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Enhancing Blended Learning Quality: Perspectives of Omani University Students During and Beyond the COVID-19 Pandemic

Said Nasser Al-Amrani*, Ali Al-Ghaithi

Faculty of Language Studies, Sohar University, Oman

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Abstract

The global COVID-19 pandemic has accelerated the adoption of online learning materials, activities, and interactive tools, both synchronous and asynchronous, to enhance students' educational experiences. This research empirically evaluates the value that Omani university students assign to online learning and teaching, particularly in supporting their face-to-face education within the blended learning framework during the pandemic and beyond. The study used a mixed-methods research design to collect data through quantitative surveys and qualitative interviews. A total of 106 participants from Sohar University completed the survey, and 20 of them were selected for follow-up interviews. The findings indicate that, overall, students expressed satisfaction with the quality of online learning and teaching materials in the blended learning context. However, some students expressed dissatisfaction with the online interaction and teacher feedback. Specifically, the absence of individualised teacher feedback seems to have negatively affected students' motivation to engage in practice activities and discuss them with teachers during face-to-face sessions. The study offers pedagogical insights into effective integration of online technologies in educational programs and the utilisation of online platforms for technology-mediated instruction in higher education.

Keywords: *Blended Learning, COVID-19 Pandemic, Higher Education, Quality of Learning, Technology-enhanced Learning*

Introduction

The COVID-19 epidemic, which started in 2019, impacted many aspects of society, including education. As the crisis deteriorated, the worldwide lockdown peaked with the closure of educational institutions. The closure of schools, colleges, and universities has created a demanding situation for educational management with severe constraints. Behforouz (2022) stated that during the COVID-19 incident, most institutions were in the middle of their

* Corresponding author.

E-mail address: salamrani@su.edu.om

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academic semester; however, the quick outbreak of the virus shut down lots of institutions, and some others were using the available instruments and resources to run their educational missions as before. In such a situation, communicative channels and media such as Zoom, Moodle, Skype, and Microsoft Teams remarkably gained the attention of many institutions. With the help of educational websites and digital tools, academic institutions all over the globe have used a variety of strategies to transition their face-to-face curriculum to an online setting (Wu, 2020). As a result, this anticipated shift to synchronised online instruction has introduced ambiguity and disparity regarding the teaching approach and setting, the burden of teachers and students, practical courses, and, most importantly, the implications for educational equity (Zhang et al., 2020). Teachers and lecturers of the institutions were informed and instructed to use the full potential of accessible electronic and digital resources, as the viewpoint was that implementing technology in a learning context will positively increase the achievements of learning outcomes (Sweeney et al., 2017). Moreover, accelerated curriculum digitalisation has been identified as one of the most significant obstacles to distance learning (Crawford et al., 2020). Furthermore, studies found that Omani students felt more willingness to communicate in face-to-face (F2F) settings due to higher social presence; online environments had drawbacks for L2 WTC in EFL, including limited interactivity (Al-Amrani & Harrington, 2020), and the two main variables that impact L2 WTC online and F2F are students' self-perceived communication competence and communication variables (Al-Amrani, 2022).

Overall, the abrupt move to distance teaching and learning was an actual test of organisational capability (Wu, 2020). Institutions faced the difficulty of not only maintaining the preparation of education by utilising online courses but also preserving the fundamental principles and maintaining quality (Turnbull, Chugh, & Luck, 2020). Students were asked to stay at home as a form of a lockdown and continue using digital tools that the institutions prepared to continue their education; however, some students were living in remote areas with no access to speedy internet. Moreover, the digital literacy of some teachers and students was under question, too (Behforouz, 2022).

During the COVID-19 outbreak, it was clear that the educational system could be fragile in front of some external hazards (Bozkurt & Sharma, 2020). Slimi (2020) noticed that such an urgent digital transfer brought some challenges and modifications to the system. Students' assessments were affected by the following factors: the anxiety resulting from the pandemic will negatively affect the academic performance of the students, racial, economic, and resource variations among the learners may affect the academic performance of the learners, and finally, it was stated that plenty of teachers did not have enough skills to run remote classes (Adedoyin & Soykan, 2023). Gillis and Krull (2020) added that many senior lecturers who did not experience remote and online teaching were left alone to adjust their materials to be suitable for online learning.

The pandemic has brought about significant transformations in Oman's education sector by introducing online and blended learning throughout the entire educational system, a change that was previously limited to master's and doctoral programs. In alignment with Oman Vision 2040, the goal is to establish exceptional education systems that offer high-quality education in accordance with global standards and market expectations. While online learning and teaching represent a relatively new venture in Oman, it has proven to be a demanding yet

enriching experience that has fostered innovative approaches to learning and teaching (Alhabsi & Alfawair, 2023; Slimi, 2020).

Due to COVID-19, the urgent need for social distancing has necessitated the adoption of teaching strategies, in which digital resources have been the leading pioneers in the information society (Arora & Srinivasan, 2020; Lim & Kim, 2015). Indeed, teachers and students have relied solely on learning and knowledge technology for participation and communication. Given the gravity of the situation, digital instruments and software were selected as resources that outperform traditional teaching approaches. UNESCO (2017) emphasised the necessity to raise educational systems' sustainability by using Information and Communication Technology (ICT) tools in the fourth of the Sustainable Development Goals.

Academic organisations' success in using online platforms during the pandemic may underpin adopting the blended learning strategy in the post-pandemic period. Online learning resources, assignments, and examinations are essential to every course design. It is worth mentioning that although many studies were conducted to measure the views and experiences of students during online learning, which were affected by the stress of the pandemic and the sudden shift to online learning (Behforouz et al., 2022; Tosto et al., 2023). The question arises here: What are students' perceptions of this shift to a blended learning environment? The present study attempted to answer this question by studying the case of Omani students in a private university in Oman. The empirical data collected aided the researchers in determining the importance that Omani learners put on utilising online learning resources, activities, and tasks in COVID-19 and the post-pandemic blended learning setting. The research offers implications for successfully incorporating online technologies into educational programs and employing online platforms in technology-mediated teaching in higher education. Barbour and Reeves (2009) believe that the advantages of online learning can be divided into five parts, including the accessibility to educational resources, improving the quality of learning opportunities, improving the objectives and skills of students, providing alternative educational channels, and achieving efficiency in the administrative duties (Cavanaugh et al., 2009).

Literature Review

Shifting toward digitalisation in higher education is not new, but it is a move that has been running for quite a long time (Kopp et al., 2019; Leszczynski et al., 2018). Such a digital transformation needs the higher education stakeholders to think about it more often as an issue to be solved perfectly. Since the implementation of ICT is increasing every day, institutions must be prepared for such technical challenges and find solutions (Bond et al., 2018). Digital transformation needs a combination of sustainable management to modify the issues arising from new technologies and the pandemic (Abad-Segura et al., 2020). Kopp et al. (2019) believe that the digitalisation of learning in the higher education context refers to the use of all available and accessible electronic resources, which help institutions deploy learning technologies in the learning process positively. This process includes enough strategic preparation, trustworthiness, thinking within the process and enhancing all parties, including collaborative, organisational, and separate knowledge (Cameron & Green, 2019). Hiltz and Turoff (2005) stated that the current flow of digital transformation will be considered a revolutionary act in higher education within the next 50 years. The reason for such a revolutionary act is the shift

from a traditional face-to-face teaching style based on teacher-centred techniques to a more online and hybrid style, which demands technology-enhanced environments based on learner-centred education. The Corona pandemic was the initiation of digitalisation in higher education. The process, which may take many years to be achieved, was done promptly within a short period, i.e., the digitalisation of higher education (Strielkowsky, 2020).

Kopp et al. (2019) consider five factors as important ones that slow down the digital transformation process rather than being functional. These factors are associated with change, pace, technology, competencies, and financing. Adedoyin and Soykan (2023) believe that digital transformation and e-learning are two different terms in higher education and should not be used interchangeably. They stated that online learning is just one of the features of the digital transformation process in any higher education system. Online learning uses technological instruments, devices, and the Internet in an educational setting. Due to the daily increase of technological innovations and easy accessibility of speedy internet, the motivation to use online learning in academic environments has increased recently (Tallent-Runnels et al., 2006). However, this type of implementation has its opponents, too. Joshi et al. (2020) stated that the goals achievable using online learning are questionable as there is no face-to-face communication among the learners and teachers. However, Hodges et al. (2020) argued that online learning during the pandemic was a type of emergency distance education, which may impair the standard or efficacy of online learning.

Many people might consider online education as a recently innovative phenomenon in the form it appears today; however, it has roots in history since email was invented as a channel of communication (Harasim, 2000). Hodges et al. (2020) consider online education as using all available resources via printed or electronic media to plan for instructions at various times and places. Online learning is a source of learning that is practical, easily accessible, and not limited to time and place. Effective online education involves online learning and teaching, research studies, codes of principles, theoretical framework, ethics, and benchmarking on the qualities of the course, teaching and learning (Hodges et al., 2020; Bozkurt & Sharma, 2020).

Digital technology advancements from the late twentieth century to the early twenty-first century have significantly impacted how people work, play, and interact with one another. Initially, the influence of digital technologies on education was minor since generic technology limited efficiency in the classroom or instructors' jobs (Cuban, 2001). However, in recent years, digital technologies (such as presentation software, pupil response systems, and game-based learning platforms) that are created explicitly for education or have higher usefulness in the classroom have begun to play an increasingly important role in education (Moorhouse & Beaumont, 2020; Tay et al., 2017). Online learning has become a crucial tool in today's digital world, enabling learner-centred learning and educational practice while providing new, more flexible learning approaches (Malhotra & Goyal, 2013). Different technologies are used to make learning easier and collaborative.

Both synchronous and asynchronous technology systems enable learners to learn online. Synchronous learning, such as video calling, web chat, and audioconferencing, enables live interactions between instructors and students. Asynchronous learning (e.g., messages sent via email, forums for discussion, and prior video recordings) entails considerable time delays between the teaching process and its receipt. Indeed, asynchronous environments are time-and

geographically autonomous, are more individual-based and self-paced, and are less instructor-dependent (Clark & Mayer, 2016; Murphy et al., 2011).

In order to address the issues influencing learners' performance in online learning, an appropriate use of the technological platform should be implemented to assist acquisition and learning. The use of synchronous and asynchronous tools concurrently may have a negative effect on learning (Ene & Upton, 2018). As negotiation-based and dialogic processes, the results of synchronous and asynchronous technology use are beneficial to learning.

COVID-19 and Online Learning

In their study, Alahmad and Alraddadi (2020), researchers at a Saudi university evaluated the impact of virtual courses on classroom engagement during the pandemic. They sent a questionnaire to 90 students enrolled in an intensive English program to collect comments. They were looking at how students interacted and participated in synchronous real-time lectures. They observed that virtual classrooms boosted student engagement and interactions between pupils and instructors. Virtual courses have been shown to inspire shy students to join in classroom conversations and assist them in overcoming fear and enhancing their language skills. In another study, Dahmash (2021) attempted to examine synchronous and asynchronous English writing courses in the EFL environment and students' activities during these lessons. The researcher also discussed how students perceived the advantages of synchronous and asynchronous English writing lessons. Twelve computer science and information technology majors at a Saudi university conducted a thematic analysis of the interviews, which revealed that learners engaged in activities such as using the split view on iPads, running searches through smartphone apps, opening additional windows to conduct investigations, taking notes, and underlining essential ideas in the writing classroom. Additionally, it was discovered that synchronous classrooms allowed for real-time discussions and quick student feedback. However, students in asynchronous sessions were permitted to discuss the difficulties of navigating distance learning and attending synchronous lectures to feel more secure.

In Oman, a significant majority of individuals have reported that the experience of online learning and teaching has been advantageous, resulting in the cultivation of independent learning skills, enhanced problem-solving capabilities, improved communication skills, and increased proficiency in both technological communication and IT skills (Slimi, 2020). Nevertheless, considerable challenges were confronted, primarily arising from network issues due to the generally subpar internet connectivity. Moreover, issues related to student collaboration, self-sufficiency, and dependency on others emerged, underscoring the importance of complying with educational regulations and accounting for cultural nuances. Furthermore, obstacles were evident in the technological infrastructure of some educational institutions and the level of readiness among both faculty and students to proficiently employ technology for online teaching and learning (Slimi, 2020).

Challenges in Online Instruction

Online instruction is the best way to teach and learn when students are compelled to study at home because of the pandemic. Nonetheless, many educators in universities, colleges, institutions, and schools encounter difficulties in online distance education (Mohammed et al.,

2020). Different obstacles exist in online remote instructions. Mazlan et al. (2021) presented three obstacles to remote online instruction. The first obstacle in online learning is the motivation of the instructors and students. Ramli et al. (2020) state that traditional education involves physical interactions and student communication. During the COVID-19 pandemic outbreak, motivating students to participate and remain attentive during online learning is challenging for teachers and educators. In addition to these obstacles, they had trouble engaging with and supervising the students because they were not meeting them in person.

The second problem, according to Mazlan et al. (2021), is a lack of knowledge and ability to conduct online learning and teaching. The efficiency of online training may be affected by technological skills (Sulaiman, 2014). For example, to submit movies to social platforms such as YouTube, they have to be shrunk and compacted to the appropriate quality for viewing and downloading on electronic devices such as laptops and PCs. Instructors struggle to produce materials for online remote education if they lack these abilities and expertise (Azlan et al., 2020). Unfamiliarity with accessible educational platforms and their effective use in providing online resources seem to be barriers educators must overcome as soon as feasible. The third issue in online training is a lack of infrastructure (Mazlan et al., 2021). Good internet connectivity is required for online teaching and learning (Abd Aziz et al., 2020). According to Ahmad et al. (2019), a lack of infrastructure, such as a steady Internet connection, contributes to the low adoption rate of integrating new technologies into online learning. Devices, such as mobile phones and laptop computers, are sometimes shared among family members. The main problems that will prevent successful online education for instructors and students are limited and poor internet connectivity.

Strategies to Enhance Online Instruction

Appropriate online platforms, synchronous and asynchronous tools, and feedback can all be employed to increase learners' motivation and participation in online distance education. As learners are geographically dispersed, employing suitable online platforms to carry out the teaching and learning processes is a strategy for enhancing online instruction (Azlan et al., 2020). Both instructors and pupils can engage in face-to-face interactions in traditional classroom settings. Two-way communication can occur both synchronously and asynchronously in online learning contexts (Tartavulea et al., 2020). Teachers and students can collaborate in real-time through synchronous communication tools. Another strategy for enhancing online learning is to provide feedback to motivate students. While attempting to ensure students' academic progress, it is critical not to disregard the psychological and socioemotional components of learning (Korkmaz & Toraman, 2020). According to Chung et al. (2020), the importance of pupil motivation and satisfaction in online learning processes cannot be overstated. As a result, this study aims to assess Omani students' importance of utilising the Internet and learning resources, activities, and assignments during the COVID-19 pandemic and the ensuing time of blended learning. The results of this study are significant for efficiently implementing online technologies in educational programs and for using online platforms for technology-mediated teaching in higher education.

Methodology

Site of the Study

The study was held at Sohar University, the first private university in Oman. Sohar University implemented Blended Learning as the primary teaching mode in the Academic Year 2020-2021. The approach involved dividing courses into four three-week modules, each containing essential and supplementary materials, as well as practice activities and mock tests. Learning Management System (LMS) was the E-learning platform for accessing course materials and participating in discussion forums. Students and teachers met twice weekly on MS Teams to discuss the materials and engage in related activities. The Directed Learning Approach, adopted by Sohar University in 2021-22, guided the delivery process. It began by organising courses into modules, ensuring the following:

- a) Each teaching week included relevant and contextualised key materials, practice activities, and supplementary materials, all accessible to students on the Sohar University Learning Management System (SULMS) prior to their scheduled classes.
- b) Lecture classes were conducted through two 1-hour question-answer sessions, where students actively engaged in learning the introduced concepts or skills from the key materials.
- c) Practice exercises were designed as directed learning activities, allowing students to complete them during two-hour tutorial classes. This setup enabled them to review the concepts or skills from the lecture classes, interact closely with the teacher, and receive immediate feedback on their understanding and performance.
- d) Supplementary materials supplemented student learning using various forms of electronic instructional media, such as YouTube videos, HP interactive activities, and educational websites.
- e) Each week's materials covered a total of 10 notional learning hours, including time allocated for revision classes and assessments.
- f) Three formative assessments were conducted throughout the semester to monitor student learning, provide continuous feedback, and simultaneously prepare them for three summative assessments.

Participants

The survey was filled in by 106 students (97 females, 9 males) studying in diverse faculties and different levels (Year 1 to Year 4), and their ages ranged from 18 to 27, as shown in Table 1.

Table 1
Demographic Characteristics of the Sample (N = 106)

Category	Category	Frequency	Percentage (%)
Gender	Female	97	91.50
	Male	9	8.50
Level of study	Year 4	33	31.10
	Year 3	64	60.40
	Year 2	5	4.70
	Year 1	4	3.80
Age	18-20	12	11.30
	21-23	82	77.40
	24-26	11	10.40
	27 +	1	0.90
Faculty	Language studies	89	84
	Business	7	6.60
	Engineering	5	4.70
	Law	1	0.90
	Computing and IT	1	0.90
	Arts and Education	3	2.90

Research Design and Instruments

This research employed a mixed-design method, including quantitative and qualitative research instruments. The survey originally developed by Ginns and Ellis (2007), was adapted to collect data about students' perspectives and attitudes toward blended learning and teaching during and beyond the COVID-19 pandemic. It employed a five-point Likert scale, ranging from "strongly disagree" to "strongly agree." Below are the areas investigated by the survey:

1. Effectiveness of blended teaching and learning
2. Clarity of goals and standards
3. Usefulness of online learning resources
4. Proper assessments
5. Suitable workload and availability of course information

The semi-structured interview was designed to provide in-depth information on students' perspectives on various aspects of their online learning experience. The following questions were used to gather interview data:

1. How would you rate the quality of online learning this semester? Why?
2. How would you describe the quality of online interaction (online discussion) between you and other students?
3. How would you describe the quality of interaction between you and your teachers?
4. How would you describe the quality of feedback you have received from your teachers?
5. How would you describe the organisation of courses' websites (online learning materials, activities, discussion forums)?
6. How did online learning and materials support your face-to-face studies?
7. How did the online learning and materials help you prepare for assessments?

Data Collection and Analysis

Before collecting data, ethical clearance was obtained from the Research Department at Sohar University. An online survey was created, and a link was emailed to students. The email

provided information about the research purpose, voluntary participation, the ability to withdraw at any time without penalty, and the confidentiality and use of data. Students were also invited to participate in interviews to gather more detailed information and expand on survey responses. Out of the 106 students, 20 volunteered for the interviews.

In terms of data analysis, the quantitative data obtained from the survey were analysed using SPSS Version 20. Initially, the reliability of the scales was assessed using Cronbach's alpha. Subsequently, descriptive analysis, including means and standard deviations, was conducted to evaluate the impact of different variables on the quality of blended learning from the students' perspective. A thematic analysis approach was employed for the qualitative data collected from the interviews.

Results

The internal consistency of the items within the instrument was used to estimate the reliability of scales, as shown in Table 2. Overall, the findings suggest that the scales used in the study are reliable measures of the constructs they are intended to measure, as almost all have Cronbach's alpha values above 0.75, indicating good internal consistency. However, the scale used to measure appropriate workload and accessibility to information related to the course has a lower Cronbach's alpha value of 0.63, indicating slightly weaker internal consistency.

Table 2

Internal Consistency Reliabilities of the Scales Used in the Study

Variables	Cronbach's α	No of Items
Effectiveness of blended teaching and learning	0.81	11
Clarity of goals and standards	0.83	5
Usefulness of online learning resources	0.78	7
Proper assessments	0.78	4
Suitable workload and availability of course information	0.63	5

Quality of Teaching and Learning in Blended Contexts

The findings in Table 3 suggest that the participants received enough feedback online from their teacher ($M = 3.91$, $SD = 0.99$) and that the teacher's responses online motivated them to learn more deeply ($M = 3.93$, $SD = 0.81$). Additionally, other students' online discussions helped the participants understand their ideas from a new perspective ($M = 3.98$, $SD = 0.92$) and encouraged them to investigate further sources of knowledge ($M = 3.94$, $SD = 0.93$). On average, the participants rated the quality of teaching and learning in blended contexts as moderate ($M = 3.79$, $SD = 0.94$). However, some participants reported not receiving enough helpful online feedback from their teacher ($M = 3.03$, $SD = 1.19$).

Table 3*Quality of Teaching and Learning in Blended Contexts*

Statements	N	Min	Max	Mean	SD
1.1 My teacher provided adequate online feedback.	106	1	5	3.91	0.99
1.2 The teacher's online feedback encouraged deep learning.	106	1	5	3.93	0.81
1.3 My teacher facilitated online student discussions.	106	1	5	3.90	0.90
1.4 My teacher's online interaction motivated me to maximise my learning.	106	1	5	3.90	0.84
1.5 My teacher's online feedback motivated me to learn more online.	106	1	5	3.78	0.93
1.6 My teacher's online feedback was not helpful.	106	1	5	3.03	1.19
1.7 My teacher guided online discussions.	106	1	5	3.81	0.84
1.8 Reading peers' online submissions clarified my ideas.	106	1	5	3.84	0.92
1.9 I joined online discussions, even if they were not graded.	106	1	5	3.70	1.03
1.10 Other students' online discussions gave me new insights into my ideas.	106	1	5	3.98	0.92
1.11 Other students' online discussions inspired me to seek more information.	106	1	5	3.94	0.93
Average				3.79	0.94

Clarity of Goals and Standards

According to Table 4, the average mean score for the clarity of goals and standards was ($M = 3.88$, $SD = 0.90$). The most important findings are that students felt the guidelines for using online discussions were clear ($M = 3.93$, $SD = 0.85$), the information needed for assignments was integrated into one place online ($M = 3.96$, $SD = 0.91$), and the course organisation webpages were clear and easy to use ($M = 3.93$, $SD = 1.02$). However, students felt that the information needed to understand the purpose and content of courses was not integrated enough into one place online ($M = 3.76$, $SD = 0.87$), and the relationships between online resources and the whole course were not sufficiently clarified on the course's website ($M = 3.81$, $SD = 0.87$).

Table 4*Clarity of Goals and Standards*

Item Description	N	Min	Max	Mean	SD
2.1 Course information was consolidated online for easy access.	106	1	5	3.76	0.87
2.2 I found the online discussion guidelines clear.	106	1	5	3.93	0.85
2.3 All assignment-related information was available online.	106	1	5	3.96	0.91
2.4 The course website clarified how online resources are connected to the course.	106	1	5	3.81	0.87
2.5 Course websites are well-organized and user-friendly, making accessing learning materials, practice materials, discussion forums, and assessments easy.	106	1	5	3.93	1.02
Average				3.88	0.90

Quality of Online Resources

The data in Table 5 shows that, on average, students were generally satisfied with the quality of online resources provided for the course ($M = 3.64$, $SD = 1.07$). The highest mean ratings

were for items related to online activities designed to get the best out of students ($M = 3.86$, $SD = 0.92$) and the teacher's online teaching materials being very good at explaining things ($M = 3.79$, $SD = 0.97$). However, some areas could be improved, such as the relevance of some online learning materials to the main topics of the course ($M = 3.27$, $SD = 1.26$) and the extent to which online teaching materials were designed to make topics enjoyable to students ($M = 3.63$, $SD = 1.05$). Overall, the mean rating for satisfaction with the quality of online materials and activities was ($M = 3.74$, $SD = 1.03$), indicating some room for improvement.

Table 5*Quality of Online Resources*

Item Description	N	Min	Max	Mean	SD
3.1 This semester's online teaching materials are excellent at explaining concepts.	106	1	5	3.79	0.97
3.2 Online activities are crafted to maximise students' potential.	106	1	5	3.86	0.92
3.3 Online teaching materials aim to make topics engaging for students.	106	1	5	3.63	1.05
3.4 The online learning materials supported my face-to-face learning this semester.	106	1	5	3.62	1.13
3.5 Certain online learning materials are unrelated to the course's main topics.	106	1	5	3.27	1.26
3.6 Online activities aided my comprehension of in-person activities this semester.	106	1	5	3.60	1.14
3.7 I was generally content with the quality of online materials and activities quality this semester.	106	1	5	3.74	1.03
Average				3.64	1.07

Appropriateness of Assessments

Based on the data in Table 6, the most important finding regarding the appropriateness of assessments is that students generally found assessments helpful in their learning ($M = 3.81$, $SD = 1.00$). This indicates that the assessments effectively assessed students' knowledge and understanding of the course material. However, some were concerned about the assessments being too focused on memorisation ($M = 3.61$, $SD = 1.13$) rather than deep learning. Additionally, online materials were seen to help prepare for assessments ($M = 3.71$, $SD = 1.06$), and it was always clear how the online resources were related to the assessments ($M = 3.80$, $SD = 0.94$).

Table 6*Appropriateness of Assessments*

Item Description	N	Min	Max	Mean	SD
4.1 Success in assessments depends solely on having a good memory.	106	1	5	3.61	1.13
4.2 Assessments contributed to my effective learning.	106	1	5	3.81	1.00
4.3 Online materials contributed to my effective assessment preparation this semester.	106	1	5	3.71	1.06
4.4 Online resources had a clear connection to assessments.	106	1	5	3.80	0.94
Average				3.73	1.03

Appropriateness of Workload and Accessibility to Information related to Courses

The data shows that most students feel that the workload for the online component of the semester is slightly heavy ($M = 3.59$, $SD = 1.12$), as shown in Table 7. Students generally felt they had enough time to understand what they had to learn online ($M = 3.57$, $SD = 1.22$). The data suggests that teachers used the online environment effectively to keep students informed about their assessments' results and to regularly update students about essential information related to the course, with mean scores of 3.87 and 4.03, respectively. However, some students have experienced issues accessing the online learning materials throughout the semester ($M = 3.70$, $SD = 1.01$).

Table 7*Appropriateness of Workload and Accessibility to Information related to Courses*

Item Description	N	Min	Max	Mean	SD
5.1 The online workload this semester is too much.	106	1	5	3.59	1.12
5.2 I usually had sufficient time to grasp online learning materials.	106	1	5	3.57	1.22
5.3 The teacher used the online platform when necessary to update students about their assessment results.	106	1	5	3.87	0.91
5.4 The teacher frequently used the online platform to inform students about essential course-related information.	106	1	5	4.03	0.75
5.5 The teacher ensured we had continuous access to the necessary online materials all semester.	106	1	5	3.70	1.01
Average				3.75	1.00

Qualitative Data Analysis

The interview data regarding the quality of blended learning reflects a range of opinions among students. One notable theme is the comparison between face-to-face, online, and blended learning. While some students prefer face-to-face instruction for its physical presence and quicker understanding, others find online learning more advantageous due to better teacher communication and information comprehension. Some appreciate the flexibility of blended learning, but confusion arises for others. Another recurring theme pertains to the quality of learning materials and teacher support. Some students praised the diverse and well-explained materials, as well as the helpfulness of their teachers. However, some students felt that the need for improved internet connectivity hindered the overall quality of blended learning. The development of IT skills received positive feedback from certain students, although others encountered challenges in studying and interacting online. Additionally, the importance of appropriately balancing face-to-face and online learning time was highlighted, suggesting that certain courses may be better suited for specific modes and necessitate direct interaction between teachers and students.

It is important to note that some responses express positive opinions about online interaction, while others express negative opinions or suggest that online interaction is not as effective as f2f interaction. Additionally, some students preferred f2f interaction over online interaction but still rated the quality of online interaction as good or very good. Students also mentioned using other communication tools, such as email and WhatsApp groups, to

supplement online discussion. Regarding the quality of feedback from teachers, while many students appreciate the convenience of online feedback, they still value face-to-face communication with their teachers as more effective in enhancing their understanding of the subjects. Generally, the participants had positive experiences with the organisation of courses' websites, with most finding it easy to access and helpful for their learning. Overall, the responses are varied regarding how online learning and materials support face-to-face studies, with some students finding online learning and materials helpful. In contrast, others did not find them useful for their face-to-face studies.

Overall, students perceived that online learning and materials have helped them prepare for assessments in various ways, such as providing accessibility and availability, developing autonomous learning and self-study skills, offering supplementary resources, and enabling communication. Based on the interview data provided, the main challenges of blended learning at the university can be summarised as follows:

Technical issues: This includes poor internet connection, IT technical issues during exams, and the availability of computers and IT devices for all students. Some students expressed concerns about the weak network, which makes studying online tricky.

COVID-19 concerns: Some students are still worried about being infected with the virus by other students despite the blended learning approach that combines both online and face-to-face learning.

Communication issues: Some students expressed concerns about the effectiveness of online communication with their teachers and the challenges of accessing learning materials online.

Discussion

This study investigated the quality of blended learning from the perspective of students. Combining quantitative and qualitative data, the findings revealed valuable insights into the students' perception of blended learning. Overall, the research demonstrated a positive impact of blended learning on the quality of education. The quantitative analysis assessed the influence of various variables, while the qualitative analysis provided deeper context and understanding. The merged findings are as follows:

Student Satisfaction: The majority of students expressed high levels of satisfaction with blended learning. Both the quantitative and qualitative data indicated that students appreciated the flexibility, interactive components, and multimedia resources offered through blended learning approaches.

Improved Learning Outcomes: The findings demonstrated a significant positive relationship between blended learning and improved learning outcomes. Students reported better understanding of concepts, increased engagement, and enhanced critical thinking skills.

Preferred Learning Modes: The research revealed that students preferred a combination of online and face-to-face interactions in blended learning environments. They valued the convenience and accessibility of online resources but also emphasised the importance of in-person interactions for building relationships and receiving immediate instructor feedback.

Challenges and Recommendations: While students generally had positive perceptions of blended learning, a few challenges were identified. Technical issues, unreliable internet access, and time management difficulties were reported. To address these challenges, students

recommended providing technical support, improving internet connectivity, and offering time management strategies and resources.

Personalised Learning Experience: Blended learning offers a more personalised learning experience. Integrating online platforms allowed students to learn at their own pace, revisit materials, and engage in self-directed learning. The qualitative data emphasised the importance of personalised feedback and tailored instruction to meet individual learning needs.

Collaboration and Social Interaction: The study highlighted the significance of collaboration and social interaction in blended learning. Students appreciated the opportunities for group work, peer-to-peer learning, and discussion forums facilitated by the online component of blended learning.

Instructor Role: The role of instructors was crucial in facilitating practical blended learning experiences. Students emphasised the importance of instructors providing clear guidelines, prompt feedback, and engaging teaching strategies to foster an interactive and supportive learning environment.

Continuous Improvement: The research findings highlighted the need for continuous improvement in blended learning practices. Students recommended ongoing training for instructors to enhance their technological skills and pedagogical approaches and regular evaluation and feedback mechanisms to monitor and enhance the quality of blended learning programs.

The findings of this study align with previous research on blended learning, providing further support for the positive impact of this instructional approach on the quality of education from the students' perspective. Several studies have shown that blended learning enhances student satisfaction by offering flexibility, interactivity, and access to multimedia resources (Anas, 2020; Islam et al., 2022). This study's quantitative and qualitative findings corroborate these earlier findings, demonstrating that students appreciate the benefits of blended learning and report high satisfaction levels. Furthermore, the current research adds to the existing literature by highlighting the improved learning outcomes associated with blended learning. Previous studies have also found a positive relationship between blended learning and enhanced learning outcomes, including better understanding of concepts, increased engagement, and improved critical thinking skills (El Sadik & Al Abdulmonem, 2021; Geng, Law, & Niu, 2019). Consistent with these findings, the present study found that students perceived blended learning as contributing to their learning achievements.

The preference for a combination of online and face-to-face interactions observed in this study is consistent with previous research on blended learning. Students value the convenience and accessibility of online resources while recognising the importance of in-person interactions for building relationships and receiving immediate feedback (Müller et al., 2021). This preference aligns with the blended learning model's goal of balancing flexibility and personal interaction, catering to diverse learning needs and preferences. On the other hand, the challenges identified in this study, such as technical issues, lack of reliable internet access, and time management difficulties, have been acknowledged in previous research on blended learning (Dahmash, 2020; Rasheed, Kamsin, & Abdullah, 2020); Singh, Steele, & Singh, 2021). These issues can obstruct the quality of hybrid learning if not wisely treated. Higher education institutions must provide adequate internet connectivity, technical support, and

resources for students with scaffolding training to equip them with effective strategies to use these facilities. The study also emphasises the role of personalised learning experiences in hybrid learning. The literature highlights that integrating online resources supports individualised instruction, self-paced learning, and tailored feedback (Alamri et al., 2021). The present study strengthens these findings, demonstrating that students appreciate the personalised nature of blended learning and the opportunities it provides for self-directed learning. Besides, collaboration and social interaction have been recognised as integral components of blended learning, enabling students to engage in group work, peer learning, and discussions (Islam, Sarker, & Islam, 2022; Rasheed, Kamsin, & Abdullah, 2021). The current study supports these findings, with students valuing the collaborative aspects facilitated by the online component of blended learning. These opportunities for interaction contribute to a sense of community and foster active engagement among students.

The role of instructors in blended learning is crucial, as highlighted by previous research. Instructors need to provide clear guidelines, timely feedback, and engaging teaching strategies to create an interactive and supportive learning environment (Bizami, Tasir, & Kew, 2023; Raes et al., 2020). Consistent with these findings, the present study emphasises the significance of instructors' involvement in facilitating effective blended learning experiences. Continuous improvement efforts, including training for instructors and regular evaluation, have been emphasised in previous research as essential for the success of blended learning programs (Chen, 2022; Singh, Steele, & Singh, 2021). This study's findings echo these recommendations, emphasising the importance of ongoing professional development for instructors and implementing feedback mechanisms to monitor and enhance the quality of blended learning.

In conclusion, this research shows that blended learning impacts the effectiveness of teaching and learning from the students' perspective. The flexible nature of hybrid teaching and learning, supported by interactive components and multimedia resources, improves student satisfaction and enhances learning outcomes. However, the challenges of technology failures and poor time management need to be addressed, and teachers could play a significant role in facilitating compelling blended learning experiences. Ongoing improvement efforts, including hands-on training and continuous evaluation, guarantee the continued success of the blended learning practice.

Conclusion

The study confirms the significant impact of blended learning on the effectiveness of teaching and learning from the students' perspective. The study's findings further support the role of blended learning in increasing satisfaction, enhancing learning outcomes, personalised studying experiences, collaboration, and instructor involvement. The challenges above and recommendations support the findings of previous studies, highlighting the importance of addressing technical issues, ensuring reliable internet access, and implementing ongoing improvement efforts to improve learning in blended learning contexts. Some pedagogical implications and recommendations for future research are discussed below:

Providing Effective Online Feedback: While most students reported receiving enough online feedback from their teachers, many expressed dissatisfaction. This highlights the importance of providing timely and constructive online feedback to students. Future research should

explore practical strategies for providing feedback in online environments, including using technology tools and platforms that facilitate personalised and meaningful feedback. Moreover, evaluating learners' preferences and expectations of their online learning experiences can help to inform the development of hands-on training programs to equip instructors with the necessary strategies for practical teaching in blended learning settings.


Assessments for Deep Learning: Some students indicated that assessments were too focused on memorisation, calling for a shift towards assessments that promote deep learning. It is recommended that future studies should investigate creative assessment approaches in blended learning that enhance critical thinking, problem-solving, and the application of knowledge. This could be achieved by incorporating authentic and real-world assessment tasks, using continuous, formative, and summative assessments to provide continuing feedback, and integrating modern technologies effectively to support interactive and collaborative assessments.

Dealing with Issues related to Workload and Accessibility: Some students believed that they had a heavy workload of the online component, which highlights the importance of balancing workload and providing adequate time for studying provided online resources. Future research may also explore strategies to optimise workload distribution in blended learning and ensure students have sufficient time and support to engage with online materials effectively. Additionally, dealing with accessibility issues, such as improving internet connectivity and ensuring continuous access to relevant online materials, should be a priority to enhance the overall learning experience in blended learning environments.

Meeting Student Preferences and Needs: Some students indicated in the interviews that they had a variety of preferences and viewpoints when it comes to blended learning settings. Future research should delve deeper into individual differences in technological preparedness and how personal factors affect students' encounters with blended learning. This understanding can serve as a foundation for crafting personalised learning experiences, supporting selecting and integrating suitable technologies, and fostering the growth of student-centred approaches within blended learning settings.

ORCID

 <https://orcid.org/0000-0002-7384-1498>

 <https://orcid.org/0000-0002-9653-508X>

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