realities of the country's educational landscape.

1.1. Problem Statement

The research purpose is to analyze the efficacy of hybrid education in higher education including the following issues: to identify the best conditions for the introduction of hybrid education, in the Learning pathway of the university using facilitation sessions.

According to the goal, the research objectives were defined as follows:

To identify the student's and teaching staff's satisfaction with the inception of hybrid education in universities.

To examine the needs of all participants of the educational process (teaching staff, students, and administrative staff) in the organization of blended learning at the university using facilitation.

To describe the blended learning in the educational process of the university using the facilitation sessions.

1.2. Literature Review

The introduction of blended learning at universities has become in demand after the COVID-19 pandemic [20]. Blended learning practices were found to be very effective for use in teaching, as well as for increasing students' interest and interest in exploring a topic. Teachers argued that the balanced use of remote and onsite learning practices is required if the curriculum is well-structured, taking into account the available resources and constraints [21]. The post-pandemic survey findings indicated that integrating digital, traditional, and in-person education fostered a positive environment for students, educators, and parents [22,23].

Given the magnitude of the information and communication changes currently taking place in the world, blended learning is helping to transform the educational process, thereby providing completely different opportunities and conditions that will be needed by all learners in new situations [24,25]. In these circumstances, blended learning is seen as a progressive breakthrough in this transformation. At its core, blended learning is an opportunity for teachers to meet the learning needs of all students, not just those who do well in school, and to bring teaching and learning into the digital age [26].

Among the main advantages of this training, researchers emphasize the following: each learner gets the opportunity to learn the necessary knowledge and skills in a convenient format [27]; planning and understanding what needs the training should meet and what results it should produce [28]; providing effective tools for learning management, a variety of didactic approaches [29]; improving the quality of learning (including through the use of more effective learning tools) [30]; increasing student motivation [31]; flexibility of the educational trajectory, the priority of a student's independent activity [32]; integration of online and offline reusable learning and teaching content [33].

There is no single definition of blended learning in scientific literature. However, in general, researchers believe that blended learning is learning that combines online and face-to-face course components into a single curriculum [26,34]. Scholars concurrently underscore that all elements of hybrid education should be interrelated and form a comprehensive study program. The student selects the timing and speed of their education, bearing responsibility for the outcomes. Consequently, the concept of hybrid learning is less about incorporating online components and more about empowering students with the autonomy and accountability to determine when, how, at what pace, and where they engage in their studies [35].

The scientific literature identifies several models of blended learning: rotational (Rotation Model), flexible (Flex Model), independent selection (A la carte Model), and virtual learning enhanced by in-person instruction (Enriched-virtual model). Most scholars recognize two primary models: rotational (with various subtypes) and flexible. In Kazakhstani universities, the rotational model (Rotation Model) is employed, where the majority of instruction occurs in the classroom, while student activities are shifted to the online environment for a specified duration. According to researchers, the distinct feature of this model is the precise allocation of time between individual e-learning, which is conducted with remote support from an instructor, and classroom learning with the teacher present. It is noted that the

main approach in the application of the rotational model of blended learning is the ratio of traditional and electronic learning, the degree of independence of students, and targeting. In general, it is fully adapted and effective for countries where it originates in the development (the USA, the UK) [36,37] what cannot be said about countries that tried to introduce a ready-made blended learning model in the education system of their country? This is confirmed by the research conducted in Turkey at Karadeniz Technical University [38,39], where a comparative analysis of the impact of blended learning and traditional face-to-face learning on student learning effectiveness was conducted. The results showed that face-to-face courses were more effective in terms of sustained persistence than blended courses. In this regard, the scholar concluded that new, adapted approaches to blended learning are needed to increase sustainability and consistency in process and outcome, especially when teaching complex disciplines that require intensive cognitive processes. In this regard, when blended learning is understood and applied carefully, it will prioritize and take precedence in student and faculty choices [40].

Learning, based on the traditional model or distance learning only, cannot be fully successful, because each student has their learning style and needs a unique approach to learning [41]. There are three learning styles: visual, auditory, and kinesthetic. Students with an auditory or visual learning style prefer electronic learning, and those with a kinesthetic learning style prefer face-to-face education [42].

The effectiveness of blended learning in the context of new teaching and learning methods to improve academic performance and develop students' critical thinking is proven in the use of problem-based learning. By combining a problem-based learning model and a blended learning approach, it is possible to overcome the limitations of face-to-face classroom meetings and achieve a better understanding of the material as well as improve students' ability to communicate and teach them to think creatively with the help of technological advances [43,44]. Research shows that blended learning facilitates learning by providing a variety of learning resources tailored to individual student's learning needs [45,46].

Hybrid education is currently the most widely adopted educational format at present, but eye contact with both classmates and a teacher remains a very important element for students [42]. Students prefer real-time online lectures to watching pre-recorded videos. Students also admitted that synchronous online communication at seminars was difficult and inefficient for them [42].

The challenges and shortcomings of online learning during the COVID-19 pandemic have motivated many higher education teachers to develop their technical skills and adapt to an online learning environment. Lecturers from Complutense and Rey Juan Carlos Universities in Madrid have successfully tested using the Mentimeter software, which provided instant feedback that improved collaborative learning [47]. The digital content has improved the quality of synchronous and asynchronous activities. At the same time, students and teachers admitted the great potential of this program designed for a diverse audience with different experiences and learning abilities.

The researchers pay special attention to the specifics of learning in a network environment taking into account the cognitive, emotional, and social aspects of the learning experience [48]. Educators should focus on the psychological involvement and motivation of students to learn online [49]. Moreover, an integrated model of blended learning based on reflexive thought processes, associations, and comprehension is available [50]. Its cognitive component includes the active involvement of students in learning by providing them with the possibility to choose information when solving academic problems. This approach gives value to the knowledge gained by students.

The motivational aspect is based on actions focused on the knowledge of their self-esteem and three psychological needs: autonomy, control, and compatibility. The emotional aspect encourages positive and healthy emotions of students for learning. Last but not least, the social learning component of this model aims to improve the effectiveness of learning through human interaction depending on collaboration, feedback, guidance, and simulation.

The experience of international researchers shows that strategies promoting the involvement of students in the educational process increase attendance and reduce stress caused by the pandemic restrictions [51-53]. Researchers pay special attention to facilitation sessions for risk prevention and prospects in education [54,55]. The facilitation method is effective in improving the outcomes of educational activities of students and undergraduates [56]. Facilitation promotes the interaction of all parties involved in the educational process (students, teachers, administration, and potential employers) [57]. Facilitation sessions enhance the perception of educational activities, and increase the involvement and interest of students and teachers in education [58,59].

The analysis of the international experience of blended learning implementation in educational institutions showed a wide range of different models, methods, and means that increased the effectiveness of this learning format. Thus, many aspects of blended learning have not been researched in detail. Knowledge gaps relating to the conditions important for blended learning implementation exist. The best approaches to learning should meet the technical capabilities of the university and satisfy the interests and needs of all parties involved in educational activities in the post-pandemic period. The present research identifies the best conditions for blended learning implementation using facilitation.

2. Materials and Research Methods

2.1. Sample

The research took place between September 2020 and May 2021. It involved students, teachers, and the administrative and managerial staff (AMS) of five universities in Kazakhstan: the Abai Kazakh National Pedagogical University, the Amanzholov East Kazakhstan State University, the Kazakh National Women's Pedagogical University, the Kazakh National University of Arts, the Kozybayev North Kazakhstan State University. The sample consisted of 920 individuals, including 540 students, 330 teachers, and 50 representatives of the administrative staff (vice-rectors, deans, and department heads). The average age of the teaching staff was 45 years. There were 120 social sciences and humanities teachers, 100 technical specialties teachers, and 110 teachers of creative specialties. The average age of the administrative and managerial staff (5 vice-rectors, 18 deans, and 27 department heads) was 50-55 years. The facilitators were members of the research group who did not work at the university where facilitation took place. The facilitation sessions at each university lasted 3 days for 4 hours each day, in groups of 50-60 participants.

2.2. Survey

Using the facilitation approach, this empirical research identified the best conditions for adopting blended learning in universities. The three stages of the research are as follows.

The first stage (ascertaining) was aimed at determining the degree of satisfaction of students, faculty, and AMS with the application of the existing model of hybrid education in higher education institutions. For this purpose, an online survey was used. The survey procedure was carried out remotely, in the absence of direct contact of the subjects with the researcher, with the help of Google Forms, which increased the reliability of the survey, namely constancy (independence of the results from the personality of the experimenter), clear instructions on the procedure of the survey were given. The logical structure of the survey contained an introductory part (address to the respondents, name of the organization, social status (student, teacher, or AMS), and the practical importance of the tasks of the study) and the main part, consisting of three questions aimed at solving the tasks of this study. The questions of the questionnaire were of open-ended type, and they involved free responses from the participants of the online survey:

Do you support the idea of implementing blended learning at your university?

Are you satisfied with the blended learning experience at your university? Why?

Have you experienced any difficulties in using blended learning? If so, please list them.

To increase the reliability and sincerity of the answers, the demographic part (aimed at finding out the personal data, gender, age of the respondents, etc.) was not included in the survey, only the social status was indicated. Data processing was conducted through a quantitative and qualitative analysis, where the percentage of the degree of satisfaction with the existing organization of blended learning in universities and the difficulties of the subjects of the learning pathway in the implementation of blended learning was calculated. The validity of the obtained results was ensured by the method of expert evaluations.

The second stage, the formative stage, includes direct facilitation activities to determine the optimal conditions for the implementation of blended learning. For this purpose, the authors used World Café [60] and Future Search by Weisbord [61]. The selected tools allow scholars to collect information, analyze problems, generate ideas, develop and evaluate solutions, reach consensus, make decisions, and plan actions. The World Café method was used as an additional method of qualitative in-depth authentication of the results of the online survey, as well as a preliminary collection of information, sharing knowledge and experience. The format was adapted to the study purpose. Given the power relationship between students, faculty, and AMS staff, information was collected separately among the representatives of these groups (5-7 people at a table), with the research team members playing the role of "café master", recording information, asking clarifying questions, and passing what they had learned to the subsequent groups. The discussion topics were divided into two independent groups. The first group includes qualifying questions related to the results of an earlier online survey:

In your opinion, what are the main advantages and disadvantages of blended learning? And why?

How does the blended learning system affect your independent study time?

What do you not like about the blended learning organization? The communication style? The methods? Something else?

In blended learning, how do collaboration and reciprocal information exchange occur?

The second group of questions concerns the strategy and prospects for the development of blended learning in the university:

Why do we need to discuss the use of blended learning in the educational process?

How to create an effective information and educational environment with a blended learning system? And what should be done to improve the quality of blended learning implementation at your university?

What should be the administrative support for the implementation of blended learning in higher education?

What is the optimal ratio of traditional and distance learning?

Data processing was carried out by the method of expert evaluation.

The Future Search method was used to formulate and discover the general foundations of the conditions put forward for blended learning implementation. The format was in the form of a conference, which consisted of three phases: 1) analyzing the proposed strategies and perspectives for blended learning, 2) finding common ground and formulating optimal conditions for implementing blended learning, and 3) voting and ranking.

The third stage (analytical) involves determining the optimal conditions for the implementation of blended learning, which would meet the interests and needs of all subjects of the educational process. At this stage, generalization and systematization of the ranking results were carried out and based on the data obtained, a correlation analysis was carried out to determine the degree of student, faculty, and AMS satisfaction with the conditions of the educational process in the format of blended learning.

2.3. Research Design

The following methods were used:

To generalize and systematize the primary data of the online survey, quantitative and qualitative analyses were used [62]. The scholars calculated the percentage of blended learning satisfaction and the difficulties faced by students while learning.

The method of expert evaluation is to process the information collected during the online survey and World Café [60]. The main criteria were the frequency of repeated opinions, ideas, and similarity in meaning. Leading university scientists acted as experts.

A ranking was used to assess the degree to which one agreed or disagreed with each condition put forward, which included 5 gradations:

Strongly disagree (0 points)

Disagree (1 point)

Neither agree nor disagree (2 points)

Agree (3 points)

Strongly agree (4 points)

The results were calculated using the following formula:

$$P_c = \frac{c}{n-1} \quad (1)$$

where C is the average value of the preferable condition, and n means the number of conditions identified by participants.

Spearman's correlation analysis was used to identify the best conditions for the blended learning implementation that satisfied all participants of the educational process [63].

The following formula was used to calculate the data:

$$p = 1 - \frac{6 \times \sum(D^2)}{n \times (n^2 - 1)} \quad (2)$$

where n is the average value of satisfaction of students, teaching staff and AMS employees for the preferable conditions, based on the ranking; means the difference between the ranks of the two variables for each subject; is the sum of the squares of the rank differences.

2.4. Statistical Processing

The processing of empirical data was performed using the Statistica 6.0 computer program.

2.5. Research Limitations

Blended learning facilitation depends on the facilitators' competence which can affect the research outcomes. In some areas, the implementation depends on the financial resources of the university.

2.6. Ethical Issue

The research instructors followed all ethical principles of facilitation: the mandatory collective adoption of the rules to create a safe research environment, the neutral position of the leader-facilitator, cooperation rules, etc.

3. Results

Table 1 presents the results of an online survey conducted to measure how satisfied students and the university staff were with the introduced blended mode of teaching and learning. Except for the small group of teachers, who accounted for 13% of the respondents, all participants supported the idea of adopting blended learning. Nevertheless, more than half of the students (58%) and teaching staff (65%) were not satisfied with the execution. Not to mention that every second student (50%) and most of the teachers (80%) experienced difficulties with the online component of blended learning. AMS employees (74%), on the other hand, were certain that the implementation of blended learning ended up being successful.

Table 1. A summary of results from an online survey measuring satisfaction with blended learning at Kazakh universities

No	Social groups	Students (n = 540)		Teaching Staff (n = 330)		Administrative and managerial staff (AMS) (n = 50)	
	Questions	Yes	No	Yes	No	Yes	No
1	Do you support the idea of adopting blended learning in your university?	540 (100%)	-	287 (87%)	43 (13%)	50 (100%)	-
2	Are you satisfied with how the blended learning in your university is executed?	227 (42%)	313 (58%)	116 (35%)	214 (65%)	37 (74%)	13 (36%)
3	Did you experience any difficulties using the blended learning approach?	269 (50%)	271 (50%)	264 (80%)	66 (20%)	10 (20%)	40 (80%)

The results of the quantitative and qualitative analyses show that many respondents who gravitated towards the blended mode of learning emphasize its positive effects on how the educational process is organized (44%), on the technical competencies of those involved in the process (38%), and on the quality of educational services altogether (33%). Teachers who did not support blended learning (13%) explained their position by saying that hybrid education has had a rather unfavourable result on the communication skills of pupils. Fig.1 presents a summary of arguments made by the respondents in favor of and against blended learning adoption.

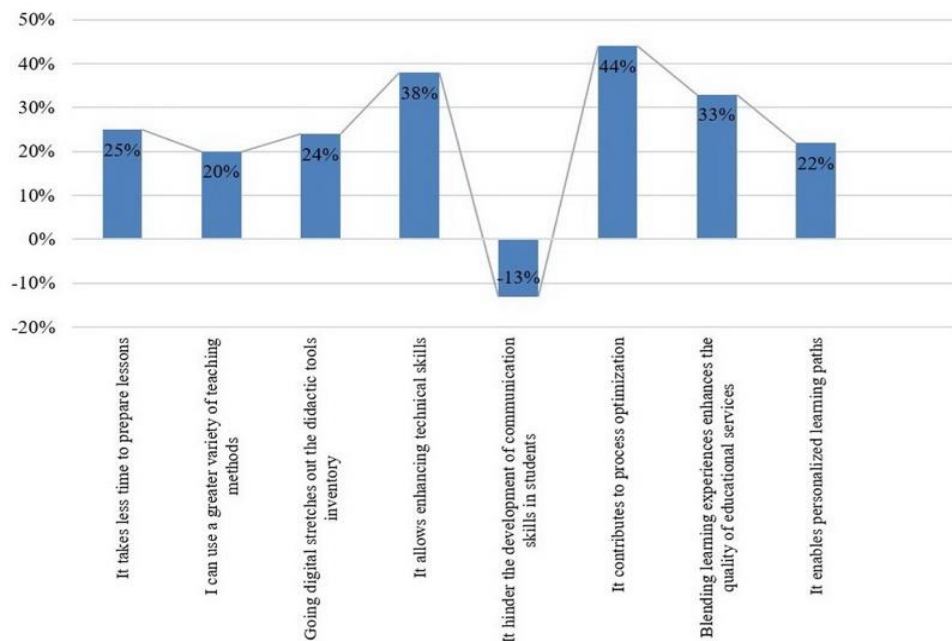


Fig. 1. Results from the quantitative and qualitative analyses of the survey data explaining why universities should adopt blended learning

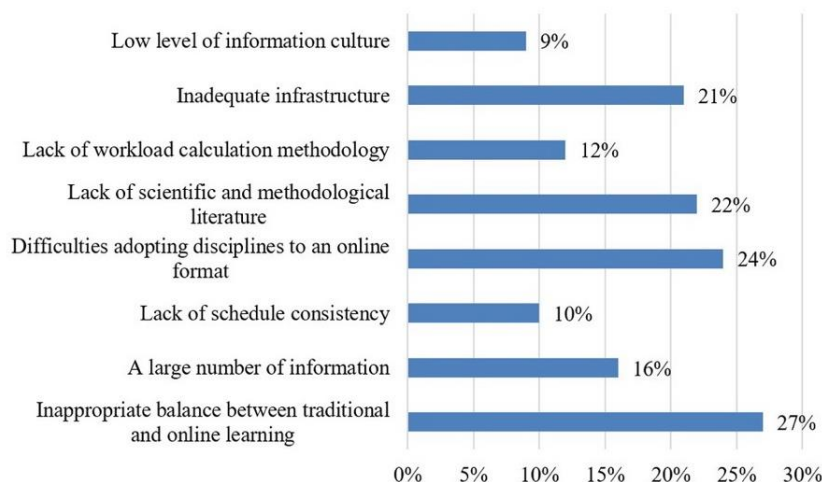


Fig. 2. Factors that lead to dissatisfaction with blended learning in the university

Fig. 2 showed that dissatisfaction with blended learning was a result of several factors. First, there was an inadequate equilibrium between in-person learning and remote education (27%). Second, it appears that online education creates a need to convert certain disciplines into an electronic format. However, some academic disciplines were defined as too specific to bring them into an online space (24%). Besides, the structure of hybrid education itself should be redefined, as indicated by 21% of the respondents.

According to the students, the main challenges in the introduction of hybrid education were the lack of interpersonal communication (58%), inadequate adaptation (54%), and the difficulty of learning new things in an asynchronous class format (47%). Teachers emphasized other problems: work overload (48%), which stems from the need to prepare for online lessons, low information and computer technology (ICT) competence (52%), and inadequate teaching methods non-adapted to the electronic form (34%). AMS employees experienced difficulties providing support to teachers and students engaged in blended learning (32%) and monitoring the learning process continuously (43%). The complete list of challenges is presented in Fig.3.

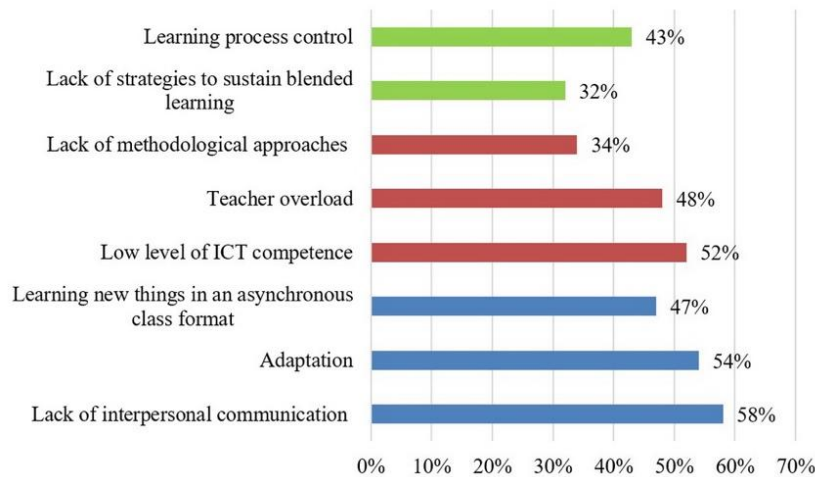


Fig. 3. Challenges experienced by students (blue), teachers (red), and AMS employees (green) in the adoption of blended learning

Table 2 presents the main key trends (ideas, opinions) put forward by AMS students, faculty, and staff during World Café Expert evaluation of the information confirmed the main results of the earlier online survey: the positive perception of blended learning, in the presence of shortcomings and difficulties in the application of hybrid education in the university. To eliminate existing problems and effectively implement blended learning in the educational process subjects, the following strategies and perspectives were proposed:

- organizational and managerial (reconsider the ratio of traditional and distance learning, organize a series of master classes "Subject Maker" for faculty, etc.),
- scientific and methodological (elaborate electronic resources and use interactive digital content),
- information and technology (strengthen the material and technical base of the university, restructure the space of classrooms),
- didactic (provide a variety of active forms of work with the learning material),
- psychological and pedagogical (organize psychological support of the educational process in the format of hybrid education, conduct special pieces of training).

Table 2. Results of expert evaluation of information received in the World Café process

Stages of information gathering	Advantages of blended learning	Disadvantages of blended learning implementation	Strategies and Perspectives on Blended Learning at the University
Groups			
Students	Learning is more interesting; Saving personal time; The ability to plan independent work and distance learning from any location; More information; Individual trajectory building.	Lack of communication with peers and with teachers, providing large amounts of information at once, confusion in the schedule, inadequate supply of e-learning with learning and instructional materials, server failures. Difficulties in adapting to the format of blended learning, in the perception of learning material in asynchronous form. Dependence on technology, broadband Internet.	It is necessary to organize psychological support of the educational process in the format of blended learning, strengthen the material and technical base of the university, put the schedule of classes earlier on the university website, reconsider the ratio of traditional and distance learning. The tasks used should provide a variety of active forms of work with the learning material.

Faculty	Efficiency; increasing ICT literacy and flexibility of the learning process; increasing students' motivation for independent work; eliminating gaps in knowledge; multisensory character; interactivity; continuity	In the ratio of traditional provision and distance learning; Deficiency in teaching methodology in the digital environment, compulsory system of professional development in the field of electronic technologies; impossibility of transformation of some disciplines in electronic format; providing feedback; requires more time and, consequently, is more expensive, as the faculty is charged by service providers for light, Internet, etc.	Computer literacy courses are needed. It is necessary to motivate students to study independently. To do this, one needs to revise the point-rating system for evaluating students' learning achievements. Electronic resources should be carefully developed, and interactive digital content should be used.
AMS	Optimization of the educational process; improving the quality of professional training; no bias on the part of faculty; taking into account different needs; eliminating the need for classrooms as well as reducing the cost of print resources.	Large costs of material and technical equipment and resources, unpreparedness of teachers to provide e-learning; knowledge deficit of the prospects and the need to use blended learning; lack of a sufficient number of highly skilled programmers to address the multifactor problems of informatization of the university.	One should conduct special trainings, in which instructors will explain and show how to work on a particular platform. Online platform courses should be constantly updated. For this purpose, a series of master classes "Subject Editor" should be organized. One should restructure classroom spaces (e.g., zoning the space using the "changing work areas" model, equipping classrooms with computers, purchasing mobile devices for students).

Table 3 shows the conditions of blended learning according to the participants.

Table 3. Conditions of blended learning

No	Things to have in place when adopting blended learning, suggested by the participants of the facilitation sessions	Number and percentage of suggestion occurrences, n = 920	
1	Modern University Infrastructure: The university has to modernize its infrastructure by purchasing software with a multilingual interface.	478	52%
2	Appropriate Balance between Traditional and Distance Learning: A well-balanced blended learning program should contain a varying proportion of conventional face-to-face and online learning experiences. The proportion will vary between academic disciplines: humanities, 70 vs 30%; technical disciplines, 60 vs 40%; and creative disciplines, 80 vs 20%.	890	97%
3	Digital Content: Teachers should use virtual reality tools, gamification software, and other technologies to produce interactive content.	824	89%
4	Additional Interactive Activities: Teachers and students should have a broad range of tools and solutions to interact with each other (such as webinars, online quizzes, competitions, consultations, etc.).	785	85%
5	Advanced Training Courses for Teachers: The teaching staff and AMS must participate in computer literacy courses to improve their technical skills.	467	50%
6	Electronic Library Updates: The electronic library and repository should contain the up-to-date literature on advances in pedagogical science to familiarize teachers with scientific and methodological recommendations for teaching in a blended learning environment.	518	56%
7	Regulation Policies Development: It is crucial to create blended learning policies for universities to ensure a fair and adequate evaluation of students.	415	45%
8	Module Structure: The learning material needs to be divided into modules based on the didactic purpose and the choice of interactive teaching aids and methods.	398	43%
9	Physiological Support: Those engaged in blended learning need support that requires psychological intervention.	878	95%

Fig. 4 presents a list of requirements imposed by respondents to a blended learning campaign, ranked from most to least important. Most students found it satisfactory with the psychological support they got in the blended learning environment (C=8.3). For the teaching staff, the most preferable thing to have in place is the advanced training courses (C=8.2). Finally, AMS focused more on the possibility of using and generating digital content using virtual reality tools and gamification software (C=8.1).

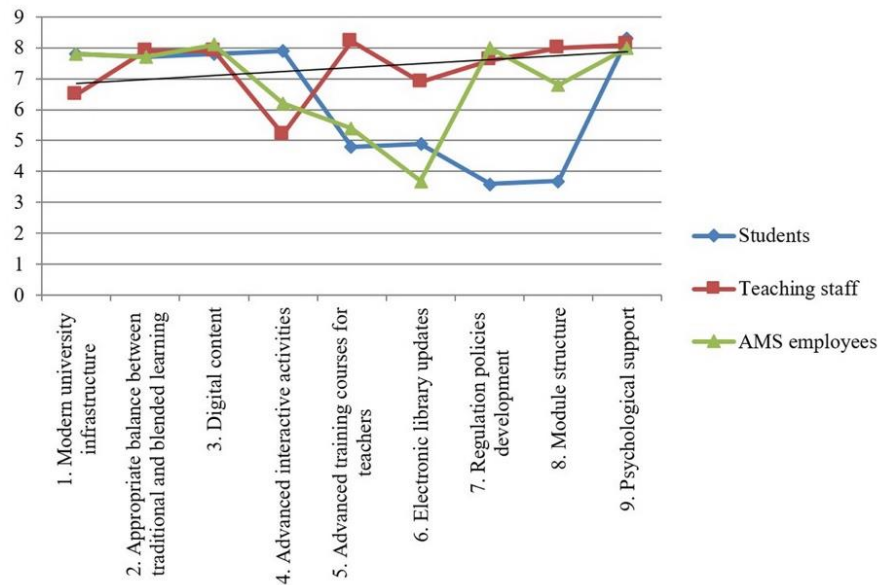


Fig. 4. Requirements for implementing successful blended learning (as seen by students, teachers, and AMS)

Correlation analysis shows a strong relationship between student needs for well-balanced blended learning and those of the teaching staff ($r=0.886$, $p \leq 0.05$) and AMS ($r=0.864$ at $p \leq 0.05$, Fig.5). The correlation found between teachers and AMS employees ($r=0.879$, $p \leq 0.05$) was also strong. A similar trend can be observed for the requirement of psychological support. A strong correlation exists between student satisfaction with psychological support and that of teachers ($r=0.741$, $p \leq 0.05$) and the AMS ($r=0.739$, $p \leq 0.05$). The correlation found between teachers and AMS was also strong ($r=0.736$, $p \leq 0.05$). Student satisfaction with digital content was strongly related to that of the teaching staff ($r=0.711$, $p \leq 0.05$) and AMS ($r=0.706$, $p \leq 0.05$). Another strong association was found between the levels of digital content satisfaction of the teaching staff and AMS ($r=0.709$, $p \leq 0.05$).

The degrees of correlation across other variables were generally moderate, according to the Chaddock scale, and varied from $r=0.456$ ($p \leq 0.05$) to $r=0.648$ ($p \leq 0.05$). Exceptions were the relationships between advanced training satisfaction of teachers and AMS and between student satisfaction with the structure of the blended learning program and that of teachers (the latter is not reliable, $p > 0.05$).

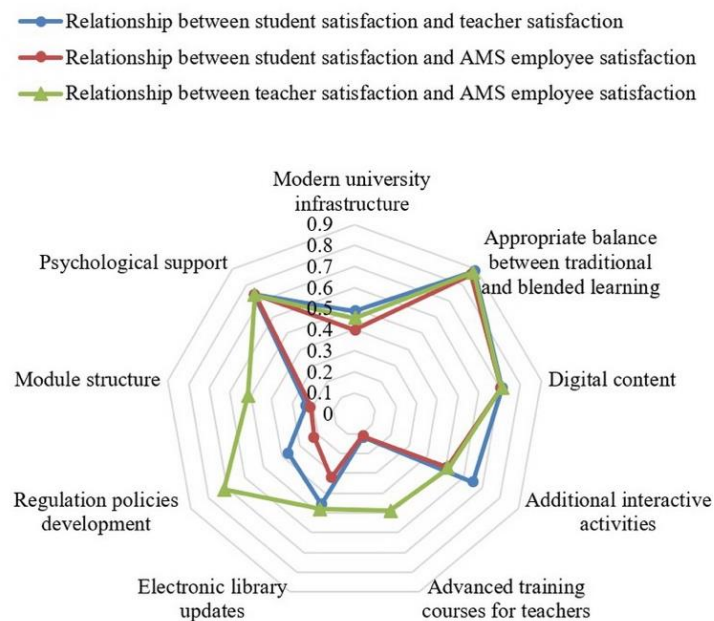


Fig. 5. Correlation between levels of satisfaction with different aspects of blended learning expressed by students, teachers, and AMS

4. Discussion

The results of this study provide a unique perspective on blended learning in Kazakhstan. A high percentage of students, teachers, and AMS, who support the idea of incorporating blended learning, coincides with previous research, where under the COVID-19 pandemic restrictions, individuals gravitate towards blended learning more [64]. Blended learning during the COVID-19 pandemic was an alternative method of teaching, a very effective, efficient approach to boost teaching quality [65].

Blended learning promotes integration [66], optimizes educational activities, and improves the quality of professional training [67]. The online survey analysis showed that blended learning allowed participants to build their educational trajectory and save time while preparing for lessons. The teaching staff and AMS highlighted the opportunities to develop technical skills, employ a variety of didactic tools, optimize the learning experience, and improve the quality of academic offerings. The conclusions obtained are consistent with those of other studies [68,69].

The level of satisfaction with blended learning varies between respondents. Unlike the university management (74%), more than half of the students (58%) and teachers (65%) were not satisfied with the introduction of blended learning. The said disagreement stems from the lack of feedback between the participants in the facilitation sessions. Feedback is an integral part of effective learning [70]. The literature emphasizes that the role and desire of a student to receive feedback are of vital importance [71]. Hence, it is crucial to meet the basic needs of students. The main goal is to help them understand that they make a valuable contribution as members of the learning community. It will enhance their satisfaction [72].

The discrepancy in satisfaction with the implementation of blended learning in Kazakhstan is revealed due to the influence of several factors. The outbreak of the COVID-19 pandemic prompted a rapid shift to blended learning, yet many instructors and students were not prepared for this format. Complex conditions, such as the lack of experience and technical resources among instructors, as well as bureaucratic hurdles from the Ministry of Education, created barriers to successful implementation. An important factor identified is the absence of methodological support and low levels of ICT skills. The study emphasizes the need to adapt recommendations to specific technical and cultural conditions, facilitating the transition from traditional to innovative approaches in the educational process.

The reasons for dissatisfaction with blended learning were an inadequate equilibrium between in-person and remote education (27%), problems with some disciplines that cannot be translated into an online format (24%), the lack of blended learning guidelines (22%) and literature on technical issues (21%). Some AMS (9%) admitted the low level of information culture among teachers. The blended learning sessions were ill-planned. For instance, schedules did not match (10%), and it led to confusion among the students. There was no methodology for calculating the workload of teachers engaged in blended learning (12%). Students (16%) reported seeing didactic errors in the learning materials that have been uploaded to the e-learning platform. Moreover, teachers provided them with too much information, and it was difficult for students to absorb it. The shift to a blended learning format thus requires serious didactic intervention and awareness of the innovations introduced by the university administration.

Previous research suggests that the transition to blended learning under the COVID-19 pandemic restrictions comes with challenges for both students [73] and teachers [74]. The present study coincides with these conclusions. The most common problems experienced by students were psychological problems [75-77]. The problems identified by teachers and AMS were of a technical [78] and didactic nature [79]. Even though the sample was big enough (540 students, 330 teachers, and 50 AMS), 58% of students struggled with interpersonal communication and 54% deemed it hard to adapt to the novel learning mode. Teachers experienced difficulties associated with the low level of ICT competence (52%), and AMS had trouble supporting the cohesion of the blended learning process (32%) and monitoring the educational process (43%).

The use of the facilitation approach in higher education contributes greatly to the development of an easily adaptable and inclusive learning environment [80]. The integration of the World Café method into the research design facilitated a qualitative authentication of the earlier online survey results and, through collaborative discussion, allowed AMS to assess the organization and implementation of blended learning more objectively at universities, which, through dialogue, acknowledged the gaps and challenges that existed. In addition, the use of World Café as an additional initial method in the research provided an opportunity to identify key trends important to participants, which allowed one to formulate questions for the next Future Search event. The results confirm the scientists' conclusions [81] that the World Café process encourages a broader exploration of the research topic and generates a wealth of ideas, thereby benefiting the participants themselves as well. However, one criticism of the World Café method is that it can contribute to focusing discussions on the positive [82]. Therefore, it was decided to differentiate groups of participants by social status affiliation.

Contemporary research increasingly emphasizes the significance of blended learning in enhancing students' academic skills. Fundamental conditions significantly enhance the stakeholders' engagement in educational processes and serve as a stimulus for creating the most reliable environment.

The analysis of scientific literature on the optimization of the pedagogical process allows educators to choose the best solutions [83]. According to the correlation analysis, the best conditions that meet the needs of all participants of the educational process are the appropriate balance between traditional and distance learning, psychological support, and digital content generation. The highlighted optimal conditions are also recommended in previous studies, namely

the right integration of in-person and digital learning, which can engage students actively and creatively [84], a good command of information technology by teachers, which will significantly affect the quality of teaching in a blended learning format [85,86].

5. Conclusions

The present findings suggest that the transition to blended learning requires universities to redefine their didactic methods and recognize the current changes in education. Although many students (100%), teachers (87%), and AMS (100%) support the idea of shifting towards blended learning, more than half of the students (58%) and teachers (65%) are not satisfied with how this transition goes. The university management (74%) generally tends to disagree. Meantime, every second student (50%) and teacher (80%) experienced difficulties handling this learning model. Other countries experience similar problems. These challenges have a great impact on most disciplines and prevent the effective implementation of blended learning.

Facilitation sessions revealed which factors the students and university staff deemed crucial here. Special attention was paid to organizational, managerial, scientific, methodological, technology-related, didactic, psychological, and pedagogical aspects. The rate of positive responses ranged between 43 to 95%. The findings of the study show that the participants of the facilitation sessions gave their preference to those requirements that could make it easier for them to transition and handle the blended learning approach. According to the results of the correlation analysis, the top three requirements for adopting blended learning that met the needs of and satisfied all respondents were the appropriate balance between conventional face-to-face and online learning, the provision of psychological support, and the use of technology to generate digital content.

The obtained results can be utilized by various stakeholders to enhance the implementation of blended learning in higher education institutions. The findings may be used by the Ministry of Education to shape national standards and recommendations for blended learning adoption in higher education institutions. Additionally, the Ministry may allocate additional funds and resources to support universities in transitioning to blended learning. University administrations can implement strategies for transitioning to blended learning that address current challenges and levels of satisfaction among students and faculty. Given the high level of dissatisfaction with the transition process, administrations may review their policies and offer additional support, including technical and methodological assistance.

Furthermore, the results can be employed to organize training sessions and seminars aimed at improving teachers' skills in utilizing blended learning methods. Based on teachers' experiences, methodological recommendations and guidelines can be developed for more effective implementation of blended learning. Student organizations can use the results to prepare proposals and recommendations for improving learning conditions and addressing identified issues. Support and adaptation programs for students to adjust to new learning conditions can be organized based on the results. These findings provide valuable information for various stakeholders, contributing to the enhancement of educational quality and the effectiveness of blended learning implementation.

Based on the findings the research recommends involving all participants in the teaching and learning process when adopting the blended learning mode. As it allows for meeting the interests of all, the final version of the blended learning program will be more effective than it would otherwise be. Using the facilitation approach, in this case, will provide the necessary feedback and enable the formation of opinions regarding the environment in which the adoption of blended learning can be beneficial. Hence, it should be considered as one of the most promising tools used in vocational education for research purposes. Further research in this field is still required.

The conclusions drawn provide valuable insights into the prospects of implementing blended learning across various educational contexts. Further research could delve deeper into how these findings may be adapted to higher education, secondary education, technical, and vocational training. For instance, in a university setting, it is crucial to explore how blended learning strategies can optimize students' academic experience and contribute to their preparation for the contemporary job market. In technical and vocational schools, research could investigate how these approaches can effectively integrate theoretical knowledge with practical skills.

It is also important to consider cultural and regional peculiarities that may influence the effectiveness of implementing blended learning within individual educational systems. Local studies can provide insights into adapting teaching methods to the specific needs of diverse student groups and accommodating the features of the regional environment. Such an approach allows for the development of tailored strategies for different educational scenarios, fostering flexibility and effectiveness in the application of hybrid education from a worldwide perspective.

The feasibility of learning in various educational institutions requires further detailed discussion, and this aspect will be taken into account in subsequent research.

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