The e-Learning Status Quo in Jordan between Reality and Expectations: Viewpoints from Faculty Members at University of Petra

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***Abstract*—In this digital era, it is inevitable to teach students without utilizing online tools and materials. This e-learning experience has been recently researched by numerous scholars in different settings. To systematically investigate this experience, the study inspects into faculty members' perspectives towards e-learning and their suggestions to improve e-learning and integration in the Jordanian universities. A questionnaire was developed to gather data from 166 participants at the University of Petra. The findings show that the faculty members greatly value the presence of infrastructure for distance learning as they perceived the lecturer's proficiency and self-assurance in online learning. Besides, the study perceives students' skill and confidence with high engagement with online instructional materials. Yet, the crucial challenges arise from the lack of a solid interpersonal connection with students during remote education, and the discomfort level of prolonged use of mobile phones or computer screens has also been reported. Furthermore, faculty members recommend some changes, like improving the quality of digital platforms and tools; developing more diverse and comprehensive assessment methods; enhancing psychological and social support for students; and redesigning curricula. It is expected that the current findings will assist the University of Petra, instructors, and students to improve the skills needed for e-learning.**

***Keywords*—e-learning, attitude, technology, performance, Jordanian lecturers**

I. Introduction

E-learning is the sole method that sustains the educational process and changes it into a platform designed for creativity, interaction, and skill enhancement. The rapid advancements in technology have resulted in the emergence of new approaches to learning and teaching, which have further reinforced the idea of individual or self-directed education. This means that the learners can continue their learning based on their own energy, ability, pace, and prior experience and skills. E-learning represents a type of distance learning that has been established, specifically using computer-based education. It relies heavily on computers and networks to impart knowledge and skills. The ways it can be used include online learning, computer-based learning, virtual classrooms, and digital collaboration. Lessons are delivered through various methods, such as the internet, audio tapes, videos, and Compact Disc (CDS). All inquiries are addressed; both final and semi-final exams are provided, as well as conducting research using programs or electronic mail.

Today, e-learning is applied in all educational institutions, but with varying success rates due to various factors, such as financial resources, electronic equipment, teachers' electronic skills, students' awareness, and others. Everyone hopes to attain achievements in e-learning that are positively reflected on student's achievements and faculty members' performance. Smart campus and paperless campus are dreams that all public and private universities strive to accomplish. However, much work must be done to cultivate the e-learning system and optimize its outputs.

Recently, there have been ample changes in the pedagogical process as universities turn to electronic education. These changes are represented profoundly in the pressure imposed on universities to cope with new methods of teaching in terms of infrastructure, training, and preparation, and motivating students to integrate into this new method [1]. Faculty members do not probably deal with these changes effortlessly [2]. Thus, the current study enquires into faculty members' perspectives towards e-learning and suggestions to improve e-learning and integration in Jordanian universities. The primary research problem of this study resorts to the following: what is the status quo of e-learning in the Jordanian context?

In the Jordanian context, the adaptation of e-learning is still problematic for some lecturers and students [3]. The current quantitative study is carried out to enrich the literature in the field of e-learning and deliver sufficient evidence on this vital topic. That is done by examining the issue within the contextual peculiarities of the Jordanian context, herein the University of Petra. It discusses the different aspects of the faculty members concerning e-learning and its implementation and their recommendations to improve e-learning and its integration.

The research query mentioned above is divided into two main questions:

1) What are faculty members' points of view towards e-teaching at University of Petra?
2) What are their suggestions to improve e-learning and integration in the context of higher education?

II. Literature Review

Nowadays, e-learning becomes one of the methods that

lends a hand to the whole teaching and learning process, which transforms it from a traditional class into being more inspiring, motivating, creative, and interactive one. It utilizes all electronic tools by applying the latest means of adopting computers, digital multimedia content, and networks. Nonetheless, it is difficult to find a mutual description for e-learning. Some scholars consider e-learning as only delivering whole on-line courses while including web-supplemented and web-dependent services for the delivery of scholastic and support processes [4]. E-learning might be applied from various perspectives, including distributed learning, online-distance learning, and hybrid learning [5].

E-learning is defined using computers and networks to deliver digital multimedia content, such as written or spoken texts, sound effects, graphics, images, and video clips. These media are collected to reach particular educational objectives. This phase of pedagogy is electronically governed and offers a range of services and tasks related to the management of teaching and learning processes at a lower cost than traditional education. Besides, the learner is capable to gain knowledge independently, which fosters interactivity in the learning process, i.e., the learner's interaction with the teacher, content, colleagues, educational institution, programs, and applications, since it allows access to any material at any time and from any place.

In Jordan, e-education emerges as one of the essential governmental priorities as the country seeks to keep pace with the rapid developments in the field of e-learning and to provide adequate budgets to afford the tools, programs, platforms, and technologies in need. These facilities are prioritised for integrating e-learning in higher educational institutes and schools as the only alternative to traditional education. Despite all the fear and unwillingness of the decision-makers; the lack of readiness of universities and schools; and the distress of teachers and students, e-learning has become an indispensable substitute for traditional education, especially during the Corona virus pandemic, which has accelerated the demand for e-learning.

It is evident that e-learning is a strategic necessity due to its significance for the progress and advancement of society. Further, it is regarded as an essential option for preparing the younger generation to employ Fourth Industrial Revolution data and acquire skills needed for future employment opportunities. In the post-Corona phase, the ministry of higher education in Jordan sought to establish new foundations for integrating e-learning into higher education institutions commensurate with national needs, labor market requirements, and global trends in the field of e-learning. These foundations define the mechanism of e-learning in its two forms, complete distance and blended, in addition to their different forms, i.e., the synchronous and asynchronous components of each of these forms. These procedures indicate that Jordan is constantly working to upgrade the pedagogical quality in all educational institutions over the country to meet the requirements and needs of the labor market.

In a study conducted by Ahmed *et al.* [6], the circumstances that affect faculty opinions of useful online processes in higher education were investigated. The researchers utilized semi-structured interviews with 15 lecturers to get insight on participants' own educational understandings. Followed by a questionnaire addressed to 51 participants, the study employed the Relative Importance Index method to clarify the most noteworthy practices affecting online education teaching. The findings showed that the most affecting issue was facilitating students' engagement and interactions in class while monitoring educational dishonesty through evaluations receives comparatively lower interest. Making lectures interactive is the most difficult method for them.

Guppy *et al.* [7] attempted to contribute evidence for the debate about the post-pandemic future of online education since the perceptions of higher institution lecturers vary. The participants in this study were 281 people from six different countries on four continents. To obtain the data, the study utilized questionnaires and interviews. The results revealed a high degree of agreement among the participants who attended more blended instruction in the post-pandemic period, with fair aspirations for fully online courses. They in all groups showed modest expectations for an advanced, groundbreaking revolution in online education.

A study by Quayson [8] investigated the challenges and understandings of faculty about online teaching in universities. In this qualitative study, the 12 participants shared barriers that co-occurred with the classifications of professional development, distance education, instruction, curriculum, and assessment. This study shed the light on the barriers encountered by online lecturers.

Zizka and Probst [9] conducted a descriptive study about 19 university lecturers' points of view about online teaching. Two questionnaires were distributed; one was in the first week and the second was at the end of the semester in the business faculty in Switzerland. The finding presented that the participants continued to be optimistic with only one barrier, which was time. However, they were willing to continue integrating online tools into their classes.

Besides, Bajaj *et al*. [10] examined university lecturers' opinions towards their remaining intent of utilizing the online platforms post-Covid-19 situations. A survey of 242 Indian participants teaching in higher institutions was conducted to meet the study's aims. The study had adopted a mixed-method approach, embracing both qualitative and quantitative methods. The study unraveled that numerous lecturers positively enjoy using online teaching methods and intend to continue integrating them into their classes.

An exploratory factor analysis and reliability study by Hosny *et al.* [11] aimed at creating, validating, and applying an instrument to assess the teachers' willingness for online education in three colleges in Bahrain, Egypt, and Saudi Arabia. This study was conducted electronically with 217 lecturers with various academic ranks. Descriptive statistics were employed with a statistical significance level of 0.05. The findings discovered that factor analysis delivered the next five factors: "online teaching and course design skills", "digital communication", "basic computer skills", "advanced computer skills", and "using learning management systems". Basic computer skills presented the highest mean scores, while online teaching and course design skills and using learning management systems presented lower scores. The study specified a general acceptable level of readiness in the three participating faculties. However, a necessity for

enhancement in "online teaching and course design" and "using learning management systems" is recognizable.

In addition, a study conducted by Qazi *et al.* [12], involving faculty members, administrators, and information technology staffs, aimed to investigate the obstacles and facilitators in adopting e-learning in Pakistani universities. The study revealed that integrating e-learning into universities is a complex process due to negative mindset among the sample of the study and doubts and fears about e-learning, lack of aspects such as resources and training, infrastructure, e-learning policies. Thus, the study suggested that prior training and awareness, dynamic policies, and computer skills of students and faculty should be provided by the universities.

Chasubuta and Ndibalema [13] investigated how faculty members encounter obstacles in integrating online assessment. The results of this study revealed that the participants faced several challenges in online assessment. These challenges are sorted into lecturer-related challenges, online educational facilities, resource-related challenges, and policy concerns. Consequently, they recommended the necessity of increasing their competence and awareness, reforming curriculum, and investing in technological systems and tools to improve online assessment.

Besides, Phulpoto *et al*. [14] suggested that universities collaborating with policymakers and developers need to empower technology infrastructure and focus on technology integration at the different levels rendering the needs of the contemporary world. Deliberate investments and mutual endeavors are essential to enhancing online education equity and lifelong learning.

In the Jordanian context, many research studies have been directed to evaluate the e-education experience in the country regarding different aspects such as teachers, students, barriers, etc. In this section, the researcher attempts to survey the previous studies in the field.

A study by Madanat *et al*. [15] delved into the insights of a group of 101 Jordanian faculty concerning their readiness for virtual learning environment. The results showed that the sample of the study revealed a moderate level of familiarity with technology and e-learning platforms, besides a similarly moderate level of competence in managing their online courses. Additionally, a remarkable gap in their experience to online education, even with their long term in teaching English. Therefore, the study highlights the necessity for adapted training programs and development initiatives to systematically improve their online teaching expertise, thereby facilitating a more effective virtual learning environment.

Likewise, Alnemrat *et al.* [16] piloted a descriptive study to gain insights on the current status of e-learning at major Jordanian universities. The respondents to this study were 157 educators. To examine the obstacles of successfully applying e-learning in their classes. Online questionnaires were distributed. The analysis of the data showed that the level of educators' knowledge of e-learning was good (M = 3.049). The utilization of e-learning by them was frequent (M = 3.640). The findings also showed that the educators benefit from the technical support to integrate e-learning. They were undecided for both the policy and support barriers (M = 3.567) and the infrastructure and resource obstacles (3.482). Yarmouk University educators have positive attitudes and a willingness to implement e-learning in their teaching (M = 3.913). Besides, they were willing to apply e-learning in their classes (M = 3.913) and presented a degree of satisfaction with the development plans and strategies related to e-learning (M = 3.668). Finally, the findings indicated that males and females have no differences in e-learning obstacles, information, or usage.

Malkawi *et al.* [17] studied the usage of e-learning platforms in Teaching English as a Foreign Language (TEFL) in Jordan. A quantitative research method was used to answer the study questions. The results showed that utilizing e-learning platforms for academic purposes is advantageous regarding ease of access. It was found that e-learning is incredibly beneficial to the students in practicing their language skills. However, some obstacles might obstruct the application of e-learning platforms, including the following factors: teacher-related, technical, and technological. The study suggests that lecturers use interactive methods, such as multimedia, videos, images, and sounds, to involve learners with several needs and abilities. The study also recommends fostering standard codification when designing e-learning to improve students' language skills and instructing lecturers on utilizing recent technological strategies in e-learning.

Altawalbeh [18] examined the level of awareness of 390 respondents about utilizing Open Educational Resources (OER) in different Jordanian universities. Applying a descriptive approach, electronic questionnaires were distributed to answer the research questions. The finding revealed that the level of awareness of the respondents about utilizing OER was medium. The domain of importance of the OER is ranked the highest, while the domain of usage of the OER is ranked last. The survey also presented that there were no statistically significant differences at the level ($\alpha \leq 0.05$) in the level of awareness of respondents on utilizing OER according to gender variables. Moreover, the survey revealed that there was a relationship between the number of years of experience and the awareness of respondents about utilizing OER according to the variable of the years of experience. More experienced teachers are more aware of utilizing OER in their classes.

A study by Bataineh *et al.* [1] evaluated the Jordanian experience with e-education and its effectiveness in higher educational institutions. One thousand students took part in the study's survey from public and private educational institutions. The researchers found that the e-education experience was not pleasant. The study underlined that the success of the distance education depends on three key factors: Student, university and technology. Concerning the theme of this current study, Al Bataineh *et al*. [18] emphasize that higher institutions' lecturers should be bestowed with the necessary guidance and programs that assist them in designing and delivering online lectures effortlessly.

After reviewing the related literature such as [1, 6, 12–19], it is evident that this study investigated the status quo of e-learning in a more comprehensive and in-depth method. This study delved into a set of beliefs about online learning online learning: infrastructure, students' ability and confidence with online learning, effectiveness of online learning and difficulty beliefs. Diversity across disciplines,

academic rank, age, etc. was accomplished correspondingly. The current study was carried out to deepen the literature in the field of e-learning and provide sufficient evidence on this important topic.

III. Theoretical Framework

The e-learning barriers were delineated as causes that prevent full engagement in the educational process. A learner or a teacher disturbed by learning and teaching obstacles feels discouraged or depressed to achieve the intended outcomes. Obstacles can be categorized into four themes: personal, professional, institutional, and contextual. Besides, they were divided into main categories: internal (personal and professional) and external (institutional and contextual). These obstacles have been subjects of examination recently, as evident in the foundational work of Mercader [20]. Internal obstacles are those which are related to the individual causes such as ability and confidence with e-learning that needs psychological and social support. While external obstacles are those related to institution and social context such as training and curriculum design, as shown in Fig. 1.

The framework distinguishes the importance of teacher's technological knowledge which fruitfully entails integration of technology in education to boost teaching experiences and promote interactive and engaging learning and teaching practices. Depending upon Mercader's foundational work, the research strived to delve deeper into lecturers' real practices and understandings. Furthermore, this study identified further obstacles by a systematic investigation of the topic within the contextual peculiarities of the Jordanian context.

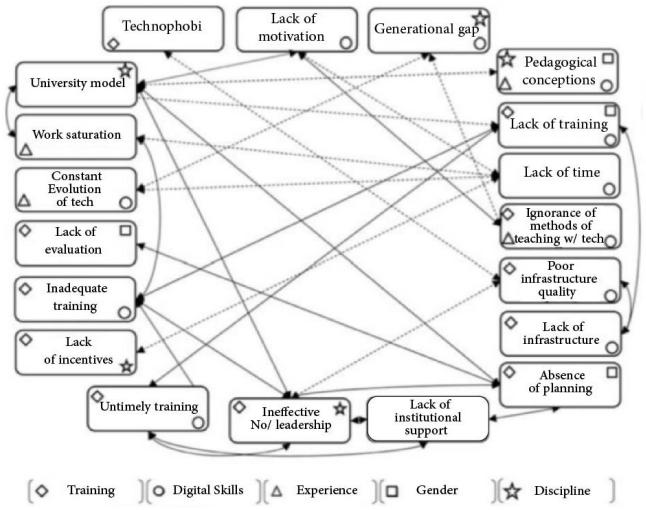

Fig. 1. Study model.

IV. Materials and Methods

The present study followed a descriptive methodology in the form of a systematic investigation of faculty members' points of view towards e-learning. The researchers developed a questionnaire based on [21–23]. The questionnaire consists of three segments; the first one is related to personal data while the second section is a set of beliefs about online learning. This section also has four areas: (a) online learning infrastructure; (b) students' ability and confidence with online learning; (c) effectiveness of online learning; (d) difficulty beliefs. The Likert scale questionnaire comprises of 37 items that represented the key points of view towards online learning. To achieve diversity across disciplines, academic rank, age, etc., the questionnaire was sent via official email to all faculty members at the university (about 400). 166 responses have been received by the researchers.

A. Validity

The questionnaire has been validated by a jury of expert educators. All their remarks and modifications have been considered by the researcher. The study's reliability has been done throughout a pilot study conducted on ten faculty members from outside the study sample, with a time difference of three weeks. After conducting the pilot study, the Pearson correlation coefficient had shown 0.82, which is satisfactory for the aims of the present study.

B. Participants

166 faculty members from the University of Petra have participated in this study. The participants of the study consist of 97 males and 69 females. These two groups of participants are of 18 professors, 43 associate professors, 78 assistant professors, and 27 lecturers. The participants have been chosen randomly from all faculties of the university. By using the simple random sample technique, all variables of the study (gender and academic rank) are represented accordingly, as shown in Table 1.

Table 1. Distribution of participants according to gender and academic rank variables

Variable		N	Percentage
Gender	Female	69	42%
	Male	97	58%
	Total	166	100%
Academic rank	Professor	18	11%
	Associate Professor	43	47%
	Assistant Professor	78	26%
	Lecturer	27	16%
	Total	166	100%

C. Ethical Considerations

Ethical permission was taken from the Ethics Board of the University of Petra. Ethical concerns were vital through the study's distinct phases. The study abided by the ethics of knowledgeable approval and confidentiality. All samples of study were afforded with an evident clarification of the study's rationale prior to voluntarily participating in the Google form questionnaire. Their participation was completely voluntary, and they were guaranteed confidentiality and anonymity of their answers. No individually recognizable data was gathered, and the data were used exclusively for study rationale.

V. Result and Discussion

This study seeks to investigate the faculty members' points of view towards e-teaching and survey their suggestions to improve e-learning and integration in the setting of higher education. The results are presented below and discussed in terms of research questions.

Q1: What are faculty members' points of view towards e-teaching at University of Petra?

To answer this, averages and standard deviations of the faculty members' points of view were computed pertaining to four areas: online learning infrastructure; students' ability and confidence with online learning; effectiveness of online learning; and difficulty beliefs.

In this study, online learning infrastructure is the necessary technical tool, including the Learning Management System (LMS), devices, communication platforms and multimedia, and internet accessibility. Based on the data presented in Table 2, it is evident that faculty members at the University of Petra highly value the presence of infrastructure for distance learning, with an average rating of 4.1231 (frequently) and a standard deviation of 0.55113. This is supported by their feedback that the university has conducted workshops on transitioning to distance learning. The university consistently provided the necessary technical help to transition to distant education, with an average rating of 4.4277 (indicating very frequent support) and a standard deviation of 0.67255. The online communication platforms (Zoom, Google Meet, Skype, Moodle, and Google Classroom) had a high frequency of use, with an average of 4.3313 and a standard deviation of 0.7252, making them easy to use. The average is 4.2651, indicating a very frequent occurrence, with a standard deviation of 0.73993. Likewise, multimedia (video clips, PPT presentations, and animations) were used as distance teaching tools, with an average of 4.0843 and a standard deviation of 0.95606. The lecturers stressed that their device was suitable for distance learning, with an average rating of 4.0783 (frequently) and a standard deviation of 0. 0.88756 and the technical difficulties have been addressed, with an average rating of 4.0542 (frequently) and a standard deviation of 0.55113. These findings are in line with Qazi *et al.* [12] and Phulpoto *et al*. [14] who found that infrastructure is an essential factor for the success of e-learning process. Conversely, the findings conflict with Alnemrat *et al.* [16], whose respondents were undecided for infrastructure and resources obstacles. Also, the study bears disagreement with Madanat *et al.* [15] who revealed a moderate level of familiarity with technology and e-learning platforms.

Table 2. Average and standard deviation of online learning infrastructure

Online learning infrastructure	Average	Standard Deviation	Respond
The university organized workshops on how to turn to distance learning.	4.4277	0.67255	Very frequently
The university provided me with the necessary technical support to transfer to distance education.	4.3313	0.7252	Very frequently
The available online communication platforms (Zoom, Google Meet, Skype, Moodle, and Google Classroom) were easy to use.	4.2651	0.73993	Very frequently
Multimedia (video clips, PPT presentations, and animations) were used as distance teaching tools.	4.0843	0.95606	Frequently
My device (computer, laptop, smart phone, etc.) was suitable for distance learning.	4.0783	0.88756	Frequently
Technical difficulties that limit the effectiveness of distance learning have been addressed.	4.0542	0.81096	Frequently
General average	4.1231	0.55113	Frequently

The data presented in Table 3 indicates that the study sample perceives students' skill and confidence with online learning to have an average score of 3.0689 (occasionally) and a standard deviation of 0.57202. They noted that student engagement with online instructional materials was effortless. The students possess the requisite technical and computer skills, as shown by an average score of 3.759 (frequently) and a standard deviation of 0.92887. Additionally, they are capable of transitioning to distance learning, as evidenced by an average score of 3.5663 (frequently) and a standard deviation of 0.91708. However, the students have encountered difficulties with the communications network, as revealed by an average score of 3.4277 (frequently) and a standard deviation of 0.93625. They perceived that the students had sufficient technical skills for distance learning, as evidenced by an average score of 3.1566 (occasionally) and a standard deviation of 0.94685. Students were occasionally ready for distance learning and occasionally engaged in online classes. Besides, the study sample noted that distance learning helps students become self-reliant and develops their thinking skills. The standard deviations for these items were 3.0181 and 2.6265. The averages are 1.22337 and 1.12504, occurring occasionally. Finally, they noted that concealed students' identities during distance learning were rare, as indicated by an average score of 2.5723 and a standard deviation of 1.23738. The result bears strong agreement with Malkawi *et al.* [17] and Qazi *et al.* [12], who found that e-learning is incredibly beneficial to students in practicing their language skills. Conversely, in another study conducted by Ahmed *et al.* [6], easing students' engagement and interactions in class was the most affecting issue.

Table 3. Average and standard deviation of students' ability and confidence with online learning

Students' ability and confidence with online learning	Average	Standard Deviation	Respond
It was easy for students to participate in the content of the teaching materials online.	3.759	0.92887	frequently
From my point of view, the students have the technical and computer skills necessary to move to distance learning.	3.5663	0.91708	frequently
My students have had problems with the communications network.	3.4277	0.93625	frequently
My students had sufficient technical skills for distance learning.	3.1566	0.94685	occasionally
Distance learning helps students become self-reliant.	3.0181	1.22337	occasionally
My students were ready for distance learning.	2.8072	0.99035	occasionally
My students were engaged in distance learning.	2.6867	0.96518	occasionally
Distance learning helps develop students' thinking skills.	2.6265	1.12504	occasionally
My students concealed their identities during distance learning.	2.5723	1.23738	Rarely
General average	3.0689	0.57202	occasionally

The data presented in Table 4 indicates that the study sample perceives the lecturer's proficiency and self-assurance

in online learning as an average of 3.7024 (frequently) with a standard deviation of 0.70211. An exemplary approach in this matter involved consistently monitoring the students' homework. The instructors consistently gave homework and assignments to students and followed up with them with high frequency of 4.241 and 4.3554 on average and a standard deviation of 0.77209 and 0.6788. The teaching style and content was modified to accommodate the characteristics of distance education, considering the averages of 4.1205 and 3.8253 (representing very frequent occurrence). They have conducted useful activities and practical applications during the distance learning process and interactivity was considered while communicating with students in online lectures with frequencies of 3.8193 and 3.747 on averages. Besides, they reported that the transition to a distance education environment, in response to the Corona pandemic, had positively affected the teaching method (frequently) and the course content (occasionally). The study sample's satisfaction score with comfortability of teaching online had a mean of 3.0301 (occasionally) and a standard deviation of 1.26215. The average score for satisfaction with distance education in general was 3.0241 (occasionally), with a standard deviation of 1.20077. The present result coincides with Guppy *et al.* [7], who reported a high degree of agreement among the participants who attend more to blended instruction in the post-pandemic with fair aspirations for fully online courses, and Bajaj *et al*. [10], who reported that numerous lecturers positively enjoy utilizing the online teaching means and intend to continue integrating online teaching means in their classes. Also, the results are in line with previous research [12, 16, 17, 20] who stressed that the educators benefit from the technical support to integrate e-learning. Thus, they have optimistic attitudes and a readiness to implement e-learning in their teaching, so they are willing to apply e-learning in their classes. Additionally, they have a level of approval with the improvement proposals and policies related to e-learning. Conversely, the above data strongly conflict with Quayson [8], who found crucial barriers in distance education, instruction, curriculum, and assessment.

Table 4. Average and standard deviation of the lecturer's ability and confidence with online learning

Statement	Average	Standard deviation	Respond
I regularly followed up on the students' homework I assigned to them.	4.3554	0.67881	Very frequently
I gave homework and assignments to students on a regular basis.	4.241	0.77209	Very frequently
I changed my teaching style to take into account the nature of distance education.	4.1205	0.81497	frequently
I modified the content of the course to suit distance teaching.	3.8253	1.04427	frequently
I have conducted useful activities and practical applications during the distance learning process.	3.8193	0.99263	frequently
Interactivity was taken into account while communicating with students in online lectures.	3.747	0.95782	frequently
The transition to a distance education environment, in response to the Corona pandemic, has positively affected my teaching method	3.5301	1.01906	frequently
The transition to a distance education environment, in response to the Corona pandemic, has positively affected the course content.	3.3313	1.06395	occasionally
I was as comfortable teaching online as I was teaching face-to-face.	3.0301	1.26215	occasionally
I am generally satisfied with distance education.	3.0241	1.20077	occasionally
General average	3.7024	0.70211	frequently

The data presented in Table 5 signposts that the study sample perceives the effectiveness of online learning to have an average rating of 3.5833 (frequently) and a standard deviation of 0.89978. They highlighted the efficacy of technology in the distance learning setting. During distant education, contact with students was much more effective compared to face-to-face learning, as indicated by the average score of 4.012 (frequently) and a standard deviation of 0.80142. The mean value is 3.1145, infrequently deviating from this norm, with a standard deviation of 1.26689. The above data concur with Ahmed *et al.* [6] and Malkawi *et al.* [17] who realised that easing students' engagement and interactions in class was the most distressing concern.

Table 5. Average and standard deviation of effectiveness of online learning

Statement	Average	Standard deviation	Respond
In my opinion, the use of technology in the distance learning environment has been effective.	4.012	0.80142	frequently
Communication with students was more effective during distance education compared to face-to-face learning.	3.1145	1.26689	occasionally
General average	3.5833	0.89978	frequently

Based on the data in Table 6, it is evident that the study sample experiences challenges in remote learning, with an average rating of 3.1114 (indicating occasional difficulties) and a standard deviation of 0.88271. The primary challenges were the lack of a strong interpersonal connection with students during remote education, particularly for those who began their university studies in a remote learning environment. The mean discomfort level of 3.9398 (frequently) and a standard deviation of 1.16358 indicate that prolonged use of a mobile phone or computer screen can be painful. The task of evaluating and giving feedback to students during distance learning is challenging due to an average difficulty level of 3.3916 (occasionally) and a standard deviation of 1.21991. The average number of challenges encountered while using technology during distance learning was 3.006, with rare variations. The standard deviation for these difficulties was 1.20351. The average is 2.1084, occurring rarely, while the standard deviation is 0.98488. The present findings are aligned with previous studies [12, 14, 17, 20] that confessed that some obstacles might obstruct the application of e-learning platforms, including the following factors: teacher-related,

technical, and technological.

Q2: What are their suggestions to improve e-learning and integration in the context of higher education?

E-learning has posed a major challenge to faculty members through many obstacles in the educational process such as infrastructure, participation and interaction, etc. To answer the second question based on the data obtained from the survey, the following key points reflect the improvements that lecturers would like to see in distance learning in the future.

Table 6. Average and standard deviation of difficulty beliefs

Statement	Average	Standard deviation	Respond
I felt that I did not have a good human bond with my students during distance learning, especially those students who started their university while distance learning.	3.9398	1.16358	frequently
I felt uncomfortable staring at a mobile phone or computer screen for a long time.	3.3916	1.21991	Occasionally
I had difficulty assessing and providing feedback to my students during distance learning.	3.006	1.20351	Occasionally
I encountered difficulties using technology during distance learning.	2.1084	0.98488	rarely
General average	3.1114	0.88271	Occasionally

A. Technology and Infrastructure

The lecturers suggested improving the quality of digital platforms and tools used in distance learning to ensure a smooth and problem-free educational experience. These digital platforms and tools can be used in the e-learning process to afford a flexible and reliable learning environment [24]. To achieve this, the lecturers also proposed providing effective and prompt technical support for students and lecturers to address any technical issues that may arise. This kind of support helps lecturers deliver ultimately effective classes. Thus, any lack of support may cause dissatisfaction for both lecturers and students [12, 14, 25].

B. Interaction and Participation

Classroom interaction is fundamental in the learning and teaching process, and it successfully develops students' learning skills. This needs the lecturers' creativeness and numerous techniques to motivate all the students to participate during the class. The participants of this study suggested that there is a need for developing new ways to enhance interaction and active participation between students and lecturers, such as using virtual reality or interactive applications. These applications immerse the students in an inspiring and motivating learning experience that stimulates reality with interactive tools. These applications are friendly use and can be downloaded for free such as MeetinVR, DeoVR Video Streaming, Maloka, Immersed, etc.

Also, the lecturers suggested increasing the use of group activities and collaborative work to foster interaction among students. Group or pair discussions, creating, investigating, critiquing, etc. are successful activities at all university levels. These activities help in development of students' interactive skills, critical thinking skills and increased disciplinary knowledge [26].

C. Assessment and Evaluation

Integrating online assessment is a crucial element in e-learning. Thus, the necessity of increasing instructor' competence and awareness, reforming curriculum, and investing in technological systems and tools to improve online assessment are endorsed [13]. The participants of study stressed developing more diverse and comprehensive assessment methods to accurately reflect students' performance, such as project-based assessments and interactive tests. These kinds of assessments cope with the shift into online learning. Many online learning platforms such as Moodle and Google Classroom can leverage the process of assessment and evaluation.

Besides, they suggested improving remote exam monitoring mechanisms to reduce cheating and ensure fairness. Leveraging developed AI proctoring systems, cheating and dishonest behaviour can be detected [27], it's obvious that these technologies are not just a trend but a need. Incidentally, many advisable procedures can be used such as utilize a browser guard, record students' screens, etc.

D. Psychological and Social Support

It is purposeful to enhance the psychological and social support for students by providing online counselling and advisory services. These may help students to direct their own encouraging psychological factors to tackle online learning obstacles. This kind of support can ease the destructive psychological condition of university learners, and depression is a vital factor in the success of online learning [28]. Thus, the participants of the study suggested organizing virtual social activities to strengthen bonds between students, lecturers, and the academic community.

E. Lecturer Training

Bearing in mind the online challenges, lecturer training is vital now than ever. The participants suggested providing ongoing training programs for lecturers to improve their skills in using technology and distance learning procedures. This facilitates the exchange of experiences and best practices among lecturers to boost the quality of distance learning. Qazi *et al*. [12], Madanat *et al*. [15] and Mercader [20] confessed that prior training and awareness are essential for a more effective virtual learning environment.

F. Access and Equity

Equitable access to technology is an essential factor in helping students with obtaining the familiarity and skills they necessitate in their online learning journey [1]. Consequently, the participants stressed ensuring the provision of necessary devices and technology to all students to guarantee equal educational opportunities. Thus, providing financial and technical support to students who face difficulties accessing technology is highly recommended.

According to Rose and Blomeyer [29] online classroom might be more effective on equity and access issues by implementing the following best practices:

1) Gathering and examining learner demographic data for program reforms,

2) Fostering policies and procedures to guarantee that all courses and instructive materials be largely accessible,
3) Fostering needs policies that defend the program duties,
4) Generating and publishing a non-discrimination policy,
5) Employing follow-up controllers.

G. Curriculum Design

Designing online curricula is challenging in higher education [15]. affirm that an inclusive curriculum including the applicable design, delivery, and supervision of distance classes is strongly needed. Hence, the participants of this study maintain that there is a need for redesigning curricula to be more suitable for the distance learning environment, focusing on self-learning and interactive materials. They also acknowledge that increasing the use of multimedia and simulations enhances students' understanding and motivation.

These essential themes illustrate the influence of distant learning on the overall standard of instruction, drawing from personal experience and observations as a lecturer. The above results bear strong agreement with [1, 12–15, 20, 27–28, 30] as these studies find that the respondents were continually optimistic and generally acceptable for online learning. Though a necessity for enhancement in "online teaching is recognizable.

VI. Conclusion

The study contributes to the literature on the status quo of e-learning in the Jordanian context. It fosters debate on e-learning in the teaching and learning process at the higher education. Besides, it presents novel data on the perspectives of university lecturers towards e-learning and suggests means to accommodate the integration of e-learning.

To put it briefly, it is obvious that sample of the study at the University of Petra highly values the presence of infrastructure for distance learning as they perceive the lecturer's proficiency and self-assurance in online learning. This helped them maintain positive contact with students, which was much more successful than traditional learning. Moreover, the study perceives students' skill and confidence with high engagement with online instructional materials. Nevertheless, the primary challenges were the lack of a strong interpersonal connection with students during remote education, particularly for those who began their university studies in a remote learning environment. The discomfort level of prolonged use of a mobile phone or computer screen was also reported.

The findings also indicate that virtual reality or interactive applications are recognized to be incredibly valuable tools to immerse the students in an inspiring and motivating learning experience, however, it can also be overwhelming to them if not properly implemented. Therefore, it is advised that the lecturers thoroughly select those applications to effectively meet their needs such as MeetinVR, DeoVR Video Streaming, Maloka, Immersed, etc.

For better online practice and implications, the study suggests some improvements, like mending the quality of digital platforms and tools; evolving new ways to enhance interaction and active participation; developing more diverse and comprehensive assessment methods to reduce cheating and ensure fairness; enhancing psychological and social support for students; providing ongoing training programs for lecturers; ensuring the necessary devices and technology for all students; and redesigning curricula to be more suitable for the distance learning environment, focusing on self-learning and interactive materials to support students' understanding and motivation.

The university could facilitate the online learning implementation by training lecturers with the novel types of online applications and interactive activities needed for the online courses. This can avoid hindrance and misperception and ensure best practices among lecturers to mend the quality of distance education.

This study is limited to sample of the study at the University of Petra and the generalizations of the study may not be used to other contexts. Thus, additional studies in different settings with a larger sample size and different methods of data collection are strongly recommended.

Finally, it is evident that the emerging educational technologies will revolutionize the form of education in this technologically accelerated world. Thus, it is vital to consider the above suggestions and implications to improve the integration of e-learning in Jordanian universities, motivate lecturers and address their needs and expectations. The results of the study extend important understandings into which aspects of the e-learning are most problematic for the lecturers. It is anticipated that the results of the study complement the discussion on distance education and encourage educators and online curriculum designers to consider these aspects and assist them to implement the online tools more effectively.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Al Bataineh K. acted as the corresponding author, facilitating communication with the journal. He provided insights into developing the questionnaire and wrote the introduction and discussion sections. Al-Natour M. and Banikhalef A. wrote the literature review and the framework. AlMahasees Z. played a vital role in the research design and data analysis; all authors had approved the final version.

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