

The State of the Arts of Blended Learning: Benefits, Challenges, and Future Directions

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Abstract- Blended learning has emerged as the modern method used for conducting classes in universities. It combines the face-to-face and online learning, and has recently been increasingly adopted by universities worldwide. The coronavirus pandemic and the involvement of information communication technology (ICT) have forced educational universities to rapidly shift to distance and online learning, forcing teachers and students to apply blended learning. Even though several studies have been carried out to assess its implementation at universities; however, blended learning still has numerous challenges that need to be addressed. Therefore, this study aims to concisely explore the current state of the art and latest research on blended learning through conducting an extensive review of the literature. To achieve this aim, the narrative review is a rigid systematic review method that is employed to synthesize set of studies retrieved from different scientific sources with the aim of investigating a particular subject. Besides, this study used the cross-analysis method in order to compare the results obtained from the literature. The results indicate the different definitions of blended learning concept, and its main benefits. These definitions, and benefits as well, would help universities to implement blended learning from different views and angles. In addition, the results reveal the crucial challenges face its implementation, and outlines future directions that can be investigated.

Keywords: Blended Learning; State of the Arts; Challenges; Future Directions.

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1. Introduction

The coronavirus pandemic has recently forced educational universities to rapidly shift to distance and online learning, forcing teachers and students to apply blended learning [1]. Blended learning is a growing phenomenon in higher education after the pandemic, and it has emerged as the modern method used for conducting classes in universities [2]. Blended learning combines face-to-face and online learning, has been increasingly adopted by universities worldwide [3]. For instance, blended learning has been implemented in Al-Ahgaff University, Yemen [4], University of Bisha, Saudi Arabia [5], Pekanbaru, Riau, Indonesia [6], Muni University, Uganda [7], Sultan Qaboos University, Oman [1], South East European University, North Macedonia [8], and Irbid National University, Jordan [9]. Blended learning has been applied in numerous courses, for example, nursing, mathematics business, and English learning [6].

However, some studies stated that blended learning has become the alternative approach of complementing conventional face-to-face learning and online learning [8]. In addition, Warman [6] indicated that the advancement of information communication technology (ICT) has recently impacted universities students to

prefer other complementary approaches of content delivery. Similarly, Ali, et al. [7] affirmed that blended learning has become the most popular educational approach that universities apply to teaching and learning due to the involvement of ICT.

Even though several studies have been conducted to assess its implementation at universities; however, these studies did not provide a clear picture on the concept of blended learning, and its key challenges and future directions. Generally, blended learning still has numerous issues that need to be addressed. To solve this problem, this study adopted the narrative review method to explore the relevant literature on blended learning. According to [10], the narrative review is a rigid systematic review method that is employed to synthesize set of studies retrieved from different scientific sources with the aim of investigating a particular subject. Besides, this study used the cross analysis method in order to compare the results obtained from the literature [11]. In particular, this study attempts to answer the following research questions (RQs):

- RQ1: What is the current state of the art and latest researches on blended learning?
- RQ2: What are the existing challenges facing the implementation of blended learning?

- RQ3: What are the future directions of blended learning?

The contents of the remaining sections are organized as follows. Section 2 explores blended learning concept, while Section 3 reviews the literature and current studies on blended learning. Section 4 presents the benefits of blended learning and Section 5 explains the key challenges that hamper the implementation of blended learning. Section 6 discusses the study findings and highlights the future directions of blended learning, whilst the final section concludes the study.

2. Blended Learning Concept

Blended learning is defined as the new approach of teaching and learning that combines the classroom learning with the online learning platform [8]. It is the alternative learning approach that incorporates the advantages of online learning and face-to-face learning to support educational differentiation [3]. Based on the literature review, the majority of studies defines blended learning as the combination of traditional face-to-face classroom with online learning [15] [18] [19].

According to Mukhtiar Baig, et al. [14], blended learning is the integration of conventional face-to-face teaching with online content, whilst [13] described blended learning as the flexible, efficient, and effective from online learning experiences combined with learning face-to-face. In addition, Kacetla and Semradovaa [21] defined blended learning as the term that is employed in teaching and learning process with a combination of numerous activities such as face-to-face instruction and online learning. Oweis [22] stated that blended learning combines both direct and indirect approaches of online learning that usually involves the internet and intranet, whilst indirect learning conducted concurrently within traditional classes.

On the other hand, some studies indicated that blended learning focuses on employing different instructional methods. For instance, Jnr [12] stated that blended learning is a learning paradigm that uses more than one teaching mode with the aim of enhancing learning outcome and teaching delivery. Similarly, blended learning is thoughtfully integrates two or more different learning methods, and contains both face-to-face and online portions [16]. While Alsalmi, et al. [17] defined blended learning as a program that uses more than one method to communicate information in order to activate learning outcomes by the interaction between both student and teacher. A study [13] argued that blended learning is learning activities that utilize mostly 45% of online learning and the rest of face-to-face learning.

Overall, the literature indicates numerous definitions of blended learning concept. These different definitions of blended learning give a clear impression that they each describe the same learning approach, albeit in different words.

3. Current Studies On Blended Learning

This section presents related studies retrieved from reviewing the literature. The current study retrieved ten studies, which are peer-reviewed studies published within the 2019–2024 period, as shown in Table 1.

Table 1. List Of Retrieved Studies

NO	Study Title	Source	Year
1	An exploratory study on academic staff perception towards blended learning in higher education	[12]	2022
2	Blended learning during pandemic corona virus: Teachers' and students' perceptions	[13]	2020

3	Blended Learning: The impact of blackboard formative assessment on the final marks and students' perception of its effectiveness	[14]	2020
4	Exploring critical factors of the perceived usefulness of blended learning for higher education students	[15]	2019
5	Face to face learning vs blended learning vs online learning (Student perception of learning)	[16]	2020
6	The effect of blended learning on the achievement of ninth grade students in science and their attitudes towards its use	[17]	2019
7	The effects of blended learning on knowledge, skills, and satisfaction in nursing students: A meta-analysis	[18]	2019
8	Using PLS-SEM model to explore the influencing factors of learning satisfaction in blended learning	[19]	2021
9	Blended learning in a higher education context: Exploring university students' learning behavior	[2]	2023
10	The Impact of the blended learning model on student learning independence during the learning process	[20]	2024

Jnr [12] conducted a study to investigate the perception of academic staff towards blended learning in higher education. The study proposed a framework which was constructed based on the model of personal computer utilization theory. It was aimed at examining the factors that influence the perception of lecturers of blended learning in order to improve teaching quality. The study employed an online survey questionnaire for data collection, whereby 413 lecturers have responded from different universities and colleges. The results of study affirmed that different factors, such as complexity, job fit, conditions, and Information Technology (IT) experience, significantly impact lecturers' perception towards using blended learning.

Aji, et al. [13] study explored the perception of teachers and students on the use of blended learning as media learning during the coronavirus pandemic. Semi-structured interviews and thematic analysis were used to collect data from teachers and students of Parahikma Institute of Indonesia. Although study indicated that blended learning offers numerous advantages; however, it has some problems that hamper students' learning and teachers' performance.

Mukhtiar Baig, et al. [14] study has investigated the impact of blackboard formative assessment on the final score of the endocrine module through using blended learning. It also aimed at determining the perception of medical students on the impact and effectiveness of the blackboard. In this study, blackboard was used for course management and formative assessment of third-year medical students from King Abdulaziz University (KAU), Jeddah, Saudi Arabia. Data were collected over three years, which are 2016, 2017, and 2019, and a formative assessment test was published annually in the blackboard during the last week of module before the final exam. Results indicated that the majority of the students liked blended learning and the formative online assessment on blackboard improved the students' performance in the final exams.

Kerz, et al. [15] conducted study to explore the critical factors of the perceived usefulness of blended learning for higher education students. In the study, 539 voluntary students have participated in the survey through an online questionnaire, while structural equation modelling was used for data analysis. The students' perception was investigated among numerous aspects including their attitudes to course topics and technology, learning

preferences, teachers' role in course design and managing the teaching process. The empirical results showed that online learning is positively perceived to be usefulness when: (1) the teacher is engaged and their activities in an e-course, with the (2) a student's attitude to the subject matter and the lecturer's classroom performance having a direct impact, and (3) technology acceptance having an indirect impact. However, no major differences were revealed when the model was tested on student subgroups sorted by gender, year of study, and students' weekly spare-time activities.

Nasution, et al. [16] conducted study for determining the perceptions of students on learning during coronavirus pandemic. It exactly aimed to examine which type of learning did students prefer most: face-to-face learning, online learning, or blended learning. The study employed the descriptive research with a quantitative approach, whereby 100 students, who enrolled in Islamic Religious Education course, were participated. The results revealed that face-to-face classes were the most preferred choice of students, in which face-to-face selected by 78 students, then 20 students selected learning by blended learning, and only 2 students who selected to learn by online learning.

Alsalthi, et al. [17] study examined the impact of blended learning on the academic achievement and attitudes of ninth-grade students in science. The study compared different teaching methods and assessed students' perceptions of their use. In doing so, a quasi-experimental design was used as a case study. A total of 112 students were involved and divided into two groups, an experimental group having 61 student and a control group having 51 students. An achievement test and a questionnaire were developed in order to ensure the study's validity and reliability, whilst SPSS was used for data analysis. The findings showed that there were statistically significant differences between the experimental and control groups, whereby the experimental group indicating better academic achievement. In addition, the experimental group showed more positive attitudes towards blended learning. These favourable attitudes were particularly evident among students who had demonstrated satisfactory academic performance in science.

Li, et al. [18] carried out a study to examine the effects of blended learning on knowledge, skills, and satisfaction in nursing students. An in-depth search was conducted in PubMed, EMBASE, CINAHL, and the Cochrane Library for English-language publications. The literature was reviewed and relevant data were extracted by two independent researchers. The eligible studies were subjected to meta-analysis using RevMan 5.0, and eight studies met the inclusion criteria for the meta-analysis. The results revealed that blended learning, comparing with traditional teaching methods, was found to significantly enhance nursing students' knowledge and satisfaction. However, blended learning showed a tendency to improve skills although there was no statistically significant difference. The findings confirmed that blended learning demonstrated effective improvements in knowledge and satisfaction levels among nursing students.

Huang [19] conducted a study to investigate the factors that influence learning satisfaction in blended learning. The study focused on three factors, which are: perceived usefulness, ease of use, and learning motivation. Particularly, it examined how these factors impact students' satisfaction during their learning. In this study, 173 freshmen, who enrolled in an interactive game design course. The results revealed that perceived ease of use impacts usefulness, usefulness and ease of use influence learning motivation, and learning motivation impacts learning satisfaction.

The study findings provided and empirical evidence, and identified the factors that teachers should consider when implementing blended learning.

A study conducted by Nikolopoulou and Zacharis [2] to investigate university students' blended learning behavior perceptions shortly after the coronavirus pandemic. This is because fewer studies regard university students' learning behavior in blended learning environments. In this study, a 19-item questionnaire was distributed to 176 university students in Greece. Results revealed that students have stated positive blended learning behavior perceptions. It also showed higher percentages of agreement were associated with the role of audio-visual online resources that facilitate and support independent learning. However, students indicated lower percentages of agreement, and some uncertainty, regarding to involvement in small group work with their peers. Researchers stated that their study could serve as a pilot for more in-depth studies of institutional and educational developments in the future.

Recently, Syarifudin, et al. [20] carried out a study to examine the effectiveness of blended learning management and online skills on students' learning independence. A quantitative approach was used together with comparative causal research. The data were collected by distributing questionnaires to 90 responded teachers from four high schools spread across one district. Data analysis techniques were correlation and regression. The results showed that blended learning management and online skills have a positive impact on student learning independence. However, the study recommended that teachers must conducted the learning process using blended learning in order to increase student learning independence.

4. Benefits Of Blended Learning

Several publications have confirmed that blended learning has many benefits. For instance, it can offer flexibility and efficiency [7], make the teaching and learning process more interactive and conventional [6]. In addition, it can increase students' knowledge and skills and academic performance [1]. Other studies consider that blended learning as a solution to classroom insufficiency, and it can solve the existing issues of traditional and online learning [7] [20].

Musawi and Ammar [1] stated that blended learning utilizes appropriate ICTs to combine times and modes of learning and integrate the best aspects of face-to-face and online interactions. Technology has a huge and diverse impact on blended learning. Learning results, student engagement, and motivation can all be improved by the use of technology in the classroom. According to [7], blended learning can provide individual learning opportunities for both students and lecturers Using computers, tablets, and smartphones offers accessibility and convenience, eventually changing the face of education. In addition to increasing student performance, the use of e-learning platforms (such as Zoom Meetings) can promote independence and attention spans.

Jnr [12] indicated that blended learning provides an effective approach for achieving the needs of academic staffs and accessing to course resources of students. Moreover, it helps to redesign course programme that leads to improve students learning outcomes, which include better grades, higher content knowledge, and improved understanding of course contents. Mukhtiar Baig, et al. [14] confirmed that blended learning improves the students' performance in the final exams. This claim has affirmed by a study conducted by Li, et al. [18], who indicated that blended learning

improves the performance skills but not improve knowledge. In construct with [19] who claimed that blended learning is very helpful for obtaining new knowledge.

Aji, et al. [13] affirmed that blended learning is useful, helpful, and efficient, while Nikolopoulou and Zacharis [2] stated that blended learning assists for autonomous learning. Jnr [12] stated that blended learning allows for didactic innovate teaching and creativity to occur within the course syllabus, and across the institution. Blended learning can make students more developed, challenged, and more creative in solving the problems they face [20]. In addition, it offers a more flexible schedule, and helps lecturers develop important skills through face-to-face sessions. Furthermore, blended learning is flexible [13] [16] [20], easy to use [13] [19], and improves student's satisfaction [13] [18]. It also provides cost-effective learning [13] [16] [20].

Huang [19] indicated that blended learning style takes subjective feelings about learning activities. Nasution, et al. [16] argued that blended learning facilitates the process of student learning and stimulates interaction. Similarly, Nikolopoulou and Zacharis [2] demonstrated that blended learning encourages interactions and self-regulation, while Syarifudin, et al. [20] claimed that blended learning increases the interactivity and students' interest in continuing to learn independently. Jnr [12] confirmed that blended learning has several benefits, such as reducing student and lecturer's classroom time and subsequently saving staffing costs. It also offers institutions the opportunity of utilizing technology, as well as facilitating active and significant learning. Numerous studies, such as [13], [15], and [2], found that blended learning motivates students to learn through communication with teachers.

5. Challenges Of Blended Learning

Results revealed that blended learning has numerous challenges, that hamper the process of learning for lecturers and students. The challenges include poor integration [12], incomprehensible materials [13], waste of time [12] [13], and bad internet networks [13] [16]. Moreover, blended learning needs complex teaching strategies [15]. It makes lecturers increasing assignments, which in turn increases the course workload and decreases the academic productivity [12]. However, Syarifudin, et al. [20] indicated that students spend more time looking for sources.

Mukhtiar Baig, et al. [14] stated that students in blended learning are afraid of its potential because it is an alternative approach to face-to-face teaching. In addition, blended learning needs explicitly educating learners, who have powerful, effective, highly learning strategies. For both, lecturer and learner, the lack of experience and low skill to use technology are considered as crucial challenge faces blended learning [12] [13]. According to Nikolopoulou and Zacharis [2], a key challenge of blended learning is the limited experiences of lecturer and learner.

6. Findings And Future Directions

In this study, a cross analysis was conducted with focusing on exploring the major challenges of blended learning from the current literature. Moreover, its key opportunities were identified through the analysis that would be investigated in future works. Although blended learning was initially used during the coronavirus pandemic; however, its adoption starts growing in numerous universities over the world. In addition, this study confirms that blended learning is defined as the combination of traditional face-to-face classroom with online learning.

From the analysis of findings, this study confirms that there are numerous challenges must be overcome in order to strengthen the adoption of blended learning in educational institutions. Academic researches, lecturers, and students, together with educational institutions' cooperation are needed to overcome these challenges. Hence, the major findings of this study, that need to be addressed in future researches, are outlined in the following points:

- Blended learning needs to be explored and understood more thoroughly, as several studies indicate that students are afraid of blended learning potential.
- There is a highly need to have good internet networks, robust integration, and comprehensible materials in order to well prepare the educational environment of blended learning and save the time.
- Work should be done to develop new teaching strategies in order to yield more efficiency and effectiveness for blended learning. This would help to decrease the course workload and increase the academic productivity.
- Efforts should be made on improving the experience and skills to use technology for lecturers and learners.
- Retrieved studies highlighted different implications for students, educators, as well as university policy and practice, which require a further discussion and investigation.
- Current research claims that there is an urgent need to use blended learning at all universities and other educational institutions.

7. Conclusions

This study reviewed the current state of the art and latest researches done on blended learning. The narrative review method was adopted to explore the related literature from numerous scientific sources. This study contributes an in-depth review on blended learning that is useful for the researchers and practitioners from academic institutions, which in turn significantly contributes to the body of knowledge. Definitely, this study provides several definitions of blended learning concept, and described its advantages and benefits. Then, it discussed the crucial challenges face its implementation, and outlined different directions for future investigation. The study's findings would help in the growing body of evidence on blended learning within the higher education context. Furthermore, it could be applied to other educational levels, such as secondary education or professional training. This study confirms that through the efficient use of technology, educators may design creative, dynamic learning environments that accommodate a range of learning styles, resulting in increased training and education efficiency and effectiveness.

References

- [1] A. S. A. Musawi and M. E. Ammar, "The Effect of Different Blending Levels of Traditional and E-Learning Delivery on Academic Achievement and Students' Attitudes towards Blended Learning at Sultan Qaboos University," *TOJET: The Turkish Online Journal of Educational Technology*, vol. 20, pp. 127-139, 2021.
- [2] K. Nikolopoulou and G. Zacharis, "Blended Learning in a Higher Education Context: Exploring University Students' Learning behavior," *Education Sciences*, vol. 13, pp. 514-527, 2023.
- [3] B. W. Gao, J. Jiang, and Y. Tang, "The effect of blended learning platform and engagement on students' satisfaction: The case from the tourism management teaching," *Journal of Hospitality, Leisure, Sport & Tourism Education*, vol. 27, p. 100272, 2020.
- [4] H. Alaidaros, A. Kherd, and H. A. Al-Aidroos, "Students' Perception of Online Learning during Covid-19 Pandemic at Al-

- Ahgaff University, Yemen: A Survey," presented at the International Conference of Modern Trends in ICT Industry (MTICTI), Sana'a, Yemen, 2021.
- [5] A. Anas, "Perceptions of Saudi Students to Blended Learning Environments at the University of Bisha, Saudi Arabia," *Arab World English Journal (AWEJ)*, vol. 6, pp. 261-277, 2020.
 - [6] L. A. D. Warman, "The Effect of Google Classroom in Blended Learning on University Students' English Ability," *J-SHMIC : Journal of English for Academic*, vol. 8, pp. 12-23, 2021.
 - [7] G. Ali, B. A. Buruga, and T. Habibu, "SWOT Analysis of Blended Learning in Public Universities of Uganda: A Case Study of Muni University," *Multidisciplinary Scientific Journal*, vol. 2, pp. 410-429, 2019.
 - [8] J. Zeqiri, V. Kareva, and S. Alija, "The Impact of Blended Learning on Students' Performance and Satisfaction in South East European University," presented at the ENTRENOVA Croatia, 2020.
 - [9] K. B. A. Al Bataineh, A. E. A. A. Banikalef, and A. Albashtawi, "The effect of blended learning on EFL students' grammar performance and attitudes: an investigation of Moodle," *Arab World English Journal (AWEJ)*, vol. 10, pp. 324-334, 2019.
 - [10] H. Alaidaros, M. Omar, and R. Romli, "Identification of criteria affecting software project monitoring task of Agile Kanban method," presented at the AIP Conference Proceedings, Penang, Malaysia, 2018.
 - [11] H. Alaidaros, M. Omar, and R. Romli, "The state of the art of agile kanban method: challenges and opportunities," *Independent Journal of Management & Production*, vol. 12, pp. 2535-2550, 2021.
 - [12] B. A. Jnr, "An exploratory study on academic staff perception towards blended learning in higher education," *Education and Information Technologies*, vol. 27, pp. 3107-3133, 2022.
 - [13] W. K. Aji, H. Ardin, and M. A. Arifin, "Blended Learning During Pandemic Corona Virus: Teachers' and Students' Perceptions," *Journal on English Language Teaching and Learning, Linguistics and Literature*, vol. 8, pp. 632-646, 2020.
 - [14] Z. Mukhtiar Baig, J. Gazzaz, and M. Farouq, "Blended Learning: The impact of blackboard formative assessment on the final marks and students' perception of its effectiveness," *Pak J Med Sci*, vol. 36, pp. 327-332, 2020.
 - [15] D. Kerz, N. TomazevicAleksander, AristovnikI, and L. Umek, "Exploring critical factors of the perceived usefulness of blended learning for higher education students," *PloS one*, vol. 14, p. e0223767, 2019.
 - [16] A. K. P. Nasution, A. H. Surbakti, R. Zakaria, S. K. Wahyuningsih, and L. A. Daulay, "Face to Face Learning vs Blended Learning vs Online Learning: Student Perception of Learning," *Journal of Physics, Conference Series (ACOSTER)* 2029, vol. 1783, p. 012112, 2020.
 - [17] N. R. Alsalhi, M. E. Eltahir, and S. S. Al-Qatawneh, "The effect of blended learning on the achievement of ninth grade students in science and their attitudes towards its use," *Heliyon*, vol. 5, p. e02424, 2019.
 - [18] C. Li, J. He, C. Yuan, B. Chen, and Z. Sun, "The effects of blended learning on knowledge, skills, and satisfaction in nursing students: A meta-analysis," *Nurse Education Today*, vol. 82, pp. 51-57, 2019.
 - [19] C.-H. Huang, "Using PLS-SEM Model to Explore the Influencing Factors of Learning Satisfaction in Blended Learning," *Education Sciences*, vol. 11, pp. 249-266, 2021.
 - [20] A. Syarifudin, H. Sanulita, E. N. Hajati, and J. H. Lumbantoruan, "The Impact of the Blended Learning Model on Student Learning Independence during the Learning Process," *Journal of Education Technology*, vol. 8, pp. 106-115, 2024.
 - [21] J. Kacetla and I. Semradovaa, "Reflection on blended learning and e-learning – Case study," *Procedia Computer Science*, vol. 176, pp. 1322-1327, 2020.
 - [22] T. I. Oweis, "Effects of Using a Blended Learning Method on Students' Achievement and Motivation to Learn English in Jordan: A Pilot Case Study," *Education research international*, vol. 2018, pp. 7425924-7425931, 2018.