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Students' Perceptions of the Sustainability of Distance Learning Systems in the Post-COVID-19: A Qualitative Perspective

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Abstract: The new Sustainable Learning and Education (SLE) concept was formulated in line with the Sustainable Development Goals (SDGs) announced by the United Nations. In order to achieve SLE, educational bodies need to utilize new technologies. Notably, the outbreak of the coronavirus (COVID-19) has forced educational institutions to utilize more innovative technological approaches to meet the objectives while still being in compliance with the doctrines of SLE. This research was conducted to explore the role of e-learning in transforming the academic industry in the post-COVID-19 time. The qualitative technique for interpretive phenomenological analysis (IPA) was applied to closely examine the participants' lived experiences. The respondents were chosen from a private university in Jordan, and data were acquired through semi-structured interviews. Quality education, ease of technology, instructor accessibility and the use of online learning resources were the dimensions used for e-learning adoption. The findings highlighted that the students were truly overwhelmed by joining online platforms, but a lack of immediate feedback discouraged them. Besides this, the study will be useful to educational institutions in Jordan and other developing nations in gaining a better understanding of students' attitudes about e-learning adoption.

Keywords: post-COVID-19; distance learning; e-learning; ICT; IPA; accessibility; sustainability



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1. Introduction

Sustainable learning and education (SLE) is a fairly recent concept in the education domain; they are intended to foster long-term learning. SLE facilitates students in practicing what they have learned [1,2]. Sustainability is now a commonly accepted concept [3–6], and SLE—as a sustainable form of learning—fosters continuity, responsiveness and proactivity [7]. This mode of learning allows knowledge to be created from changes that occur to the learner, making it a form of learning that lasts a lifetime. SLE is intentional and purposeful [8,9]. As opposed to traditional learning which usually occurs in the classroom, SLE is more flexible and less structured, and therefore could take place anywhere and at any time, with sustainability as its focal point. The authors of [10,11] accordingly discussed several key components of SLE, including the ability to immediately adapt to the current context, and the ability to transfer learning in complex situations. Distance learning (otherwise known as e-learning) is gaining popularity in Jordan because it has deeply transformed the lives of students. E-learning improves students' skills while allowing them to learn whenever and wherever they want. It has also opened up new job opportunities for students who are eager to learn and explore at their own pace. Students are becoming more interested in new technologies and products because technology is highly likely to become part of the education sector. The techniques of e-learning teaching that effectively connect students and teachers are encouraging students to embrace “self-learning”.

The novel coronavirus called COVID-19 was first identified in December 2019 in a seafood market in the city of Wuhan [12–16], and the virus has been clinically affirmed

to spread through people [17–19]. Owing to its severity and rapid spread across the globe, COVID-19 was declared a pandemic by the Director General of the WHO in March 2020 [20]. A pandemic is a disease outburst happening over a vast geographic region, with an extraordinary impact on a significant percentage of the population [21]. Following the outbreak of the pandemic, the requirement of social distancing has been ordered in most countries all over the world, as a way to curb the spread of the virus. Ref. [22], accordingly, defined social distancing as an intentional increase in the physical gap between individuals.

The COVID-19 pandemic has generated fears and consequently stigma (in some cases) all over the world [23,24], and its impact was severe. However, in Jordan, the impact of COVID-19 was felt a little later. Still, its impact on the health of the people and the country's economy was just as severe. In fact, because of globalization, Jordan was also affected by the pandemic just like other developing economies. Like other countries, several protective measures against COVID-19 have also been adopted by Jordan, like social distancing and human movement restrictions or lockdowns. Among scholars worldwide, there have been efforts to create preventive and control mechanisms for the pandemic. Relevantly, [19] mentioned the need, among scholars, to share current research findings to promote collaborative enquiry and technological networking for viable COVID-19 related research.

Online education is established through the planning and designs of instructions based on some relevant theories and models. Meanwhile, the outbreak of the pandemic has forced education institutions to shift to online learning as a way to curb the spread of the virus. Among universities, however, the shift to online education has been questionable due to lack of proper planning, design and development of online instructional programs. In fact, effective online education includes online teaching and learning, promoting a variety of research projects, concepts, prototypes, theories, and ethics, as well as evaluating benchmark concentrations on quality online course design and teaching [25,26].

Online education is an innovative learning field, and it is a blend between distance education and face-to-face instruction via computer-mediated communication [27]. Accordingly, five features of online education were highlighted by [28]. Firstly, online education offers the learner a unique learning experience because learners are regarded as unique. Secondly, this type of education is delivered through a computer and worldwide. In addition, the learner participation is different from that in the traditional classroom. Furthermore, the learning environment provided by online education is different in terms of social dynamics. Lastly, this type of learning reduces the discrimination and prejudice that could otherwise occur in the traditional face-to-face learning.

Teachers nowadays are creating an environment of e-learning by adopting innovative digital media tools that serve the education, rather than simply giving lectures. As a result, the breadth of interactivity has expanded dramatically. Furthermore, digital platforms have resolved the issues in teaching such as outdated pedagogy and a scarcity of teachers for specialized subjects. These platforms have paved the way for the most optimal experience of e-learning and a sense of independence in the learning style of these students. The new e-learning tools are more focused on professors rather than on the students [29]. However, the question is on whether these goals are achievable through e-learning environment. Previous studies have attempted to ascertain the issues emerging in e-learning, and then solutions are provided to address them. However, the majority of the research has focused on candidates enrolled in professional courses, as can be observed in [30,31].

It has been reported by [32,33] that the general satisfaction level of students as a positive affect is a consequence of the assessment performed by the teacher, Microsoft teams, and the teaching and learning method's competency in increasing understanding, as opposed to the use of the traditional approach that centered on the students primarily.

In Jordan, [34] found several factors that were impeding the sector of education. These factors include financial constraints, poor net connectivity, and communication barriers. Furthermore, the impact of COVID-19 on learning has been examined, but within the context of developing countries, studies involving COVID-19 are still very limited [35].

In addition, the viewpoints of Jordanian students towards online learning have not been explored much [36,37]. Hence, this study attempted to ascertain what impedes and propels online learning from the viewpoint of learner amidst the pandemic of COVID-19 in Jordan. For this purpose, interpretative phenomenological analysis (IPA) was applied. This study investigated the viewpoints of students of e-learning, and these students had completed at least five online courses, which means that these students had ample experience in the use of e-learning. In the scrutiny, this study tried to identify the characteristics that stimulate or impede e-learning adoption among students.

The arrangement of this research, following the introduction, is as follows: Section 2 reviews past relevant literature; Section 3 details the methodology of research chosen in this study; Section 4 discusses the findings of the research; Section 5 presents the study conclusions; and Section 6 discusses the research implications, limitations and recommendation for future studies.

2. Literature Review

Globally, information and communication technology (ICT) is increasingly more reachable and prominent [38–41]. ICT is a method to improve educational quality [42–44]. The application of ICT in facilitating learning among children is increasing. Through ICT, learning can occur using technology-based and technology-mediated tools. Learning becomes more reachable through ICT, as knowledge can still be transmitted amidst scarce educational resources. With the advent of ICT, the use of blackboards in lecture halls is no longer necessary, as teachers are now employing technology to create a more engaging class with practical information, and to impart students with an in-depth understanding of the subject of interest. During the pandemic of COVID-19, the sector of education was among the severely affected. In fact, COVID-19 has created a new technology-driven virtual teaching model, gradually reducing the value and relevance of the traditional in-person teaching model.

The adoption of e-learning is considered to be a workplace motive, and students demand online access to all course materials, including those from face-to-face sessions [45]. Indeed, students today belong to the “touch a button” generation, rather than the “turn the page” generation. Despite the varying confidence level of students towards online tools and resources, students should be provided assistance in honing their skills in order to allow them to connect effectively with e-learning opportunities. It is undeniable that students want to increase their knowledge, but they are also unwilling to face challenges in the process of acquiring the knowledge. In this regard, e-learning has been considered as a very convenient and flexible method of self-training, and through e-learning, students can learn at any time that suits them. E-learning makes possible on-the-fly learning [46].

Ref. [47] indicated that improving the quality of learning content and building a system that offers simplicity and ease of usage will enhance e-learning adoption. Additionally, promoting new courses will affect adoption positively. Ref. [48] found that e-learning eases and prepares global societies in their communication and discourses among themselves. Meanwhile, ref. [49] proposed eight essential success indicators for e-learning adoption that can make institutions efficient and effective. In their study, ref. [29] reported several factors that impede the adoption of e-learning. They are: low internet connection, a lack of the exposure of students to ICT solutions, and bad marketing techniques. Additionally, in the Jordanian setting, ref. [34] found inadequate infrastructure, a lack of particular training, and a lack of quality material to be among the causes of e-learning failure.

2.1. Online Learning during COVID-19

Due to the global spread of COVID-19, educational institutions had to be closed temporarily. In order to assure learning, online learning was established within those institutions. The pandemic has compelled governments and academic institutions to give courses online through joint platforms; this is equally a test to see how prepared they are in dealing with a pandemic. Indeed, many institutions were unprepared because they

had not anticipated having to shut down in the twenty-first century, which is marked by the technological and medical progress. Meanwhile, traditional direct education has been the most successful way of learning. However, online learning has several advantages during a pandemic like that of COVID-19 because it facilitates social distancing in order to prevent and limit the virus's transmission. It also guarantees scheduling flexibility and the availability of learning irrespective of location. Moreover, this type of learning permits students to submit their feedback to their lecturers. In addition, it encourages educational institutions to demonstrate how well prepared they are to deal with a crisis—in this context, the pandemic of COVID-19—and their level of performance, as well.

2.2. Challenge of Online Classes

During this pandemic, students' perceptions of the barriers to adopting online learning were shockingly high, and these challenges came in a variety of forms: infrastructure, situational, and perceptual. Students perceived themselves as non-tech-savvy while their faculty was perceiving otherwise, and they frequently encountered a shortage of devices or networks, in addition to feeling isolated [50]. Notably, the shift to online learning appeared to be less challenging for university students than for school students, but it was more difficult for rural students than for their urban counterparts. Such perceptual differences showed statistical significance, with the majority of rural students having to deal with poor network connectivity in their villages [9,34].

The lack of dependable internet connectivity and/or technology has impaired the participation of many students in digital learning, leading to a digital divide which can in fact be observed across states and income categories. The mitigation of the impacts of school closure because of the pandemic (to a certain degree) [51] has shown a strong view of online educational environments as an interventional approach that could potentially empower students with its positive learning environment which could create positive learning experiences. However, the hurdles faced by some students, especially the marginalized ones, have made the shift to online education ineffective. In fact, the achievement of students who learn online has been found to be comparable to that of students who learn via face-to-face instruction; for this reason, online learning has been perceived by many scholars as a practicable educational substitute [52].

3. Materials and Methods

This study attempted to identify the viewpoints of students concerning what hinders and propels their online learning during the COVID-19 pandemic. Specifically, this study attempted to illustrate the lived experiences of students rather than establishing a theory. Hence, the IPA qualitative research methodology proposed by [53] was applied. IPA is appropriate because it allows the understanding of the lived experience of people in a flexible and versatile manner.

In this study, IPA was used to closely examine the participants' lived-in experiences [54]. This method of analysis allows the researcher to determine how people react to specific events [55]. It also allows a deep understanding of the participants' views, and of a specific group, rather than developing a theory that can be applied to the entire community [56].

Additionally, IPA has better descriptive capability, which drives significant stated inferences following the pre-existing theories and notions [57]. However, in such study, the participants and sample size should be cautiously determined. In general, IPA involves a small sample size of between one and 12 [55], but there are studies that have proposed a sample size of between two and 25 participants, as in [58,59]. As indicated by [53], IPA encompasses a thorough examination of individual circumstances, rather than making broad generalizations.

In order to obtain comprehensive insights from the study respondents, primary data were acquired through semi-structured interviews. Through the data, the researchers could engage in a deep assessment of resemblances and differences, convergence and divergence.

The researcher could engage in an in-depth interaction with each particular case as well. There are 18 private universities in the area that were being investigated, and the sample for this study was chosen using the purposive sampling method. Thirty-four students of private universities in Jordan who completed the online certification courses took part in the phenomena investigation.

The students were from several disciplines: namely law, business administration, marketing, engineering, and finance. Such a choice of students allowed the researchers to achieve a vast array of perspectives on e-learning adoption. This allows the generation of a varied viewpoint of the examined phenomenon, taking into account the commendation of IPA proponents.

Those interested in becoming a study participant were asked to contact the researchers directly. Additionally, it is critical for researchers to secure written permission from participants for a phenomenological research study [58]. With ages ranging from 18 to 22, thirty-four respondents, of whom 18 were female and 16 were male, expressed their interest to willingly become study participants. All of the respondents had completed at least five online courses related to their field or areas of interest with certification, and they were given certificates for the completion of the courses. The purposive sampling technique was applied in this study, and the use of this type of sampling is common in qualitative research [60,61]. This technique identifies and chooses the information-rich cases through the optimal use of accessible resources [60,61]. The qualified participants were asked about the factors that propel their e-learning adoption or that impede them from taking another course. The selection of participants from different domains allowed the study to obtain diverse opinions from diverse students. Prior to soliciting the students into partaking in the research, approvals were obtained from the ministry of higher education and scientific research.

In-depth interviews and a semi-structured questionnaire were used in the data gathering. In the interviews, the researchers employed open-ended questions. Four experts in the field confirmed the checklist's reliability and validity, and appropriate changes were made in response to their recommendations. In the initial phase (the first phase), which concerns the gathering of demographic information through interview sessions, participants were to respond to three trigger questions, as follow:

1. How do you feel about online learning courses?
2. What motivates you to take part in e-learning?
3. Are there any obstacles that you believe are decreasing the interest towards e-learning, and if so, what are they?

As can be observed, the questions were all direct and simple; this was to facilitate the participants in answering them. Each interview lasted about thirty minutes on average. The interview data were analysed using Atlas version 8, as proposed by [62,63].

The verbatim transcripts were scrutinized for the key themes, concerns, and phrases that provided valuable insight into the perspective of the participants on e-learning. Then, in the second phase, the emergent themes in the notes were analyzed, and the transcripts were marked up accordingly. The detected themes were afterwards recorded independently from the transcript, and the resulting list of topics was evaluated for associations, in order to compare and contrast them, and to construct theme clusters. Themes that were similar were placed in the same group, and each group was assigned with a name.

The entire process was independently coded and evaluated, and internal consistency was achieved. Disagreements did occur wording-wise, but they were minor. Specifically, the disagreements concern the themes of the security of the online resources and blended learning potential.

The transcript notes were used to assess each interview, and were then transformed into themes and clusters, resulting in high-order motifs. Ref. [64] proposed the "cutting and sorting" technique to assure objectivity and openness in the process of analysis. Then, the collected results were scrutinized until they were consistent (see Appendix A). The outcomes were supported with verbatim excerpts from the interviewees. This was to

validate the results further. Ref. [53] suggested that for sample sizes greater than eight, excerpts from three to four respondents for each subject would suffice. The perspectives of each individual participant were not specified in order to keep the word count down, but features of all persons and themes were identified across the board. Ref. [58] stated that researchers who employ a phenomenological research study are obliged to obtain written permission from participants. In this study, a total of 36 respondents (18 females and 16 males) expressed their willingness to partake in the study, and written permission was obtained from them. These respondents were between 18 and 22 years old, and all of them had completed at least five online certification courses which were relevant to their study and interest domain.

The participants were all students taking professional courses in Jordanian private universities. There are currently 18 private universities operating in Jordan. Of these 18 universities, the majority (11 universities) are in the middle region, while 5 are in the north region, and 2 are in the south region.

In total, 34 students participated in the study, with the following details: 4 students majored in law (1 from a private university in the north region, 2 from private universities in the middle region, and 1 from a private university in the south region), 6 students majored in business administration (2 from a private university in the south region, 2 from private universities in the middle region, and 2 from private universities in the north region), 8 majored in engineering (3 from a private university in the north region, 3 from private universities in the middle region, and 2 from private universities in the south region), 8 students majored in marketing (2 from a private university in the north region, 2 from private universities in the middle region, and 4 from private universities in the south region), and 8 students majored in finance (1 from a private university in the north region, 2 from private universities in the middle region, and 5 five from private universities in the south region).

4. Results

Four major themes emerged from the qualitative data analysis in relation to students' adoption of e-learning/online learning. They were: quality education, ease of technology, instructor accessibility, and the use of online learning resources.

(i) Quality education

Students are eager to learn more when the content of the education presented is of high quality. High-quality content is in fact the force driving the adoption of e-learning. This factor is important because students believe that e-learning is beneficial and can help them master certain skill. Examples of feedback given by participants related to Quality Education are provided as follows:

Technology facilitates the acquirement of concepts. E-learning allows learner to link different resources together in various formats, and learner can also acquire new concepts or courses online at the time and place of their convenience. (Respondent 5)

With e-learning, teacher could explore and use other resources other than textbooks in imparting knowledge and content to student. (Respondent 2)

In the sector of education, the effectiveness of e-learning has been proven, whereby it allows teaching and learning on a global scale. Learner could develop skills in a classroom through e-learning. Equally, through e-learning, seminars could be simultaneously held for students from similar or different institutions under one roof. (Respondent 4)

E-learning is definitely the best tool in education sector, particularly for global level educational programs. Students could gain crucial skills even in the comfort of their room. Also, with e-learning, seminars can be organized for students in the same or different institutions at the same time, under one roof. (Respondent 19)

As a marketing student, I think that the digitized aspect of e-learning is meticulously taught, and therefore, it makes sense to use e-learning to facilitate the traditional form of learning. (Respondent 20)

(ii) Ease of technology (the ease of connection to the internet and the ease of navigation of the online class interface)

Technological solutions should provide a learning environment for intelligent, dynamic behavior [33]. According to [65], technology can facilitate the production, education, and practice of design. During the COVID-19 pandemic, the most widely used online learning applications in Jordanian universities were Zoom and Microsoft Teams. Here, students' interest in accessing their online courses was stimulated by convenient access to the computers and the Internet. They didn't need to drive to the campus or school to access their online class because they had access at home or in the dorm. As students are enrolled in an online class, some may be eligible for internet access discounts.

Getting a degree is attainable with this online curriculum offered on the internet. (Respondent 6)

I have Internet connection in my dorm, and I can access my course at any moment. (Respondent 7)

I can get affordable dial-up Internet access from the university. (Respondent 9)

I think in using Zoom meetings, the only issue is internet connection that can sometimes be unstable. Other than that, I have no issues with this application; the technical aspects and the features of Zoom meetings are satisfactory to me. (Respondent 33)

Furthermore, the well-designed online course allowed students to easily explore and obtain the information they needed. Different participants used two different types of courseware technologies: namely WebCT and Blackboard. WebCT was used in two of the participants' online courses, while Blackboard was used in one of the participants' undergraduate courses. As a result, two different types of interfaces were used in this investigation. Two respondents remarked on the overall class design's ease of navigation.

The options on the Blackboard's screen are quite user-friendly. I'm able to move about the screen with ease. (Respondent 12)

The quantity of links, content, and navigation bar on the homepage is all extremely basic and lay out. (Respondent 15)

Furthermore, frequent exposure to online activities increases the familiarity of students with the used technology. During the interview, Respondent 5 mentioned:

Online learning helps us to become more familiar with technology use. Right now, because of online learning, I am able to use Google Drive and Zoom. This is definitely an advantage to me. (Respondent 31)

My friends and I learned to use Zoom meetings. We practiced a lot. This was before the final exam. I think this application is very useful. (Respondent 26)

Sometimes we use Zoom meeting to prepare our presentation project. My classmates and I would do the presentation rehearsal together using this application. I think it is very useful, but when the internet is unstable—yes, the internet can be problematic sometimes—we cannot use Zoom effectively. We would have to wait for a while to get everyone to join the meeting especially when the internet was not as good. (Respondent 28)

Zoom is new to me and I only heard about it after I had to use it because of the pandemic. I did not realize that this application had been around a long time, like, since 2015. I had to admit; it was difficult at first and I was nervous too. Now I find Zoom very useful, after using it almost every day with much practice. (Respondent 1)

I think that we need more time in using this new software and applications. It is so difficult having to master the application in such short period of time. (Respondent 21)

Ref. [66] highlighted the need to deliver a learning environment for intelligent, dynamic behaviour as one of the solutions provided by technology. In another study, [65] mentioned technology as a tool that steers the design formation, teaching and practice. During the COVID-19 pandemic, the most commonly used online learning applications among universities in Jordan were Zoom and Microsoft Teams. Among these applications, Zoom was reported to be a user-friendly application. Meanwhile, the application of Microsoft Teams was deemed to be more secure. Interestingly, most of the respondents said they had trouble connecting to the Internet.

(iii) Instructor Accessibility

Tutors are guides to students; it is common for tutors to assist students, and students may receive tutoring several times per week, in groups or personally. In a related study, Ref. [67] found that the experience of students in their learning process is greatly affected by tutor support.

The data revealed that instructor accessibility was a hot topic, with the presence and accessibility of an instructor having a substantial impact on the experience of students. Some of the interactions were fruitful. For example, in [68], some students had positive interactions with instructors. One student regarded a professor as “[bending] over backwards to help”, while another said a professor “was always quick to respond within 24 h” (p. 186).

Unfortunately, not all students had positive relationships with their teachers, and their online experiences suffered as a result. The lack of communication with the professor disturbed [69,70], a student from [70]’s research. He went on to say:

Instructors in their introductions; I felt at ease setting the tone for whom they were right immediately. That was incredibly significant to me. Certain academics, on the other hand, went almost ignored. You couldn’t see them since they were hidden. That was said clearly from the outset. Unless they were given a question, they tended to stand back. I assumed they were uninterested in us because of their acts, and I was less likely to approach them. (p. 137 for more information)

For example, one student made the following remark:

It appears that our tutors are unconcerned about our mental wellness. (Respondent 17)

Other students compared their instructors’ online learning behavior to how they taught design on campus:

Tutors are real people who have families and kids, and this was probably why they sometimes failed to come to the studio on time. Interestingly, this did not happen on campus. (Respondent 32)

I believe that not all of my tutors are capable of working well online. It’s clear that this is their first time teaching online. (Respondent 8)

(iv) Use of online learning resources

The results show that students have a high inclination to utilize online resources, whereby the majority of the respondents expressed satisfaction regarding online learning. Furthermore, more than half stated that the learning resources for their assignments were easy to attain through the Internet. Senior and graduate students were especially positive towards online learning. Furthermore, most of the respondents admitted to using YouTube learning videos or reading architectural blogs, and they spent a considerable amount of time on those two applications. Such usage was facilitated by the availability of resources.

The obtainability of electronic research was also regarded as a pleasant experience by the responding students. Those performing research usually would utilize the digital library, and based on the feedback from these students, the library was very helpful to them for their online class.

Our library is excellent when it comes to assisting our research. It provides us students with online databases, and we can always refer to the librarian if we need any help, or if we have any question. The librarian is very helpful. (Respondent 30)

If the library does not have the article or book that we want, there is library loan; we can use that. (Respondent 3)

Everyone can use the online indexes and databases. This is very convenient. (Respondent 27)

Learning Preferences show the lowest level of readiness. The majority of students indicated that they chose their online classroom because it was very flexible. In fact, in offline settings—students were not allowed to use their cellphone—finding more learning resources would be impossible. Contrariwise, online learning allows the use of certain contrivances in the information search to help these students with challenging materials. Hence, wider learning access will increase the independence of students in their learning.

Online learning gives us freedom in learning, so that we can become autonomous learners. It makes us independent learner because we can look for online learning materials on our own; we can surf the internet and look at other references; and when we have trouble understanding something, we can open YouTube to get more explanations because there are many videos there that explain things. (Respondent 34)

There should be more online resources available for us. (Respondent 2)

I think that the faculties in the university should have one special website for students to publish their excellent work or projects. Each faculty should provide that. (Respondent 2)

Among the factors that motivate students in e-learning adoption is the captive nature of e-learning. The interactive nature of e-learning and its multimedia nature are among the elements that capture users in their use of the instrument. Refs. [71,72] stated that in higher education, the use of technologies in learning is mainly to ease student interaction.

Negative Experiences and Contributing Factors

(i) Delayed feedback from the instructor

Feedback is an important element in online learning, and many studies have examined the impact of feedback on the quality of online learning. It has been reported that timely and constructive feedback impacts the satisfaction of students regarding their online courses [73,74]. On the other hand, delayed feedback has been linked to stress, frustration and confusion among students.

The disapproving perceptions of online education quality among students appeared to be mainly caused by the late or ill-timed feedback of the lecturer. In fact, students expressed their expectation of timely feedback from their lecturer, especially concerning discussion posts, submitted assignments, and exams or tests.

The instructor does not provide immediate feedback. So far, I haven't gotten any responses. In terms of instructor feedback, I believe there is a significant need for development. (Respondent 10)

You must receive regular feedback on examinations, discussion postings, and primary sources of contact. (Respondent 11)

Students also expect a prompt response from their instructor when they sent email or voicemail messages.

She (the instructor) did not return my phone calls or emails. I had no way of getting in touch with her. (Respondent 16)

The reaction of students towards the lack of feedback has been examined in many past students. In the present study, the subject of feedback was discussed in the interview, as follows:

We are not getting enough feedback. (Respondent 22)

I want to see the face of my tutor. I find it difficult to understand when I can only hear my tutor's voice when receiving the feedback. (Respondent 23)

I am getting limited feedback from my tutor. I only get verbal feedback from him. It is not enough. (Respondent 24)

I am a second-year student. I think the feedback I am receiving from my tutor is not enough because it is just verbal feedback. I feel that the design needs to be altered manually, and we have to find help and information from other sources. (Respondent 25)

Students usually had to wait a day or many days for feedback from the instructor.

(ii) Addiction to technology

The participants stated that studying alone with internet access can be ineffective because they could be distracted by the internet itself, as it allows them to surf the net for purposes other than studying. In addition, students stated that they are not motivated to study on their own. One respondent mentioned that when adolescents have access to the internet, they are enticed to abandon their studies:

When offered the opportunity to peruse the internet, they lose interest. Its excessive use has the potential to instill addicted behavior. (Respondent 14)

However, we grow addicted to and dependent on technology as a result of this process, which becomes a challenge for us. (Respondent 13)

Nearly everybody has a smartphone and a laptop, as well as an access to the internet. However, all these devices could entice them into engaging in other activities, such as gaming or watching series or movies if they were left to their own devices. This could lead to health hazards linked with excessive use.

Ref. [75] found that a significant level of anxiety is associated with use of technology, ranging from technology failure during usage to failure to function academically when presented with technology.

(iii) Security concerns

The students mentioned data security as a major reason for their apathy in e-learning. The student's creativity is also jeopardized because plagiarism is encouraged. Furthermore, in e-learning, exams and assessments are usually overseen by proxy. Hence, as indicated by [76], it may be challenging to control undesirable behaviors such as cheating and plagiarism.

Because this model is still in its early stages, it has restricted accessible resources; there is a security issue with these online resources; and student's effort is questionable because anyone can do it for him/her. (Respondent 2)

Many fraudulent websites exist and these websites can defraud students by charging them a large sum of money and giving them made-up hope. (Respondent 4)

Students and their private information are exposed to the vast World Wide Web; their privacy is at risk. (Respondent 5)

(iv) Sense of isolation

A feeling of isolation has been reported by online learners, because the students do not get to physically communicate and engage with their instructor and their peers adequately.

You cannot physically communicate with your teacher as frequently. (Respondent 21)

I can hardly meet my classmates or do class activities together. I think we miss out a lot. (Respondent 5)

Some participants stressed how extremely isolated they were feeling when joining an online class, and without group work, the learner would not be able to communicate with their classmates or teacher/instructor. Online classes could indeed result in the unfamiliarity of the student towards his/her teacher and peers.

Actually, I have no idea who my classmates are; I don't even know how many classmates I actually have. (Respondent 18)

We have the phone number of our instructor, but she seems unreachable. (Respondent 16)

We are not getting any guidance, I mean, there is no one physically teaching us how to use the system, and so, we are not that interested in using it. (Respondent 2)

Accordingly, from the interview:

I lose focus a lot during online meeting, because, while listening to my teacher, I would frequently receive invitation from friends to play games online. It can be very distracting and I did not get to learn as much as I should. (Respondent 4)

I prefer offline classroom because I think it is more fun. I get to physically interact with my classmates and I find that I understand things better in the classroom. Online classroom for me can be tiring sometimes because I would have to sit in front of my laptop for the Zoom meeting. It can be boring sitting there for the entire class session. Sometimes I would be sitting there the whole morning. It is uncomfortable. (Respondent 5)

I don't know if I like Zoom meeting because I just feel it is not effective sometimes. There are times when I would be distracted by my family; they would ask me to do something for them, like taking care of my sister and sometimes I would be wasting my class session playing with my little brother. (Respondent 1)

Many students expressed that studying alone is boring [77], and in fact, being alone with access to the Internet may tempt students to engage in other, more attractive activities like playing online games, chatting with friends, or surfing the web for other purposes. This could impede students from learning as they would in the traditional classroom. Furthermore, the notion of self-learning and self-doing may decrease learner's interest towards learning, unless the learner has already mastered the system [78]. Ref. [76] relevantly reported that the use of e-learning as an education method isolates the learner and decreases interaction and relationships.

5. Discussion

The present study was conducted to investigate the perceptions of students regarding e-learning adoption. Furthermore, this study attempted to ascertain the characteristics that propel and impede e-learning adoption. A qualitative method was the chosen methodology; this method allows researchers to gain a more comprehensive understanding of the topic at hand, despite the small sample size used. Valuable insights on how students perceive e-learning adoption and their motivation in using e-learning were gathered in this study. The findings highlighted that student favored e-learning due to its ubiquity and accessibility. The desire to improve knowledge was another motivation for their e-learning usage. These findings supported [72], who discovered that the majority of students were highly excited and willing to join and communicate in online platforms.

The researchers concluded from the findings that education should not be propelled by technology. Instead, educational goals and needs should become the drivers of technology. Presenting content and assessing achievement were the two areas where technology may be tremendously beneficial [79]. Web-based learning tools have been implemented among higher education institutions in their efforts to impart enhanced learning experiences to students. However, Ref. [80] mentioned the need to scrutinize these tools, such that their impact on students' learning could be ascertained. The impact of these tools on students' learning experiences should be examined as well. Hence, great care must be used when creating e-learning content.

Students have the expectation that e-learning will make them shine. Notably, according to [81], students resist education technology because it causes them to lose social contact. It is thus insufficient to simply provide academics the continual e-learning courses because certain hands-on experience is also necessary to understand the subjects better. Differentiating instruction, according to [79], is one technique to improve the learning

experience. Differentiating instruction has the main goal to satisfy the diverse learning demands of individual students.

Ref. [69] stated that e-learning course design should include activities that incorporate and increase both skills and knowledge. Furthermore, a system of assessment for motivation and tools for customizing or tailoring e-learning lessons should be developed. E-learning cannot address all of the world's educational challenges on its own. In order to promote tangibility, e-learning can become a tool that provides users with instant access to ideas and experiences from various individuals, communities, and cultures. Furthermore, in order to boost the trust of potential users, [78] proposed the development of an e-learning system with a reassuring and intuitive user interface. Moreover, the findings demonstrate the needs of staff members for online software training and practice. The training and practice could ease the communication between tutors while also assuring that the right support is being provided by the tutor.

Ref. [36] found several factors causing students to feel that they are not being assisted in online learning, which consequently causes them to abandon online learning altogether. The factors include technical factors like the unfamiliarity with the new applications and poor network quality. The personal situations between students and tutors when the students are learning from home, such as the lack of expertise of tutors in facilitating the online learning of students, were another factor. All of these factors were found to exacerbate the difficulty of online learning.

Students could personally seek assistance from their teacher in the traditional classrooms, but in online learning, these students may end up keeping their learning troubles to themselves. Students generally know the function of whiteboards in the classroom, and many feel that explanations are better conveyed through the whiteboard; thus, offline classes were seen as providing better understanding. Similar findings were reported in [31].

Many of the participants in this study expressed uncertainty about the components of their online learning experience, and expressed a desire for greater guidance and support. There were a variety of reasons why students feel unsupported and, as a result, become disengaged from online learning. These include delayed feedback from the instructor, addiction to technology, security concerns, and a sense of isolation. The personal situations of both students and tutors when working and studying from home, limited peer interaction, and the lack of expertise of the tutor in online education were contributing factors as well. All of these factors combined can intensify the challenge to online learning. Hence, design instructors should attempt to broaden their students' comprehension by clarifying what online learning in an environment means before the year of study begins. This will allow students to reflect more independently, and will progressively accept the new student-centered learning approach. Additionally, tutors should highlight what outcomes students need to achieve, and should also explain how they will be tested. Further, students should be allowed to visit other students' sections and view their work during the year.

6. Conclusions

As perceived by the respondents, face-to-face learning is more effective and less challenging compared to online learning. This notwithstanding, online learning is now a common medium of instruction in educational institutions, and it helps students in learning, to a certain degree, particularly during the COVID-19 pandemic. Among the issues in online learning adaptation are the lack of engagement and motivation, and data links. Clearly, online learning is still no match for conventional face-to-face teaching and learning; as such, blended learning has been proposed. As the name implies, blended learning blends online learning with conventional face-to-face instruction to create a robust online learning environment.

In Jordan, the education system has always been confined to the classroom, involving face-to-face interaction between teacher and student, with the blackboard in front of the classroom to facilitate teaching and learning. However, the advent of technology has changed the educational landscape. Still, in order to optimally reap the benefits of

both old and new teaching and learning methods, the right balance between both has to be accomplished.

Contradictory to [21], the present study found e-learning to be an increasingly popular mode of learning in the Jordanian context. This was evidenced by the discovery of the inclination of students towards using online learning tools to engage in interaction with their peers and their teachers. For learning purposes, the students demonstrated their satisfactory acceptance of digital technology when traditional learning was not available or unfeasible, as in the situation of COVID-19 pandemic. Hence, the quality of adopted e-learning should be improved accordingly in order to ease student learning. Moreover, the study has significance for government officials as well, because COVID-19 has created a huge need for dynamic e-infrastructure to ensure inclusive e-learning with high levels of student involvement, and to bridge the digital divide. A fantastic initiative has already been launched. A new 2021 education policy has been drafted by the Jordanian government. The draft comprised a legislative framework to increase learning outcomes with the utilization of digital technology. It was a challenge to create a strong digital infrastructure, but through improved adaptability in the Jordanian ministry of higher education and regulatory agencies, the challenge can be overcome.

7. Research Implications, Limitations and Recommendations

The present study enriches the knowledge of the implications of e-learning in Jordan, and fills the research gaps accordingly. Several major implications, especially for instructors, are worthy of discussion. Firstly, instructors need to utilize online teaching in an effective manner; for instance, they need to be virtually available to students all through the lecture session. In addition, instructors need to adequately and effectively interact with students, using the online chats available. Furthermore, in order to improve collaborative learning among students, instructors need to encourage students to participate in group discussions and group assignments. In addition to the real-time online lecture, instructors should also furnish students with additional audio–video content, so as to make learning more interesting. Considering that learning is the responsibility of both the learner and the instructor, it is important that both parties actively contribute to the creation of a dynamic learning environment. Following the outbreak of the COVID-19 pandemic, the study is of value to government policymakers because the pandemic has resulted in a great need to establish a dynamic e-infrastructure in order to achieve inclusive e-learning with highly committed e-learners, while dealing with the issue of the digital divide. Accordingly, New Education Policy 2021 was introduced by the Jordanian Government; this was to allow the formation of a regulatory framework for digital technology utilization to achieve superior learning outcomes. Robust digital infrastructure is challenging to create for the Jordanian government, but the challenge can be addressed through the achievement of adaptability across the ministry of higher education and scientific research, and regulatory bodies.

The study will be beneficial to the government in taking a number of actions in support of e-learning adoption, but more could be done to make the journey more comfortable and pleasant. In fact, a number of challenges to e-learning need to be addressed first, among them the issues of confusion or clutter, tech-phobia, and reliability. The implementation of e-learning is undeniably a long-term approach, and stakeholders may need some time to accept it. In fact, e-learning implementation involves a paradigm change from a teacher-centric approach to a learner-centric approach. These two approaches may appear to be mutually exclusive, but they can often complement each other in achieving educational objectives [82].

Experts believe that taking these elements into account in a systematic way will help to improve the sector as a whole. In today's world, this could make e-learning the most effective way to learn. It will be viewed as a means of altering the educational landscape of a country. Educational institutions must therefore develop strategies and policies that will aid in increasing students' adoption of e-learning. Various strategies—such as developing high-quality content, making available hands-on experience for skills

reinforcement, creating live and interactive sessions or a thorough question and answer session, authenticating students who complete the course, conducting a thorough check on online course providers to eliminate fake courses, and regularly updating the courses available online—will undoubtedly facilitate e-learning adoption. In addition, a sense of isolation could easily be addressed by supplementing the online learning platform with other social media platforms, or by creating sub-groups within the class so that students can interact with other students in class assignments and during exercises.

This study has a few limitations. Firstly, the responses were obtained from participants with a strong preference for e-learning adoption or non-adoption. Secondly, participants answered in a way that they perceived would appear acceptable to the researcher, instead of exposing their genuine intentions. Thirdly, there was also a risk that the results will be interpreted differently by different researchers. Fourthly, the study was limited to college students only; therefore, the findings cannot be applied to high school students or working professionals.

In the examination of e-learning adoption, this study focused on students. Students are one of the stakeholders in the education domain. Hence, conducting a similar study on other stakeholders—for instance, the management of college and lecturers—will be beneficial in further developing the plans for the implementation of e-learning in students' learning. These groups of stakeholders should be able provide valued inputs on how to integrate e-learning into the system. Furthermore, this study should be carried out in other regions or in other countries which are comparable to Jordan, such that valuable outcomes may be obtained. Understandably, online learning is global, as is the COVID-19 pandemic, and both affect the life of people globally. Hence, it is reasonable to deduce that the outcomes of this study are generalizable to the world population.

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Appendix A. List of Codes and Concluding Themes in the Qualitative Analysis

Codes	Themes
<ul style="list-style-type: none"> • Concepts are better acquired through technology 	<i>Quality education</i>
<ul style="list-style-type: none"> • E-learning allows exploration and application of resources other than textbooks, for teachers 	
<ul style="list-style-type: none"> • E-learning is indeed the best learning mode in education 	
<ul style="list-style-type: none"> • Challenges in starting e-learning 	<i>Ease of technology</i>
<ul style="list-style-type: none"> • Support for technical issues 	
<ul style="list-style-type: none"> • Technology can make education and design course practice easier 	

Codes	Themes
<ul style="list-style-type: none"> Theoretical lessons of better quality 	Instructor Accessibility
<ul style="list-style-type: none"> Potential for blended learning 	
<ul style="list-style-type: none"> Preference towards recorded theoretical teaching sessions 	
<ul style="list-style-type: none"> Online teaching should be provided 	
<ul style="list-style-type: none"> Preference towards joining the lesson session from home 	
<ul style="list-style-type: none"> Improved involvement in online resources 	Use of online learning resources
<ul style="list-style-type: none"> More availability of online resources 	
<ul style="list-style-type: none"> Ability to access online indexes and databases 	
<ul style="list-style-type: none"> Use of library loan as alternative to unavailable book or article at the library 	
<ul style="list-style-type: none"> Usage of online databases 	Delayed feedback from instructor
<ul style="list-style-type: none"> Instructor fails to provide prompt feedback 	
<ul style="list-style-type: none"> The feedbacks provided to students are inadequate 	
<ul style="list-style-type: none"> Students are unmotivated to learn by themselves 	Addiction to technology
<ul style="list-style-type: none"> Other more attractive uses of the internet cause students lose interest in learning 	
<ul style="list-style-type: none"> Students are increasingly showing addiction and dependency towards technology, and this creates new challenge 	
<ul style="list-style-type: none"> Fraudulent websites are everywhere on the internet 	Security concerns
<ul style="list-style-type: none"> The is issue of security concerning the online resources 	
<ul style="list-style-type: none"> E-learning violates privacy 	
<ul style="list-style-type: none"> Interaction is taking place in sessions. 	Sense of isolation
<ul style="list-style-type: none"> Students are present during the sessions. 	
<ul style="list-style-type: none"> It is much better learn in campus 	

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