

# Recommended Improvements for Online Learning Platforms Based on Users' Experience in the Sultanate of Oman

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## Abstract

The Covid-19 pandemic has seen an increasing use of video conferencing software as e-learning platforms. Students and faculty members face many challenges in using these platforms as part of the teaching and learning process, including technical problems. This paper reviews these challenges and offers solutions to improve the experience. A descriptive-analytical approach was used, with the researchers collecting data from the literature and from questionnaires distributed to 32 faculty members and to 104 students of higher education institutions in the Sultanate of Oman. This paper suggests improvements to enhance the experience of e-learning platforms, from the user perspective in the higher Education Institutions-Sultanate of Oman.

**Keywords:** video conferencing, e-learning, higher education, e-learning platforms, online learning

## 1. Introduction

The higher education system is subject to continuous processes of change, taking into account the needs of society and the requirements of students in the age of technology. In order to support teaching and learning, the process of integrating innovative e-learning is one of the most important challenges facing higher education institutions (Abuhassna et al., 2022), as it can be performed through a variety of online platforms, with many ways of expressing the concepts. Despite the different terminology used in computer science, e-learning and learning management, all of these systems are used through the Internet and have common features that contribute to the success of the educational process (Coman et al., 2020).

The Covid-19 pandemic has resulted in increased use of learning applications and programs by higher education institutions, with a variety of environments and tools whose strength lies in their availability anywhere and at any time using fixed or portable devices (Ventayen et al., 2018). In addition to making it easier to distribute content to a large number of users at the same time; This makes it possible to control the content and the time spent on learning, and thus employing it in a manner commensurate with each learner's needs and learning goals (Coman et al., 2020).

E-learning platforms are defined as integrated sets of interactive services provided through the Internet, that are not restricted to time or place, with tools to support and enhance the educational process for both teachers and students. Students can access courses and participate in various learning activities individually or in collective spaces so that they can communicate with each other remotely, exchange information and solve problems (Al Mulla & Abdullah, 2021). That is, the method used by universities to structure instructions promotes the optimal organization of content and interaction with students (Cacheiro-Gonzalez et al., 2019).

For this reason, many video conferencing programs and applications have been used as platforms to provide e-learning during Covid-19 in higher education institutions in Oman. For example, commenting and holding discussions make them suitable for direct interaction between teachers and students, with ease of access to these platforms through a web browser or by downloading the application on to various electronic devices (Oloyede et al., 2021). Many direct video-calling platforms are available on the Internet free of charge; they include Zoom, a cloud-based technology for video and audio conferencing, collaboration, chat, and webinars; Google Meet,

integrated with other G-Suite tools to create videos, record meetings, share screens, and join calls; and Teams, with chatting, meeting, calling, and collaborating features integrated with Microsoft Office software (Jena, 2020).

Amin and Sundari (2020) state that although video conferencing technology software and applications were created in order to improve and maximize business efficiency, they are widely used for educational purposes. Registered users can not only share visual images but also transfer files, slides, still images and text through the platform used. The expected learning outcomes from using certain types of video conferencing systems may vary from one context to another depending on the available ICT resources (Al-Samarraie, 2019).

Although all the platforms enable simultaneous face-to-face communication between faculty members and students, each has both advantages and disadvantages, and need improvement to adapt to the rapidly changing educational sector. To meet their specific needs, some faculty members prefer to use more than one platform collaboratively, as this contributes significantly to increasing satisfaction and interest by making the learning process more active. A great deal of attention is currently being paid to video and audio quality for all platforms, while students feel that the platforms are not being updated to meet current requirements (Thakker et al., 2021).

The researchers therefore conducted a survey to investigate the quality of the electronic platforms and video conferencing technology and applications used in higher education institutions in the Sultanate. The results showed that, from the point of view of Omani faculty and students, these platforms are of high quality, although there are many challenges resulting from the transition from traditional to online education. This paper presents some solutions to these challenges by reviewing previous studies and the views of faculty members and students.

## 2. Literature Review

All higher education institutions have resorted to e-learning as a quick solution to confronting the Covid-19 pandemic, resulting in many challenges for all those concerned with the educational process, including faculty members, students, technicians and also parents. Many tools and electronic programs are used to provide and continue the educational process, the most useful of these being the applications and programs for web conferencing technologies, which are used as platforms for the provision of e-learning.

Byun and Slavin (2020) conclude that the pandemic has brought both challenges and benefits to the educational system; while distance e-learning is likely to reduce the quality of education, in return it is considered an opportunity to improve educational content and professional development for teachers. Although online learning environments aim to introduce learning to students with the help of synchronous web conferencing tools, slides, files, and various applications (Basaran & Yalman, 2020). Utomo et al. (2020) suggest that no single tool can meet all the needs for distance learning assignments, exams, discussions and face-to-face meetings.

Thanks to web conferencing technologies, academic faculty members can manage and upload educational content in the form of presentations, image files and documents, publish live video content using a webcam, and share screen and audio with students. Students can interact with each other and with faculty members, share information, and use instant messaging to ask questions (Basaran & Yalman, 2020), using this technology effectively in online learning. The sense of group belonging among learners may replace face-to-face classroom learning to some extent (Jena, 2020), because e-learning systems provide tools to interact with them and with other students through discussion and comment forums. Because the educational content is easily accessible from anywhere, enabling students to study at their open pace and in complete comfort, this type of education increases their satisfaction and reduces stress (Adeoye et al., 2020).

This was confirmed by the results of the study of Alameri et al. (2020), that Moodle, Microsoft and Zoom platforms helped students develop and improve their self-study abilities and encourage them to progress in line with these, contributing to developing their time management skills and motivating them to learn. Amin and Sundari (2020) confirmed that using video conferencing technology to manage learning was a new experience for students and motivated them to be more responsible and more encouraged to learn because of receiving quick feedback via the Internet. It also contributes greatly to the socialization of participants by enabling them to manage knowledge, e-learning, and human feeling in the communication process (Basaran & Yalman, 2020).

However, another study by Ngoc and Phung (2021) sought to understand some of the problems that students encounter in their online courses via Moodle and MS Teams and their causes. In addition to some technical problems (such as poor computer skills, Internet outages and limited technological infrastructure), the students faced serious challenges including various distractions and lack of social interaction. The three main causes of these two problems are fear of public speaking, their lack of a distraction-free learning environment, and skills related to self-organized learning and cooperative learning.

Many researchers from different disciplines have been interested in enhancing students' performance of the online learning experience, and one of the issues of is their perceptions about online learning, summarized in four e-learning environments: self-learning, learning, multimedia learning, and teacher-led learning (Wei & Chou, 2020). Latip et al. (2020) consider that social impact is important in accepting e-learning and positively affects the intention to use it.

Basaran and Yalman (2020) found that one of the frequent mistakes that occur during the presentation and evaluation of web conferencing applications is the equivalence of the educational environment presented online with a traditional classroom environment presented face to face. They emphasized that although many studies had been conducted to verify the effectiveness of conferencing technology, the results showed that it did not achieve the full expectations of the students, which would affect their attitude towards learning. Another problem affecting the students' attitude towards using video conferencing is the technical problems related to applied techniques such as audio video and communication problems, as well as the method of interaction. The way faculty members use body language and class times also affects the quality of learning through video conferencing.

In a study conducted by Nambiar (2020), the results of a survey of teachers and students investigating their perceptions and fears of using virtual classrooms and online learning showed that satisfaction with the quality and timely interaction between student and teacher were affected by the availability of technical support, online classroom units, and making adjustments suitable for transferring scientific content.

Most of the studies reviewed agreed that there are several challenges in using e-learning systems: poor infrastructure, financial constraints, lack of knowledge of e-learning and teachers' resistance to the change. The students' attitude towards computers and the use of e-learning systems is important as it can affect their future use of online educational materials, and therefore ultimately the usefulness of online education intended for students. Latip et al. (2020) stated that people who are highly self-sufficient in technology will be more likely to recognize that learning by using technology is good for them; conversely, those with low self-efficacy perceive the use of technology-based learning as a burden, which may negatively affect their acceptance of e-learning.

Mukhtar et al. (2020) showed the advantages of online learning from the point of view of medical students and staff, specifically convenience and accessibility from anywhere; however, they recognized disadvantages, including inefficiency and difficulty in maintaining academic integrity, and made a number of recommendations: the necessity of training faculty members in online teaching methods; developing lesson plans to reduce the cognitive load; increasing interaction during online teaching activating many educational strategies, including flipped learning; limiting the duration of the lectures; and using online assessment programs in order to increase interaction.

Simamora et al. (2020) investigated the views of faculty members in different universities in Indonesia about the challenges encountered in using e-learning platforms and their expectations of them. They concluded that online learning applications are useful for some lecturers to present their material without the need for a face-to-face presence, although there are some obstacles such as insufficient access to the Internet. Some universities offer self-developed applications to facilitate the teaching, and to provide access to study materials for students. Some teachers also used online learning service provider applications or third parties such as YouTube, Zoom, Google Meet, and Google Classroom. They stressed the importance of development and training, and improving the infrastructure to support online learning in the future. Online learning has high prospects and potential for application through its strong connection with technological developments in rapidly changing times.

Albrahim (2020) added that the competencies of online teaching should be defined in order to help coordinate expert improvement packages for online trainers; he classified these competencies into six skills: pedagogical, content, planning, technological, administrative and institutional, and social and conversational skills.

Thakker et al. (2021) highlighted the shortcomings that were preventing faculty and students from having an effective e-learning experience: they had security concerns and fears of file sharing over the Internet and lack of ability to use all the features of the platform used during the lecture because they were not aware of them; while Sangh and Awasthi (2020) cautioned that the security concerns arising from the use of these applications should be dealt with the highest priority.

### **3. Data Collection and Analysis**

#### *3.1 Data Collection Tools*

The researchers relied on the descriptive analytical approach, building measurement tools adapted from the literature (Mahyoob, 2020). Questionnaires were used to collect data from both faculty and students, with

questions related to the quality of electronic instruction platforms, the most important challenges they faced and their suggestions for improving the reality of e-learning in higher education institutions. The study tool questionnaires were distributed electronically, to overcome the difficulty of accessing Omani students and faculty members in person. The sample consisted of 124 male and female students, and 32 faculty members from 24 institutions of higher education in the Sultanate of Oman (Alkubaisi et al., 2021).

The researchers designed two scales to measure the study data, collected by a questionnaire on the quality of the programs used in e-learning, one directed to faculty members and another to students. The Canadian standards for e-learning were adopted, containing the five dimensions already described, presented in Table 1 (Barker, 2002). The researchers added items on the quality of the programs used in e-learning, with two open questions for students to offer an opinion of the challenges facing them and for faculty members to obtain their suggestions for improving the quality of e-learning programs. A five-point Likert scale was used to measure the responses to the closed-answer items, as detailed in Table 2. The researchers then checked the validity of the study tools, by presenting the originals to a group of arbitrators. The questionnaire items were modified in accordance with the arbitrators' recommendations on their content and presentation.

The consistency of the electronic form of the questionnaires was tested with an exploratory sample of the study population, and Cronbach's alpha was calculated. Using the SPSS program, the results showed high stability coefficients, approaching 1, where the resolution for faculty members reached 0.92 and for students 0.98; see Table 3.

Table 1. The Dimensions of the E-learning Quality Scale for Faculty Members and Students

Dimension	Number of Points for Students Scale	Number of Points for the Faculty Members Scale
Student Management	5	6
Learning Management	8	10
Knowledge Delivery Management	5	6
Ease of Use	6	6
Privacy and Assessment Management	4	8
Total	28	36

A five-point Likert Scale was used to measure the responses to the closed-answer items, as detailed in Table 2.

Table 2. Measurement Distribution of Levels

Levels	Degree	Arithmetic Mean Range
Very High	5	4.2 to 5
High	4	3.4 to 4.19
Medium	3	2.6 to 3.39
Weak	2	1.8 to 2.59
Very Weak	1	1 to 1.79

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Table 3. Cronbach's Alpha Stability Coefficient Results

Scale	Dimension	Number of Points for Each Scale	Stability Coefficient	Overall Stability Coefficient
Students Scale	Student Management	6	0.76	0.92
	Learning Management	10	0.75	
	Knowledge Delivery Management	6	0.92	
	Ease of Use	6	0.61	
Faculty Members Scale	Privacy and Assessment Management	8	0.88	0.98
	Student Management	5	0.91	
	Learning Management	8	0.95	
	Knowledge Delivery Management	5	0.93	
	Ease of Use	6	0.92	
	Privacy and Assessment Management	4	0.88	

### 3.2 Procedures

The researchers reviewed the theoretical literature in order to define the problem accurately and on a clear scientific basis. They then identified the study community, faculty members and students in higher education institutions in the Sultanate. Following a summary of the study objectives, and instructions for answering the questionnaire, the questionnaire collected the demographics of the respondents, including the type and name of their educational institution, while the main section consisted of five axes to measure the quality of e-learning programs (Alkubaisi et al., 2021).

After being assured of the validity of the study's standards and their relevance to the research objectives and problem, the researchers published the questionnaire on various social networking sites, the most important of which are WhatsApp and Twitter, with the aim of reaching the largest possible amount of the study sample and from various educational institutions. The collected data was entered into the statistical software SPSS, to analyze the results.

## 4. Results and Discussion

Based on the results in (Alkubaisi et al., 2021), the researchers concluded that the programs used in e-learning in higher education institutions in the Sultanate enjoy high quality from the point of view of faculty members and students; there are no differences in the quality of e-learning programs due to the type of program used, perhaps because these programs were designed and created by the largest technology companies in the world.

The results also showed statistically significant differences from the point of view of the faculty members by institution type in the ease of use, in favor of private education institutions. There were statistically significant differences in the remaining dimensions between public and private education institutions. As well as, the results showed that there were statistically significant differences from the students' point of view of the institution type in the dimension of student management in favor of public education institutions; the students considered that management of students through e-learning programs was of high quality, and researchers attribute this result to the fact that their faculty members make the greatest effort in this aspect. There were no statistically significant differences in the remaining dimensions between public and private education institutions.

The analysis showed that students and faculty members faced some challenges related to e-learning, which they believe may affect the quality of receiving education through these programs. They include poor Internet connection services, weak technical support, inability to organize learning times, the absence of a mechanism to enroll students in the program collectively, difficulty in maintaining focus during lectures, the lack of mechanisms to verify the absence of cheating, the poor skills of faculty members to deal with e-learning tools, as well as the lack of students' own experience.

The researchers conclude that it is necessary to provide strong support mechanisms for faculty members and students, to make continuous evaluations of e-learning programs and applications, to enhance learning and e-learning culture, and also to cooperate with stakeholders to find mechanisms to ensure continuous improvement in order to provide a strong technological infrastructure, and to draw on local and global expertise in order to improve and upgrade e-learning.

In addition, necessary steps must be taken to train all stakeholders in education to learn through Internet programs and applications. The government and higher education institutions must adopt a policy of providing educational services free of charge to all learners in order to encourage online learning, and work to unify efforts

in this field and the establishment of a unified electronic platform.

Finally, the researchers believe that universities should invest more in the field of technology to support their teaching and learning process, infrastructure and facilities that can support e-learning and, as the biggest challenge facing students and faculty is the instability of the Internet connection, technical problems, lack of experience and knowing how to deal with technology and e-learning.

## 5. Conclusion

This research aims to list a set of required enhancements for the most-used e-learning platforms from the perspective of Omani users in higher education. All proposed enhancements have one purpose, which is to reach the targeted quality in online learning. E-learning platforms still have a gap between the course lecturer and the students, so reducing that gap in distance learning will improve the quality of online learning, especially for practical courses, through issuing the required tools and features. The instability of the Internet connection, e-learning platform technical issues, and the lack of using online learning technologies still represent the main challenges in the domain of online learning. This means that all must work together to enhance the quality of online learning, and all have a specific role in this purpose. Telecommunications companies, Internet service providers, academic institutions, lecturers, and students have to work together to facilitate the functionality of online learning, each one from his position and role.

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## Research Data Availability

This article aims to support researchers who are interested in the field of education, by sharing the research data and the template of the data collection tool through the following link:

<https://drive.google.com/drive/folders/1THMhsPBEtwdr7yTReXhhXeYPzBC2-mrc?usp=sharing>.

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