Journal of Information Technology Management
ISSN-OnLine: 2980-7972
University of Tehran

Blended Learning in Higher Education: Key Challenges

Atefeh Ghofrani

Ph.D. in Educational Management, Faculty of Psychology and Education, University of Tehran, Tehran, Iran. E-mail: at.ghofrani69@ut.ac.ir

Fatemeh Narenji Thani*

*Corresponding author, Associate Professor, Faculty of Psychology and Education, University of Tehran, Tehran, Iran. E-mail: fnarenji@ut.ac.ir

Mohammad Lohrasbi

Master's student in Planning and Administration of Higher Education, Faculty of Psychology and Education, University of Tehran, Tehran, Iran. E-mail: mohammad.lohrasbi@ut.ac.ir

Journal of Information Technology Management, 2025, Vol. 17, Issue 3, pp. 18-40
Published by the University of Tehran, College of Management
doi: https://doi.org/10.22059/jitm.2025.374767.3883
Article Type: Research Paper

Received: February 28, 2025
Received in revised form: April 19, 2025
Accepted: July 16, 2025
Published online: August 23, 2025

Abstract

Blended learning is a pedagogical approach that combines face-to-face instruction with online activities and has garnered significant interest in recent years. Despite the potential benefits of blended learning, it faces several critical issues that may dampen stakeholders' enthusiasm within universities. Consequently, the current study explores the key challenges of blended learning in higher education institutions. The data for this research were collected through a qualitative approach, using a descriptive phenomenological method and semi-structured interviews with experts in the field. The findings were then analyzed using Colaizzi's (1978) seven-step method. During our research, interviews were conducted with 14 experts in the field through purposeful sampling. From these comprehensive discussions, a total of 112 significant statements were identified. These statements were then meticulously categorized into ten initial themes, providing a structured overview of the data. Further analysis allowed us to distill the challenges associated with the blended learning approach in higher education into three critical factors. The validity of the qualitative data, based on the four criteria of Lincoln and Guba (1985)—credibility, transferability, dependability, and confirmability—was

examined through re-coding by two independent coders and confirmed. The findings reveal that the challenges associated with implementing blended learning in higher education can be categorized into personal, organizational, and support-related factors. Each of these dimensions encompasses various critical elements. Notably, these research outcomes hold significant potential for facilitating the successful adoption of a pragmatic blended teaching and learning approach within higher education.

Keywords: Blended Learning, Challenges, Higher Education - Teaching and Learning Strategies

Introduction

The fourth industrial revolution, coupled with the integration of transformative technologies into educational institutions (Leavy et al., 2023), has catalyzed the emergence of novel methodologies, including e-learning (Burlacu et al., 2023). Aali et al. (2020) define e-learning as a process through which learners acquire knowledge, construct individual understandings, engage in learning experiences, access learning content, interact with instructors and peers, and receive support via Internet-based platforms. Digital learning environments provide key advantages, including easy access to information, flexibility, and improved academic outcomes, especially during the COVID-19 pandemic. These benefits enhance student engagement, cost savings, and increased learner-centricity (Melati & Harnanik, 2021; Liu, 2023). Consequently, digital learning systems have gained prominence in education, particularly within higher education settings.

However, persisting with an online teaching-learning paradigm presents challenges, including the absence of interpersonal and face-to-face interactions, limited opportunities for developing social skills, a diminished sense of belonging to a community, and the preference for face-to-face communication among professors and students. Furthermore, challenges such as faculty and student resistance to online learning, inadequate proficiency in information and communication technology, content development limitations, delayed feedback and inadequate evaluations, student frustration and anxiety in online environments, lack of motivation to engage with digital content, and insufficient self-motivation skills in digital contexts, alongside the time-consuming and costly nature of online learning for universities and technical hurdles like slow internet speeds, hardware and software issues, digital disparities, and uneven technology distribution, compound the challenges (Eklund & Isotalus, 2024; Yeleussizkyzy et al., 2023; Gaffas, 2023; Al-Gharaibeh et al., 2023; Galagedarage & Indrasena, 2023; Nuuyoma et al., 2023; Amalaraj et al., 2023; Kuhn et al., 2024; Eli-Chukwu et al., 2023; Aissaoui, 2022; Kim, 2023; Narenji Thani et al., 2024), resulting in challenges and adverse psychological effects on learners.

Reflecting global trends, the *UNESCO Global Education Monitoring Report* of 2023 underscores that, in 2021, among over 30,000 learners, 37% opted for in-person learning,

24% for blended, 22% for online, and 17% for print-based approaches. This report underscores how the flexibility of online learning enables learners to tailor their learning experience to align with work and family commitments. Despite the prevalence of in-person learning, the distinctive features of blended learning warrant further exploration (*Global Education Monitoring Report*, 2023).

Blended learning, a combination of in-person teaching and digital environments, has become a key focus in education. While definitions may vary, a common theme is the integration of physical and digital learning spaces, enhancing the learning experience with transformative technologies. Blended learning amalgamates traditional teaching modalities with online learning activities to afford students a flexible and personalized learning journey, enhancing engagement and learning outcomes (Zhu et al., 2020). Many comparable universities worldwide have been at the forefront of integrating blended learning into their curricula. These institutions have shown that blended learning, which combines traditional face-to-face interactions with digital tools, can significantly enhance teaching effectiveness and student engagement. However, their experiences also underscore several challenges in adopting this approach. For instance, despite the promise of innovative learning technologies, universities often face resistance from faculty unfamiliar with digital pedagogy.

Additionally, technical obstacles such as difficulties with software integration, platform compatibility, and the need for robust technical support systems can hinder the successful implementation of blended learning. Furthermore, there is a pressing need for continuous faculty development to equip instructors with the necessary skills to teach effectively in a blended learning environment. While these challenges are significant, the successful implementation of blended learning in higher education institutions provides valuable insights for others seeking to adopt similar models. Blended learning can be deployed across four tiers: "activity-level blending," where learning activities integrate both in-person and digital components; "course-level blending," the most prevalent approach, interweaving face-to-face and computer-based activities within course units; "program-level blending," whereby learners choose in-person and online blends within their academic programs; and "institutional-level blending," representing the comprehensive integration of face-to-face and computer-based education at an organizational level (Graham, 2006, as cited in Müller et al., 2023). Further research and practical experiences are needed to explore institutional-level blending (Graham et al., 2013). Blended learning, which combines modern technologies with face-to-face instruction, enhances cost-effectiveness, accessibility, and academic engagement. It fosters critical thinking, self-regulation, and student motivation (Bock et al., 2021; Li, 2020).

Despite the manifold advantages, adopting a blended approach presents significant challenges, as Kaur's (2013) study revealed. She delineates these challenges into three primary categories: technical, organizational, and instructional design, providing specific instances for each. Technical challenges extend beyond mere technological implementation to

ensure program success through adept technology utilization and support. Institutional challenges involve recognizing that blended learning entails a complex process that exceeds individual program considerations. Instructional design challenges underscore the importance of content creation within stringent time and budget constraints for program success. Kaur (2013) emphasizes the transformative potential of this approach, positing that it can shift learners from passive to active roles by fostering reading, speaking, listening, and critical thinking skills.

In their 2023 study, Bahrami and Nazarzadeh Zare underscored the imperative for university administrators to consider normative, mimetic, and coercive factors within the university milieu when implementing and executing blended learning in teaching-learning processes. They advocated for further integration of blended learning within university settings, suggesting emulation and learning from successful institutions in its implementation. Recommendations included developing university regulations focused on blended learning utilization, fostering a culture of blended learning among faculty, training instructors in blended learning methodologies, providing incentives for its adoption, and allocating educational credits for its use (Bahrami & Nazarzadeh Zare, 2023).

Jafarzadeh et al. (2021) identified changes in instructors' roles and responsibilities, skill deficiencies, and attitudes as challenges of blended learning from educators' perspectives. They emphasized the complexities of designing and implementing blended learning and advised educational decision-makers to take practical steps, including facilitating suitable infrastructure, enhancing professional development, generating appropriate learning content, and prioritizing blended learning.

Various factors, including increased digital technology adoption and internet usage, have propelled the shift towards blended learning, enabling institutions to cater to diverse learning styles (Alammary et al., 2020). However, this transition is not without challenges. Despite its significant advantages, implementing blended learning presents universities with obstacles concerning institutional shifts, structural issues, organizational strategies, policies, and student and instructor concerns (Bruggeman et al., 2021).

In 2023, Shaveta Thakur highlighted several challenges, including high maintenance costs, technology dependency, adverse consequences for educators and learners, plagiarism concerns, reliability issues, and time consumption (Thakur, 2023). Similarly, Bekbaev and Menglibekov (2023) emphasized the need to address the digital gap, provide teacher training, overcome technological obstacles, sustain interaction, and ensure data privacy. They suggested that addressing these challenges could foster a fairer and more efficient educational landscape.

Muthuraman et al. (2020) argued that universities face obstacles such as a lack of experience and technical, methodological, and organizational knowledge among teachers, managers, and learners. Additionally, students' time management and technological

proficiency, inadequate support for professional development, and the challenge of establishing a supportive learning culture are significant barriers.

Gqokonqana et al. (2022) highlighted challenges based on students' experiences, including weak technological backgrounds, limited internet access, difficulty accessing educational materials, and restricted library resource access. They suggested personalized learning management systems and collaboration with internet service providers to ensure stable connectivity.

Karimi and Mohsenizadeh (2019) identified challenges in implementing blended learning in medical sciences, including content quality, standardized courseware, resistance to change, managerial difficulties, and resource limitations. Administrative challenges such as lack of awareness, policy formulation, instructor preparation, and educational quality assurance were also noted.

Alkaabi et al. (2023) found that rotational blended learning positively and negatively affected university professors. While high self-efficacy led to competence in teaching domains, its introduction caused uncertainty among teachers about their profession. Bisriyah (2020) highlighted challenges such as time commitment, technical issues, teaching complexity, role transition, and communication deficits associated with blended learning implementation.

Conversely, Osadcha et al. (2023) reported a positive attitude among German scientists towards electronic teaching tools, emphasizing their importance based on relevant experience with information and communication technology.

Studies assessing blended learning's impacts on learners emphasize the need for specific data collected after extensive utilization of this method. Meta-analysis studies, like that by Kumari et al. (2023), indicate significant influences on students' digital literacy and creativity, underscoring the limitless potential for students and teachers in the learning process.

As educational institutions advance, there is a notable inclination towards the increasing adoption and implementation of blended learning methodologies, underscoring the critical imperative to address the challenges inherent in this educational approach. This article contributes significantly to the ongoing discourse surrounding the future trajectory of education. It is meticulously crafted to serve as a valuable resource for educators, policymakers, and researchers deeply engaged in educational innovation. The study's findings aim to provide actionable insights to individuals striving to optimize teaching and learning methodologies within the digital era, thereby elevating the overall quality of education.

In this research, the central inquiry revolves around the following question:

1. What challenges are present in implementing a blended teaching-learning approach in higher education?

Methodology

This study employs a qualitative, phenomenological research design. The sampling technique is purposeful sampling, with data collected through semi-structured interviews with subject matter experts selected based on predefined criteria. The participants are academic experts with professional backgrounds in novel learning approaches, including e-learning, hybrid learning, blended learning, and digital learning, or possess practical experience in these domains. To ensure a comprehensive understanding of the research topic, 14 experts who met the selection criteria were interviewed. There is a continuum of interview types, ranging from in-depth and unstructured to structured interviews. Structured interviews are rigid and inflexible; qualitative researchers use unstructured or semi-structured interviews. Given the topic and research objectives, the semi-structured interview method was employed in the present study.

To begin the interview process in the current study, initial planning and actions were taken to coordinate the necessary interview arrangements. The format and location of the interviews were determined according to the interviewee's discretion. Each interview session started with the researcher providing general information about the research topic and objectives, followed by the interview questions, which were asked in general terms according to the research objectives.

The first question, "In your opinion, if a university intends to adopt a blended learning approach, what factors and components should be considered?" was used to gather the interviewee's general opinion about the factors and components that constitute a blended learning model in universities. During the interviewee's responses to each question, if clarification was needed to resolve any confusion or to analyze the interview results precisely, new questions were asked as necessary. Additionally, based on the findings of previous interviews, new questions were designed for future interviews.

After answering the first question, to obtain more accurate results, the interviewee was asked to respond to the question, "Among the factors and components mentioned by you, which ones are the most important?" The average duration of each interview session was 37 minutes. Furthermore, with the consent of the participants, the sessions were recorded, and after the session concluded, the participants' responses were transcribed without any omissions. The analysis of the findings from each interview was conducted immediately after each session. However, to identify the factors and components of the blended learning model for universities, the summarization and analysis of the interview findings underwent several rounds of revision and refinement over 18 months. Once the interview analysis was completed and the factors and components of the model were identified, considering the shift in educational approaches after the COVID-19 pandemic, another interview was conducted to assess whether the change in educational conditions had influenced the opinions of experts in this field.

Sampling continued until theoretical saturation was reached. Data saturation was achieved after conducting 14 interviews. The analysis follows the Colaizzi (1978) method, a systematic seven-step process for qualitative data analysis. The study's validity was rigorously assessed using Lincoln and Guba's (1985) four-point criteria, including triangulation of interview sources to enhance credibility. Confirmability was ensured by adhering to stringent criteria for participant selection, maintaining neutrality during selection, and conducting unbiased result analysis to uphold the integrity and reliability of findings. The research provides a detailed account of its context, assumptions, and methodologies to enhance the applicability of conclusions to similar contexts. Additionally, reliability was further substantiated through independent re-coding by an additional coder alongside the primary researcher.

Table 1. Calculation of reliability between two coders

Number	Interview code	Total	Points of agreement	Non-agreement	Agreement percentage
1	9	16	12	4	75%
2	13	22	17	5	77/27%
3	2	15	11	4	73/33%
4	**Total**	**53**	**40**	**13**	**75/47%**

Table 2. Coefficient of agreement in decoding by research

Number	Interview code	Total	Points of agreement	Non-agreement	Agreement percentage
1	5	5	4	1	80%
2	10	11	9	2	81/81%
3	7	10	9	1	90%
4	**Total**	**26**	**22**	**4**	**84/61%**

Table 3. Research Participants' Information

Row	Field of Study	Job Location	Years of Job Experience	Member of the E-Learning Association and Over 5 Years of Active Presence	Owner of Prominent Scientific Works and Operational Experience in E-Learning
1	Power and Control Engineering	Shiraz University	27	*	*
2	Computer Science	Mehr Alborz Non-Profit Institute	17	*	*
3	Educational Planning	University of Tehran	25		*
4	Computer Science	Iran Research Institute of Communication and Information Technology	20	*	*
5	Educational Management	Shahid Beheshti University	7		*
6	Curriculum	Shahid Beheshti	5		*

	Planning	University			
7	Distance Education Planning	Virtual University of Medical Sciences, Shiraz	26	*	
8	Educational Management	Mehr Alborz Non-Profit Institute	20	*	
9	Artificial Intelligence	Iran University of Science and Technology	20	*	
10	Curriculum Planning	University of Birjand	27		*
11	Computer Engineering	Ferdowsi University of Mashhad	25		*
12	Distance Education Planning	Virtual University of Medical Sciences, Shiraz	15	*	
13	Computer Engineering	University of Teacher Education	15		*
14	Information Technology Management	University of Tehran	6	*	*

The analysis of interview findings involved several steps using the Colaizzi approach:

1. All interviews were read multiple times and transcribed.
2. Relevant sentences and concepts related to the discussed phenomenon were extracted.
3. Meaningful concepts indicating participants' thoughts were derived from each phrase.

An example of the analysis process is illustrated in Table No. 4.

Results and Discussion

Table 4. Key Phrases Sampled from ID Phrases Key Utilizing Colaizzi's (1978) Method

hrases P Key	The Text of the Interview
Negative attitudes towards the e-learning environment persist within educational contexts characterized by conventional pedagogical approaches. This resistance is compounded by decreased positive educational impacts in students' adherence to instructor guidance within blended learning frameworks. Additionally, a decline in active student participation and interaction is noted in e-Learning environments. Key stakeholders often exhibit insufficient familiarity with blended learning methodologies, compounded by educators' lack of necessary perception regarding their efficacy and effectiveness. Technological challenges further impede the evaluation of teachers' performance,	Blended learning, characterized by integrating face-to-face instruction and online elements, promises to revolutionize the educational landscape. However, it also presents many challenges that educators must navigate adeptly. Resistance to change is a common hurdle. Faculty members, entrenched in traditional classroom dynamics, may resist embracing this hybrid model. Similarly, students may doubt the effectiveness of online components, perceiving them as inferior to in-person instruction. Dispelling these misconceptions and highlighting the advantages of blended approaches is paramount. Our educational system has long been anchored in established practices. Blended learning disrupts this status quo, compelling us to integrate tradition with innovation seamlessly. Maintaining the depth of personal connections

exacerbating the aforementioned issues. Unpleasant experiences for educators and learners during the COVID-19 pandemic underscore the urgency of addressing these challenges. Insufficient motivation among stakeholders to transition to blended learning persists, alongside the need for infrastructure investments and financial constraints within educational institutions. Specialized expertise in electronic content production and distribution is imperative, as is the recognition of increased teacher workloads. Perceptions regarding the added value of blended learning remain insufficient among the populace, necessitating attention to changing expectations within reward mechanisms. Furthermore, internal stakeholders exhibit inadequate motivation for embracing new learning paradigms, exacerbated by educators' limited skills in designing lesson plans tailored to blended learning environments. Challenges persist in qualitative assessment and measuring student progress, underscoring the complexities inherent in this educational shift.	while leveraging digital tools poses a significant challenge. Traditionally regarded as mentors, instructors may find their impact diluted in virtual environments, where role modeling and personalized guidance are more challenging to convey. The spontaneity and vibrancy of face-to-face interactions, including discussions and "aha" moments, may diminish online. Designing engaging online activities necessitates creativity, yet the virtual environment lacks the immediacy of the physical classroom. How can we spark curiosity and foster active participation? While learning management systems offer many features, such as discussion boards and multimedia tools, many instructors fail to leverage them fully. Traditional methods of evaluation may prove inadequate in blended settings. Assessing an instructor's effectiveness becomes challenging when a significant portion of instruction occurs online. Budget constraints further strain our efforts, hindering the seamless delivery of blended learning. Balancing in-person classes, virtual discussions, and grading tasks exponentially increases our workload, risking burnout if not managed effectively. For some students, online classes may be a compromise. We must inspire enthusiasm and demonstrate that the virtual environment can be as transformative as traditional settings. Achieving the optimal balance between online and in-person components is an intricate art that varies depending on the subject matter, audience, and context. Traditional examination methods may fail to capture the essence of blended learning. Alternative assessment approaches that respect both realms are necessary. As educators, we must remain adaptable, innovative, and champions of the best of both worlds. Blended learning represents not a compromise but an evolution in education.

The key terms were meticulously analyzed in the fourth stage of the study. After identifying and eliminating duplicates, the primary themes were categorized into ten distinct groups. Subsequently, these initial themes were organized based on their interrelationships in the subsequent phases, employing a systematic approach. They were then classified into three main factors: Personal-Related, Organizational-Related, and Support-Related Challenges.

The identified themes were presented to the participants during the final step to validate the research findings. Based on the feedback received, necessary adjustments were made. The significant statements, initial themes (categories), factors, and interview sources are summarized in Table 5.

Table 5. Significant Concepts Related to Challenges of the Blended Learning Approach

Factors	Initial Themes (Category)	Significant Statements	Interview Sources
Personal-Related Challenges	Challenges Related to Attitudes and Beliefs of Internal Stakeholders	Negative attitudes towards the e-Learning environment; insufficient necessary perception among administrators about blended learning; insufficient acceptance of academic leadership and internal stakeholders toward implementing blended learning approach; Unpleasant experience of teachers and students with e-learning environment during the COVID-19 pandemic; Preference of internal stakeholders (students and teachers) towards using conventional face-to-face classroom instructions; inadequate willingness of administrators for developing particular requirements of using blended learning approach; Insufficient motivation within internal stakeholders to change the learning approach; academic staff preferences for doing administrative duties in in-person environment; Managers' competency; Incompatibility and resistance among experienced and senior teachers; Inadequate motivation among critical stakeholders for transitioning to a blended approach; paradigm Shifts of internal stakeholders about their roles and expectations in digital era; The potential rise in the preference for studying at foreign universities and decline in domestic student enrollment; decreased positive educational impacts about following teachers by students in blended approach; People's insufficient beliefs towards the use of blended learning as an added value.	m.2, m.3, m.4, m.5, m.6, m.7, m.8, m.9, m.10, m.11, m.13, m.14
Personal-Related Challenges	Challenges Related to Stakeholders' Necessary Skills	Weak ICT skills of key Stakeholders; teachers' inadequate instruction methods aligned with the blended approach; students' preference for Face-to-Face interaction with instructors; insufficient skills of teachers to design lesson plans for implementing the blended learning approach; insufficient pedagogical skills of teachers about the new teaching-learning approach; students' lack of internal locus of control; insufficient student abilities in self-learning and self-study.	m.1, m.3, m.4, m.8, m.9, m.11, m.13
Personal-Related Challenges	Challenges Related to Stakeholders' Knowledge	Key Stakeholders' insufficient familiarity with blended learning; Stakeholders' insufficient information for using the blended learning approach; teachers' inadequate knowledge about instruction methods based on the blended approach; teachers' inadequate knowledge about efficiency and effectiveness of the blended approach; insufficient understanding of students and teachers about new and current learning approaches.	m.1, m.2, m.3, m.4, m.6, m.7, m.8, m.10, m.12, m.13
Organizational-Related Challenges	Challenges Related to University Culture and Structure	Traditional and rigid university regulations; controlling of teachers' physical presence; The conventional nature of the educational system; Extra emphasis on predefined structures of the teaching-learning process; Stakeholders' negative attitudes in the organization about blended learning	m.1, m.3, m.5, m.8, m.10

		as prevention; organizational resistance to technological capacities in learning; Weakness in the culture of personalized learning at the university; Resistance of external policymakers about using blended learning approach (Ministry of Science Research and Technology); The mismatch between university organizational structures and the blended learning approach; Lack of a proper definition of the blended learning approach at the university; inconsistencies between current roles and duties of human resources with the blended learning; the Necessity of changing in current organizational process at the university.	
Organizational-Related Challenges	Challenges Related to Organizational Resources (Financial, Human, Information)	University financial constraints; Necessity for planning the implementation of the blended approach; Poor alignment of the programs and curriculum with the blended approach; Irrelative current regulations and guidelines with blended learning approach; low amount of expertise in both in-person and online environment; The need for experts in the field of electronic content production and publication; necessity attention to impact of defined organizational university policies on teaching-learning approach; Necessity of attention to human resources' expectations changes of rewards mechanism; Necessity of existence of TA besides experienced and senior teachers; Necessity for continuous professional development programs for all academic staff about new learning approach instructors; Implementing blended learning requires sufficient financial resources; insufficient allocation of financial resource for supporting resources Necessity for investment in infrastructure; The possibility of an economic crisis due to the decrease in the number of students, given the developments in the higher education system; the costly nature of acquiring necessary technical tools for students; financially disadvantaged student; cost-prohibitive nature of blended learning for students; Inadequate Fit of Development and Empowerment System with New Approaches to Learning.	m.1, m.3, m.5, m.8, m.4 m.9, m.10, m.13, m11, m.14. m2
Support-Related Challenges	Challenges Related to the Support System	The Necessity of a psychological support system for students in a blended approach; developing the teachers' Necessity of a supporting system for creating compelling content; the Necessity of a student supporting system for solving problems related to in-person and the e-learning environment; the Necessity of a supporting system for the process of taking exams in a blended learning approach.	m.1, m.4, m5, m8, m14
Support-Related Challenges	Challenges Related to the Teaching-Learning Process	Increase in teachers workload; heighten student Anxiety due to technical issues in E-learning environment; Psychological issues of students when needing to communicate with teachers; Necessity for teachers availability for students; Decreased active participation and interaction of students in E-learning environment; Difficulty in	m.1, m.2, m.3, m.4, m.6, m.7, m.8, m.9, m.10, m.11, m.12, m.13, m.14

		qualitative assessment and student progress measurement; Decreased motivation for academic activities due to reduction of face to face interaction; Insufficient capability of teachers to motivate and engage students; Decline in student-teacher communication; insufficient utilization of new technological mechanism in classroom leadership; insufficient attention to importance of teachers' position in blended approach; Reduced effective Interaction Between Students and teachers Due to Decreased Physical Presence; decreased effectiveness of Classroom leadership in the E-learning approach; developing challenge of engaging in E-learning environment for experienced and senior educators; time-consuming nature of adapting for teachers to technological tools; weakness of using constructivism theory in the classroom leadership; Necessity of alignment between technology and pedagogy in implementing blended learning; the Challenge of trusting students' presence in the E-learning environment; the Necessity of implementing both in-person and electronic tools for learning outcome assessment; the challenge of finding an appropriate combine between technological and pedagogical strategies by teachers; issues concerning non-theoretical, Internship and also the courses which need lab; Emphasis of educators on behaviorist theory in classroom leadership; The employment of defined activities in face-to-face classes without considering the specific characteristics of the blended approach.	
Support-Related Challenges	Challenges Related to the technology (Software, Hardware, Infrastructure)	Problems caused by internet speed at the national level; Insufficient access to the cloud for storage; Inadequate software updates and proportional; Necessity of access to hardware appropriate to the hybrid approach; Necessity of quick access to electronic resources; Necessity of designing user-friendly learning environments; The likelihood of losing important data and information in an electronic environment; Insufficient internet bandwidth; Insufficient number of servers for implementing a blended approach; Lack of necessary software for sharing universities' experiences regarding the implementation of a blended approach; The necessity of access to and updating of software related to LMS; Problems arising from access to databases due to sanctions; Insufficient attention to the use of appropriate pedagogical and technological standards for content preparation; Access to interactive and user-friendly content production software; Lack of access to transformative technologies in classroom leadership; Lack of access to appropriate software to protect privacy.	m.1, m.7, m.9, m.10, m.11, m.12
Organizational-Related Challenges	Challenges Related and to Evaluation Quality Assurance	Impact of technological issues on evaluating teachers' performance; Inadequacies in the evaluation system and giving undesirable feedback;	m. 3, m.10, m.11, m.13

	Systems	insufficient quality standards appropriate for blended approach; The challenges related to evaluating the educational system by senior administrators considering the differences in in-person and E-learning environments; Difficulty in evaluating educators' performance in a blended approach; Necessary mechanisms for performance evaluation of technical experts at the university; Insufficient quality criteria for evaluating support system regarding continuous improvement; the Necessity of paying attention to the accreditation of educational processes by a reputable institution outside the university.	
Organizational-Related Challenges	Challenges Related to Ethical Consideration	Inadequate copyright and intellectual property rights mechanisms for content produced by teachers; concerns regarding internal stakeholders' privacy in the digital era; educators' worries regarding the publication of generated content; the existence of security issues related to the digital environment; and a lack of legal mechanisms to protect content produced by individuals.	m.8, m.11, m.14

This section explores stakeholders' challenges in implementing blended learning at universities. Specifically, it addresses internal stakeholders' attitudes, beliefs, skills, and knowledge, highlighting how these factors are significant barriers to successfully adopting this approach.

Challenges Related to the Attitudes and Beliefs of Internal Stakeholders

Attitude denotes an individual's cognitive orientation, predisposing them toward favoring or opposing an entity, comprising cognitive, affective, and behavioral components (Ghasemi, 2016). Hence, effectuating organizational change necessitates individuals' willingness and agreement. If individuals harbor a negative attitude toward it, they will be less inclined to collaborate, thereby impeding the successful implementation of the change. In this research, experts have underscored stakeholders' erroneous attitudes toward the blended learning approach as a primary challenge in its implementation at universities. For instance, one expert elucidated, 'There are certain barriers that I perceive as mental impediments, obstacles that resist any change, hindering alterations in behaviour, work methods, and organizational performance (m.2).' "Some contend that the efficacy inherent in traditional education might never be replicated in online education" (m.4), and "There are those who assert that learning in this approach holds no value, insisting that it must undergo multiple iterations with outcomes witnessed" (m.11).

Challenges Related to Stakeholders' Necessary Skills:

Acquiring essential skills is fundamental upon entry into any field. Realistic expectations of successful performance arise once individuals attain competence in these skills. Interviewees have also articulated, 'Professionals in disciplines such as computer science or electronics, who may not have extensively utilized tablets or mobile devices previously, are suddenly compelled to adapt to these tools. This transition can prove more daunting for a professional

than for students.' (m.4). Furthermore, "One of the obstacles and challenges for an instructor is to design a scenario or syllabus to delineate which level, course, or activity the blended approach is intended for. The instructor must meticulously outline the blended approach's schedule, methodologies, and other specifics. Are all instructors genuinely adept at this task and capable of executing it? (m.13)"

Top of Form

Challenges Related to Stakeholders' Knowledge

The initial stride in implementing the blended approach in a university involves ensuring stakeholders across all echelons, including organizational managers, instructors, experts, and students, are well-versed in its essence, Necessity, and positive outcomes. Subsequently, possessing technical expertise and specialized knowledge becomes imperative for effectively executing this approach. Experts have pinpointed stakeholders' lack of knowledge and information as one of the most formidable barriers to successfully implementing this approach, given the impediments and complexities encountered in embracing a Blended Learning Approach at universities.

"The primary challenge is unfamiliarity with this approach" (m.4), "When you introduce an instructor to blended learning, they might inquire, 'Well, what's in it for me? What are the benefits?" The initial feedback from instructors often aligns with this sentiment (m.6). "There needs to be an awareness of new learning paradigms. We overlooked the significance of a paradigm shift in cultivating graduates equipped for the job market" (m.13). These statements exemplify responses from experts underscoring stakeholders' inadequate knowledge about the blended learning approach.

This section discusses the organizational-related challenges faced by universities in implementing blended learning. It covers various obstacles such as the resistance of traditional university structures and cultures, lack of sufficient resources (financial, human, and infrastructural), ineffective evaluation and quality assurance systems, and ethical considerations. These challenges hinder the effective adoption of blended learning, requiring changes in organizational structure, resource allocation, assessment methods, and ethical frameworks to support this new approach to education.

Challenges Related to University Culture and Structure

The organizational structure delineates the system for assigning tasks and outlining the overarching framework of activities conducted within an organization (Mirkamali, 2022). Universities can only align themselves with the latest global learning approaches and leverage cutting-edge learning technologies by dismantling their traditional structures as educational institutions. This necessitates reshaping how tasks are executed, redefining regulations, and reconstructing member relationships to adapt to these changes. Digitization mandates reimagining organizational structures and balancing compartmentalizing and integrating educational departments (Mosteanu, 2020). Per the study participants, we operate in a

traditional university environment where professors' punctuality and activity levels are rigorously monitored. The concept of blended learning disrupts these conventional norms of physical presence (m.1). "Unfortunately, our educational system adheres to linear learning. Students must attend 16 class sessions and adhere to a predefined structure before qualifying for the final assessment" (m.10). Additionally, "The second challenge revolves around stringent regulations that some administrators may be reluctant to amend or circumvent" (m.5). Participants posit that university regulations and traditional structures impede the implementation of blended learning approaches within academia.

Challenges Related to Organizational Resources (Financial, Human, Information)

The foundational and physical components utilized in production are recognized as organizational infrastructure (Mirkamali, 2022). As individuals must possess the knowledge and skills required to fulfill organizational objectives, securing and equipping innovative technologies, physical space, and necessary budgets is equally indispensable. If any of these factors lack the requisite readiness, they impede organizational goals. Experts in this study acknowledged that "numerous universities have allocated extensive buildings to classrooms. However, following a shift in the teaching approach, these spaces often lie vacant, incurring costs for utilities such as water, electricity, and gas" (m.4). Why hasn't the Ministry of Science implemented the blended learning approach? This is because the budgetary allocations are considerably smaller and less robust, particularly in medical education. Hence, discussions regarding costs are prevalent" (m.9). Furthermore, "The second challenge lies in procuring the components and infrastructures for this endeavour, be it technical infrastructures, appropriate content, assessment processes, etc. Consequently, it appears that universities must invest to a certain extent, a measure many global universities have embraced" (m.8).

Challenges Related to Evaluation and Quality Assurance Systems

Maintaining the quality of higher education services, particularly learning, as its cornerstone, is a crucial agenda in assuring high-quality education through assessment and monitoring (Yonata, 2023). Experts in this study believe that "one challenge lies in assessment; presently, we lack a mechanism to gauge the effort an instructor puts in, both in the classroom and behind the scenes" (m.3), and "there is still no mechanism in place to ensure the quality of blended learning" (m.13).

Challenges Related to Ethical Considerations

As a social system comprising individuals in a university, adherence to ethical considerations is crucial to prevent anomalies and undesirable behaviors. Analysis of interviewees' responses indicates that some criticize the implementation of the blended learning approach, suggesting potential ethical implications for individuals, such as "Preserving individuals' privacy or addressing copyright issues poses significant challenges in the online sphere" (m.8); "When teaching is recorded, there are instances where examples provided from certain companies might tarnish a company's reputation or harm an individual. While anonymizing examples, we

aim to maintain utility, meaning benefit, and this proves challenging. These concerns extend beyond an instructor's apprehension about making mistakes, as they might create issues for others" (m.11).

In the fifth stage of qualitative data analysis using the Colaizzi method, the researcher presents a brief narrative description of the findings. The researchers illustrate this stage schematically in Figure 1 in the current study. Then, in the next step, the validity of the results obtained from qualitative data analysis needs to be examined, which was explained in the research methodology section regarding how it was conducted in this study.

This section explores the support-related challenges faced in implementing the blended learning approach, highlighting issues within the technical and academic support systems, the teaching-learning process, and the technology infrastructure. It discusses how difficulties adapting to digital environments, lack of incentives for instructors, inadequate student engagement, and technical limitations in software, hardware, and infrastructure can hinder the successful integration of blended learning in universities. These challenges emphasize the need for improved support systems and technological readiness to facilitate this educational shift.

Challenges Related to the Support System

In addressing support system challenges, we illuminate potential obstacles that technical and academic support teams may encounter in implementing the blended learning approach. Among the opinions expressed by interviewees concerning this challenge, "One of the issues is the difficulty older professors, who have had less interaction with digital environments, face in adapting. Initially, each of them had an assistant or relied on their students for assistance" (m.4); "When you propose blended learning to an instructor, they may inquire, 'What incentive do I have?'" (m.6).

Challenges Related to the Teaching-Learning Process

The teaching-learning process is fundamental to the educational system, upon which a university's effectiveness significantly hinges. Expert opinions in this research indicate that implementing a blended learning approach will present numerous obstacles and challenges for instructors and students. Among the views expressed, one such statement addresses the need for ubiquitous accessibility, as highlighted by an expert: "If a student, for instance, is in Tabriz and only has the phone number, they would not know what to do if they called me and I did not answer" (m.1); "Some students are not receptive to this form of education due to our country's non-constructivist context. We prefer being taught by experts, and then we mimic their teachings. We haven't been encouraged to explore independently; essentially, our locus of control is external" (m.6); "To engage in this space—the blended learning approach—, the instructor needs to invest more time" (m.9); "It is also challenging to achieve a sufficient level of integration in this approach. It is fragmented; half an hour online might suffice for some classes" (m.11).

Challenges Related to the Technology System (Software, Hardware, Infrastructure)

According to the earlier definition of blended learning, technology constitutes a vital component of this approach. Consistently utilizing tools and technical equipment presents users with difficulties and challenges. Despite the myriad benefits of harnessing technological capabilities in education and learning, specific challenges could impede the implementation of a blended approach in universities. Responses from participants underscore this issue. For example, "Currently, many universities instruct instructors to remove content from the system, stating, 'We want to discard it.' This is the most imprudent managerial statement made at the technical level: 'We lack hard drives; consider the storage capacity available on platforms like Google, how much content is readily accessible for free. If we don't need it, let's discard it!" (m.1); "If the environment is not conducive to easy student access... if these aspects are not adequately prepared, undoubtedly, we will encounter challenges" (m.10); "Unfortunately, electronic learning systems, including virtual classrooms and LMSs, lack the user-friendliness and stability they should possess" (m.11).

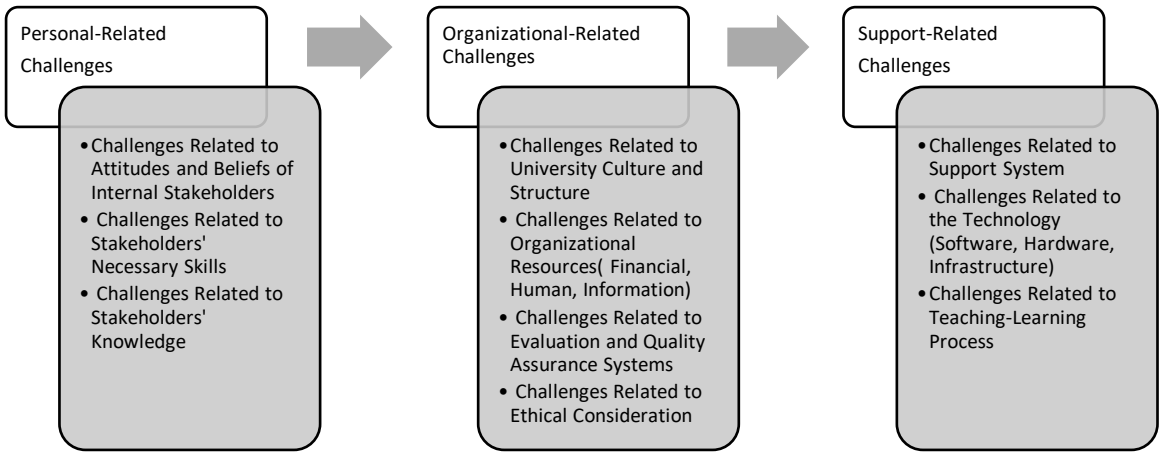

Figure 1. Related Challenges of the Blended Learning Approach

Conclusion

Despite the significant advantages outlined across various sections of this study, implementing the blended learning approach can present some challenges for universities. This research aimed to identify the challenges associated with implementing a blended learning approach in higher education. The findings of this study indicate that the themes related to challenges confronting implementing a blended learning approach in higher education can be categorized into personal, Organizational, and Support-Related challenges. Each of these themes encompasses components observable in Table 3. Among these, examining the identified challenges of implementing this approach based on previous research and exploring their alignment or potential divergence with the findings of this study could lay the groundwork for future investigations and a better understanding of challenges to the widespread adoption of blended learning in higher education. As mentioned in the

introduction, numerous studies have been conducted to identify the benefits and challenges of blended learning. Here, we aim to examine the correlation or divergence of these research findings and compare them with the outcomes of this article.

Based on the findings of this study, among the identified and common personal-related challenges in implementing a blended approach in higher education, challenges related to the attitudes and beliefs of internal stakeholders can be addressed. Stakeholders' attitudes towards adopting this approach in higher education can be critical to its widespread success. This issue gains increased importance after the experience of using e-learning during the COVID-19 pandemic and the formation of various perspectives on its advantages and disadvantages in the educational environment, as there is a need to reconstruct stakeholders' attitudes by providing more transparency regarding the benefits of this approach. This is emphasized in studies by Muthuraman et al. (2020) on creating a supportive culture to adopt the blended approach. The blended learning approach in higher education presents distinct challenges that hinge on stakeholders' necessary skills and knowledge. The transition to this model requires stakeholders, particularly professionals from fields less accustomed to digital tools, to acquire and master new skills swiftly. This necessity can be a formidable hurdle, as proficiency in using technology-intensive tools is essential. Moreover, the success of the blended learning approach is contingent upon the instructors' ability to design and execute a well-structured syllabus that aligns with the blended model's requirements. Crafting a detailed plan that includes the schedule, methodologies, and other specifics is a complex task that not all instructors may be adept at. This skill gap can lead to ineffective implementation, thereby undermining the potential benefits of the blended learning approach. This issue is emphasized in studies by Muthuraman et al. (2020) and Gqokonqana et al. (2022).

Among organizational-related challenges, those related to organizational resources can be highlighted among the current challenges identified. These challenges encompass various issues, including financial, human, and informational resources. Previous studies have emphasized the importance of providing suitable software and hardware infrastructure, promoting professional development for educators, and developing appropriate learning content for the blended learning approach, as discussed by Jafarzadeh et al. (2021). Additionally, the research by Bekbaev and Menglibekov (2023) has drawn attention to the existence of a digital divide, while Karimi and Mohsenizadeh (2019) addressed managerial issues, facility constraints, and administrative challenges such as a lack of awareness, policies, programs, goals, and learning-related support. Another challenge that stands out, similarly based on the studies by Shaveta Thakur (2023), Bekbaev, and Menglibekov (2023), relates to ethical considerations, particularly the commitment to privacy preservation. These challenges highlight the importance of ensuring secure technological infrastructure for a blended learning approach, where integrating various online platforms and tools can potentially expose sensitive student and faculty information to cybersecurity threats. Addressing these challenges requires a comprehensive approach encompassing user authentication protocols and regular security audits to mitigate risks and uphold the principles of data privacy and confidentiality.

Additionally, institutions must stay abreast of constantly evolving privacy laws and regulations to adapt their practices to ensure compliance and the trustworthy handling of confidential information in the digital learning landscape. The blended learning approach in higher education presents transformative potential that is often met with significant challenges related to university culture and structure. The traditional and rigid university regulations often hinder the flexibility required for blended learning. At the same time, controlling teachers' physical presence reflects resistance to the autonomy and adaptability that blended learning necessitates. The conventional nature of the educational system and the extra emphasis on predefined structures of the teaching-learning process are at odds with the innovative and fluid nature of blended learning. Bahrami and Nazarzadeh Zare (2023) also emphasized the importance of fostering a blended learning culture among faculty members.

Finally, among support-related challenges, we can mention the challenges related to the teaching-learning process. These challenges include drafting university regulations and laws concerning the use of blended learning in the teaching process by faculty members, promoting further centralization in the use of blended learning by faculty members, training professors on implementing blended learning in teaching, increasing encouragement for teachers to embrace blended learning, and allocating more rewards for the utilization of blended learning in classroom leadership. These points, highlighted in studies by Bahrami and Nazarzadeh Zare (2023) and emphasizing the necessity of professional development for educators in the study by Jafarzadeh et al. (2021), have shown the relevance of the results of this research to previous studies on this topic.

Another significant common aspect of the identified challenges is technology-related factors. As mentioned, implementing this approach undoubtedly requires mastery of initial technical knowledge for educators and learners. If this does not materialize due to reasons such as constraints in financial resources in higher education, lack of motivation in learners and educators, or weaknesses in existing infrastructure, the process of implementing this approach in the teaching-learning system will face severe disruption. As noted earlier, this issue stands out in studies by Manjot Kaur (2013), Muthuraman et al. (2020), Bisriyah (2020), Gqokonqana et al. (2022), and Karimi and Mohsenizadeh (2019).

Similarly, issues such as the necessity of developing university regulations and by-laws, organizational infrastructure readiness, and faculty training and encouragement, highlighted as challenges in the studies by Bahrami and Nazarzadeh Zare (2023), as well as Osadcha et al. (2023), encompass stakeholders' weaknesses in necessary skills, the traditional structure of the university, lack of organizational infrastructure readiness, and ethical implications. While innovative and flexible, the blended learning approach presents unique challenges requiring robust support systems to ensure its success in higher education.

Psychological support for students is paramount, as it facilitates the transition between traditional and digital classrooms, helping them to navigate the complexities of a hybrid learning environment. Similarly, teacher support is crucial for developing engaging and

compelling content, the cornerstone of student learning. Teachers must be equipped with the tools and training to create and deliver content that resonates with students in physical and virtual settings. Inadequate support for professional development is mentioned as an important challenge in implementing a blended learning approach in higher education by Muthuraman et al. (2020).

In this study, all these challenges have been explained in detail to introduce the forthcoming challenges in implementing blended learning and explain the specifics of each challenge. This aims to offer a perspective for managers and researchers to develop suitable solutions. Given the increasing inclination towards employing blended learning in higher education systems, studying the challenges of implementing this approach alongside proposing solutions based on the findings of various research studies could serve as a pivotal point for advancing technology further in higher education. This is because investigating these challenges enlightens universities and higher education institutions interested in this approach about the potential challenges and issues ahead. This awareness can provide higher education managers and decision-makers with an overview for planning and investing in the prerequisites of this approach.

Several practical recommendations can be proposed to address the challenges identified in this study. First, universities should implement targeted training programs for faculty to enhance their proficiency in using digital tools and designing blended learning courses. These programs should equip instructors with the skills to effectively integrate technology into their teaching while maintaining student engagement in physical and virtual settings. Furthermore, substantial investments in upgrading the technological infrastructure are crucial, ensuring faculty and students have access to reliable platforms and resources. In addition, universities should consider establishing dedicated support systems, including technical and pedagogical assistance, to help faculty navigate the complexities of blended learning. By prioritizing these investments in training and infrastructure, higher education institutions can foster a more adaptable and resilient educational environment that is better positioned to overcome the challenges associated with blended learning.

Conflict of interest

The authors declare no potential conflict of interest regarding the publication of this work. In addition, they have witnessed all ethical issues, including plagiarism, informed consent, misconduct, data fabrication and falsification, double publication and submission, and redundancy.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Aali, M., Narenji Thani, F., Keramati, M. R., & Garavand, A. (2020). A model for the effectiveness of e-learning at university. *Journal of Information Technology Management, 12*(4), 121–140. http://magiran.com/p2205626

Aissaoui, N. (2022). The digital divide: A literature review and some directions for future research in light of COVID-19. *Global Knowledge, Memory and Communication, 71*(8/9), 686–708.

Alammary, A., Sheard, J., & Carbone, A. (2020). Blended learning in higher education: Three different design approaches. *Australasian Journal of Educational Technology, 36*(2), 29–45.

Al-Gharaibeh, S., Hijazi, H. A., Alzoubi, H. M., Abdalla, A. A., Khamash, L. S., & Kalbouneh, N. Y. (2023). The impact of e-learning on the feeling of job alienation among faculty members in Jordanian universities. *ABAC Journal, 43*(4), 303–317.

Alkaabi, A., Qablan, A., Alkatheeri, F., Alnaqbi, A., Alawlaki, M., Alameri, L., et al. (2023). Experiences of university teachers with rotational blended learning during the COVID-19 pandemic: A qualitative case study. *PLOS ONE, 18*(10), e0292796. https://doi.org/10.1371/journal.pone.0292796

Amalaraj, J. J. P., Saminathan, T. A., Lourdes, T. G. R., Al-Maliki, M. A. A., Aziz, M. A. F. A., Yusoff, N. A. M., & Zaki, R. A. (2023). E-learning during COVID-19 and anxiety levels among university students: A systematic review. *Journal of Public Health and Emergency, 7*(1).

Bahrami, F., & Nazarzadeh Zare, M. (2023). The impact of institutional factors on faculty members' use of blended learning. *Technology of Education Journal (TEJ), 17*(3), 671–682. https://doi.org/10.22061/tej.2023.9693.2887 [In Persian]

Bekbaev, G. A., & Menglibekov, R. M. (2023). The use of educational technology in blended learning environments. *Oriental Renaissance: Innovative, Educational, Natural and Social Sciences, 3*(9), 701–713.

Bisriyah, M. (2020). Exploring blended learning in higher education: Different definitions and teachers' perceptions. *JETLe (Journal of English Language Teaching and Learning), 1*(2), 38.

Bock, A., Kniha, K., Goloborodko, E., Lemos, M., Rittich, A. B., Möhlhenrich, S. C., Rafai, N., Holzle, F., & Modabber, A. (2021). Effectiveness of face-to-face, blended and e-learning in teaching the application of local anesthesia: A randomized study. *BMC Medical Education, 21*(1), Article 1. https://doi.org/10.1186/s12909-021-02550-2

Bruggeman, B., Tondeur, J., Struyven, K., Pynoo, B., Garone, A., & Vanslambrouck, S. (2021). Experts are speaking: Crucial teacher attributes for implementing blended learning in higher education. *The Internet and Higher Education, 48*, 100772. https://doi.org/10.1016/j.iheduc.2021.100772

Burlacu, M., Coman, C., & Bularca, M. C. (2023). Blogged into the system: A systematic review of the gamification in e-learning before and during the COVID-19 pandemic. *Sustainability, 15*(8), 6476.

Eklund, M., & Isotalus, P. (2024). Having it both ways: Learning communication skills in face-to-face and online environments. *Frontiers in Education, 9*, 1270164. Frontiers Media SA.

Eli-Chukwu, N. C., Igbokwe, I. C., Ifebude, B., Nmadu, D., Iguodala, W., Uma, U., & Akudo, F. U. (2023). Challenges confronting e-learning in higher education institutions in Nigeria amid COVID-19. *Journal of Applied Research in Higher Education, 15*(1), 238–253.

Gaffas, Z. M. (2023). Students' perceptions of e-learning ESP course in virtual and blended learning modes. *Education and Information Technologies, 28*(8), 10329–10358.

Galagedarage, T. M., & Indrasena, K. (2023). Information and communication technologies (ICTs) for e-learning in tertiary education in Sri Lanka: A study of undergraduates from state universities in Colombo district. *International Journal of Media and Communication Research (IJMCR), 4*(2), 33–48.

Ghasemi, B. (2016). Organizational behavior management. Tehran: Sepahan. [In Persian]

Global Education Monitoring Report Team. (2023). *Global education monitoring report 2023: Technology in education: A tool on whose terms?* https://doi.org/10.54676/UZQV8501

Gqokonqana, O., Jurie, F., Madubedube, A., & Mlawu, L. (2022). The influence of emergency remote learning on Level 2 accounting students at a South African university. *International Journal of Learning, Teaching and Educational Research, 21*(4), 240–254.

Graham, C. R. (2006). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk & C. R. Graham (Eds.), *Handbook of blended learning: Global perspectives, local designs* (pp. 3–21). San Francisco: Pfeiffer Publishing.

Graham, C. R., Woodfield, W., & Harrison, J. B. (2013). A framework for institutional adoption and implementation of blended learning in higher education. *The Internet and Higher Education, 18*, 4–14.

Jafarzadeh, M. R., Hosseini, S. A., Jahed, H., & Abedi, S. (2021). The application of blended learning in higher education from teachers' perspective. *Higher Education Letter, 13*(52), 95–123. [In Persian]

Karimi Moonaghi, H., & Mohsenizadeh, S. (2019). Blended learning and its effectiveness in nursing education: Review. *Educational Development of Jundishapur, 10*(1), 29–40. [In Persian]

Kaur, M. (2013). Blended learning—Its challenges and future. *Procedia - Social and Behavioral Sciences, 93*, 612–617. https://doi.org/10.1016/j.sbspro.2013.09.248

Kim, K. J., Kim, G., & Kang, Y. (2023). Faculty perceptions and use of e-learning resources for medical education and future predictions. *Korean Journal of Medical Education, 35*(4), 325–333.

Kuhn, A., Schwabe, A., Boomgarden, H., Brandl, L., Stocker, G., Lauer, G., & Krause-Wolters, M. (2024). Who gets lost? How digital academic reading impacts equal opportunity in higher education. *New Media & Society, 26*(2), 1034–1055.

Kumari, D. N., & Satyanarayana, D. (2023). A study on teachers' perceptions towards blended learning in improving student performance in secondary schools.

Leavy, A., Dick, L., Meletiou-Mavrotheris, M., Paparistodemou, E., & Stylianou, E. (2023). The prevalence and use of emerging technologies in STEAM education: A systematic literature review. *Journal of Computer Assisted Learning, 39*(4), 1061–1082.

Li, L. (2020). Action research of O2O blended learning in the integrated English class in a Chinese private language university context. *The Online Journal of Distance Education and e-Learning, 8*(1), 10–17.

Lincoln, Y., & Guba, E. G. (1985). *Naturalistic inquiry.* Sage.

Liu, Y. (2023). Matches and mismatches between university teachers' and students' perceptions of e-learning: A qualitative study in China. *Heliyon, 9*(6).

Melati, I., & Harnanik, H. (2021). Learning microeconomics during the pandemic: Does digital platform management matter? In *Proceedings of the 3rd International Conference on Economics, Business and Economic Education Science (ICE-BEES 2020), 22–23 July 2020, Semarang, Indonesia*.

Mirkamali, M. (2022). Educational leadership and management. Tehran: Yastoroon. [In Persian]

Mosteanu, N. R. (2020). Challenges for organizational structure and design as a result of digitalization and cybersecurity. *The Business and Management Review, 11*(1), 278–286.

Müller, C., Mildenberger, T., & Steingruber, D. (2023). Learning effectiveness of a flexible learning study program in a blended learning design: Why are some courses more effective? *International Journal of Educational Technology in Higher Education, 20*(1), 10.

Muthuraman, S., Veerasamy, R., & Nabila, T. C. (2020). Blended learning in higher education: A critical review. *The Online Journal of Distance Education and e-Learning, 8*(1), 18–24.

Narenji Thani, F., Keramati, M. R., Mirshahvalad, E., Taghavi Far, & Lohrasbi, M. (2024). Exploring and classifying critical challenges of e-learning through a systematic approach at the University of Tehran. *Quarterly of Iranian Distance Education Journal, 6*(1), 58–81. https://doi.org/10.30473/idej.2024.70067.1185

Nuuyoma, V., Lauliso, S. S., & Chihururu, L. (2023). Nursing students' perspectives on e-learning challenges during early stages of the COVID-19 pandemic. *Curationis, 46*(1), 2358.

Osadcha, K. P., et al. (2023). J. Phys.: Conf. Ser. 2611 012021. https://doi.org/10.1088/1742-6596/2611/1/012021

Thakur, S. (2023). Blended learning in higher education: Advantages, challenges, and future.

Yeleussizkyzy, M., Zhiyenbayeva, N., Ushatikova, I., & Lushkov, R. (2023). E-learning and flipped classroom in inclusive education: The case of students with the psychopathology of language and cognition. *Journal of Psycholinguistic Research, 52*(6), 2721–2742.

Yonata, B., Trimulyono, G., Sabtiawan, W. B., Savitri, D., Putri, N. P., Susiyawati, E., Sendouw, R. H. E., Pangalila, T., Pasandaran, S., & Rantung, V. P. (Eds.). (2023). Monitoring and evaluating lectures during the COVID-19 pandemic as a part of education quality assurance. In *UNICSSH 2022, ASSEHR 698: Advances in Social Science, Education, and Humanities Research: Proceedings of the Unima International Conference on Social Sciences and Humanities* (pp. 603–611). Atlantis Press is now part of Springer Nature.

Zhu, M., Sari, A., & Lee, M. M. (2020). A systematic review of research methods and topics of the empirical MOOC literature (2014–2016). *The Internet and Higher Education, 45*, 100722.

Bibliographic information of this paper for citing:

Ghofrani, Atefeh; Narenji Thani, Fatemeh & Lohrasbi, Mohammad (2025). Blended Learning in Higher Education: Key Challenges. *Journal of Information Technology Management*, 17 (3), 18-40. https://doi.org/10.22059/jitm.2025.374767.3883