# Distance Learning at the University of Jordan in the Setting of Covid-19 Pandemic from the Students' Perspectives

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**Abstract—**The study aimed to investigate the reality of distance learning at the University of Jordan during the Covid-19 pandemic from the students' point of view. The study relied on the descriptive-analytical approach and used a questionnaire consisting of 60 items as the study tool to achieve the objectives of the study. The stability of the study tool was confirmed and validated. The data was collected from a random sample of 826 students studying at the University of Jordan. The results indicated that the degree to which faculty members' use of e-learning applications in education from the students' point of view was medium. As for the University of Jordan students' attitudes towards distance learning, they tended to be negative. The degree of problems that students faced during distance learning was described as medium, too. The results showed that there were statistically significant differences at the significance level (α= 0.05) in relation to the attitudes of the University of Jordan students towards distance learning regarding the variable of gender, and it came in favor of males. Moreover, there were statistically significant differences at the significance level (α= 0.05) in relation to the problems that faced students during distance learning regarding gender, but here, it came in favor of females. Statistically significant differences at the significance level (α= 0.05) appeared in the responses made by the study sample regarding the problems they faced during distance learning in relation to the faculty, and it came in favor of the humanities faculty. One of the most important recommendations discussed in the study is training the faculty members on using e-learning applications.

**Keywords—**e-learning (distance learning), Covid-19 pandemic, university of Jordan

## 1 Introduction

During the past and the current century, the world has witnessed a huge development in Technology. Such development is recently exemplified by developing applications that contribute to educating and teaching students online using the

Internet. Accordingly, it became necessary for each individual to work on demonstrating their abilities and developing their expertise to keep pace with such developments. [15] emphasized that the e-learning environment is a motivational environment for acquiring knowledge, developing collaborative learning, and maintaining self-discipline.

E-learning has established itself as an effective educational system and employing it in the educational process has become urgent for the role it does in promoting self-development, improving performance, and enhancing collaborative learning [1].

After the nightmare of the Covid-19 pandemic, the Ministry of Education and the Ministry of Higher Education in Jordan adapted to the exceptional circumstances and decided to use distance learning instead of face-to-face learning. From another perspective, it was a suitable opportunity to implement the vision of the Ministry of Education in order to move from teaching to learning and focus on the active role of the learner in self-learning by changing the role of the teacher to be a facilitator and a mentor of the educational process.

The e-learning experience has revealed the novelty in the methods used for e-learning in our educational institutions and that the requirements of such form of learning have not been adequately met due to the poor infrastructure and the lack of ability to deal with e-learning programs and platforms. E-learning is supposed to be an interactive process designed in different learning patterns that suit all learners with varying learning levels. In other words, e-learning is not just about sending files containing the learning material using different social media means which affected the success of the educational process [16].

Implementing distance learning successfully depends on a group of factors. The first factor is interactivity, which allows simultaneous interaction between learners and instructors. The second factor is the immediacy means used where learners can get information quickly and wherever they want. Stability is also considered a factor as it is concerned with recording the lectures so that the students can reach them when needed. The fourth factor is availability which refers to providing learners with access to the subjects they want to learn anywhere and in a style that suits their characteristics, needs, and abilities. The fifth factor is adaptation which allows learners to access information using appropriate methods and in the time that suits them [10].

This study sheds light on the reality of distance learning at the University of Jordan in light of the Covid-19 pandemic from the students' point of view. The purpose of conducting this study is to recognize the extent to which faculty members use e-learning applications and consider students' attitudes towards distance e-learning in light of the Covid-19 pandemic. The study also discusses the problems students face during distance e-learning and provides solutions and recommendations to improve the level of e-learning implementation in educational institutions in the future.

# 2 Background

## 2.1 Problem of the study

To reduce the spread of Covid-19, the Jordanian government has taken certain precautionary measures. One of these measures was to stop working inside the governmental and private institutions, including educational institutions. However, it was a necessity to maintain the educational process in the universities using distance learning. There is no doubt that such sudden changes in the educational system have confused both teachers and students. Most faculty members were not ready to manage the distance learning process due to lacking the adequate competence needed to deal with distance learning applications and platforms. In relation to the second part of the educational process, students have faced many challenges, including lacking experience in using educational platforms, lacking the motivation to learn, and having poor internet connections in some areas.

## 2.2 Aim of the study

The study aims to examine the degree to which faculty members use e-learning applications in education from the students' point of view, considering the attitudes of the students at the University of Jordan towards distance learning. It also aims to recognize the problems that faced students during the process of distance learning in relation to the variables of gender and the faculty.

## 2.3 Significance of the study

The current study contributes to enriching the theoretical literature on how to manage the distance educational process and use different educational platforms and applications during serious crises in order to help teachers and students adapt to urgent conditions. It also contributes to providing higher education institutions and universities with suggestions to improve the quality of e-learning and reduce the problems facing students in the e-learning process. Moreover, it can open the door for other researchers to conduct new studies on the same topic to address problems that were not discussed in this study and suggest additional recommendations.

## 2.4 Terminology

The Covid-19 pandemic is a disease that has spread in most countries around the globe, and Jordan was one of the countries that have been affected by it. This disease consists of a clique wide range of viruses, including viruses that can cause a range of illnesses for humans, ranging from the common cold to the Severe Acute Respiratory Syndrome [19].

The reality of e-learning is procedurally defined as studying the current situation of using e-learning applications at the University of Jordan by examining the degree to

which faculty members use e-learning applications from students' point of view, considering their attitudes towards it, and identifying the problems facing them. The reality can be examined according to the responses of the study sample participants on the study instrument designed for this purpose.

Distance learning is an educational system that is based on the interaction between the faculty members, students, and educational material using various e-learning means, whether synchronously or asynchronously in which the learner is spatially distant and remote. It is procedurally defined as the educational system adopted by the University of Jordan during the Covid-19 pandemic, instead of face-to-face education. At the University of Jordan, the interaction between the faculty members and the students was achieved using various educational platforms such as Microsoft Teams [3]. E-learning educational system has two types. The first type is synchronous e-learning, and it requires having all learners present at the same time to conduct interactions and discussions between the learners themselves or with the teachers. These discussions may be conducted either in chat rooms or in virtual classrooms. One of its advantages is that the learner gets instant feedback. However, it has certain disadvantages such as requiring modern equipment and a good internet connection, and it may sometimes be difficult for the learner to be present at the agreed time [5]. The second type is asynchronous e-learning which is an indirect method that does not require learners to be present at the same time, but it allows learners to access materials and learn according to their own convenience and effort that they are devoting. One of its disadvantages is that providing feedback is always delayed and learning occurs in isolation, without activating collective participation. Implementing e-learning successfully depends on having certain elements that interact with each other to achieve the objectives of the e-learning process. One of these elements is the e-learner who is the student who has chosen to learn using the e-learning system. The second element is the e-teacher who is the mentor and supervisor who encourages learners and guides the learning process. The third element is the e-classroom which is a classroom equipped with tools and technologies that facilitate the e-learning process. The fourth element is the e-book which is the educational material and activities being available to all learners at a low cost anytime and everywhere. The fifth element is the e-library which contains books, magazines, and electronic bulletins from which learners can access information easily no matter where they reside. The last element is the e-mail which is a very widespread online service, similar to regular mail, where messages and the delivery and receipt of messages are done electronically over the Internet. It is considered as a means of communication between learners and teachers [17].

### 2.5 Limitations of the study

**The objective limitation.** The study is limited to examining the degree to which faculty members use e-learning applications in education from the students' point of view, considering their attitudes towards distance learning, and addressing the problems they encountered in e-learning.

**The spatial limitation.** This study is limited to students at the University of Jordan in the Hashemite Kingdom of Jordan.

**The time limitation.** The study was conducted in the second semester of the academic year (2020-2021).

**The participants' limitation.** The study was conducted on University of Jordan students in six scientific and humanitarian faculties, namely: Engineering, Agriculture, Information Technology, Arts, Foreign Languages, and Educational Sciences.

## 3 Previous studies

[18] conducted a study on six Indian universities to examine the degree to which faculty members use Web 2.0 technologies in the learning environment. Three hundred questionnaires were distributed to a stratified sample of university professors from various fields and departments as agriculture, arts, education, engineering, management, and science. Out of 300 questionnaires, 147 valid questionnaires were collected and analyzed. The study demonstrated the usefulness of using Web 2.0 applications but highlighted that they have certain challenges related to the implementation process. It was suggested that an effective strategy to deal with implementation problems may include learning from the experience of others, having open access to content, and increasing reliance on open platforms for knowledge sharing and creation. The majority of the faculty members used Web 2.0 tools for the three main purposes of web teaching and research, for interactive learning features, and for keeping teachers themselves up to date with topics relevant to such applications. Accordingly, the results indicate that faculty members have positive attitudes towards Web 2.0 use in education.

[4] conducted an analytical study on the reasons behind lacking success in implementing distance learning at the college of education for girls in the General Presidency University for girls' education. The study made a comparison between two distance learning experiments. One experiment was conducted in the state of Malaysia and proved its success, continuity, and development, and the other study was conducted in Saudi Arabia in 2005 at the college of education for girls for almost a year. Data was collected using the qualitative method, relying on two methods of data analysis and interviews, and it also used the quantitative method by distributing questionnaires. The study sample included 229 distance learning students in the college of education for girls. The means and standard deviation values of the responses were calculated. It was found that the weaknesses led to lacking continuity for this form of learning despite the need for it. The study argued that the success or failure of the e-learning process depends mainly on the availability of good infrastructure, availability of material, human, administrative and technical expertise, availability of quality and review centers, and availability of high-quality technical media.

[2] revealed the extent to which faculty members employ e-learning technologies in the departments concerned with the Mathematics Teacher Preparation Program at

King Khalid University and tried to allocate the obstacles that prevent reaching the optimal use of these technologies in teaching. The study sample consisted of all faculty members and students who are studying at the Mathematics Teacher Preparation Program at King Khalid University. The two-part questionnaire was used to examine the reality and obstacles that faced faculty members while using electronic technologies in teaching. An interview was conducted on a stratified sample of faculty members asking them for their opinions regarding the extent to which e-learning technologies were employed in their classes and the constraints that faced them during the employment process. The results revealed that the degree of using electronic technologies by faculty members was low and that there were many challenges of using electronic technologies in teaching. The most prominent obstacles that faced teachers were the large number of administrative and teaching tasks required from teachers, the failure to encourage faculty members to provide incentives to employ electronic technologies in university teaching, and the lack of financial allocations to support electronic technologies used in teaching.

[6] investigated the extent to which secondary school teachers use second-generation tools and identified the obstacles that limit their use of such tools in the public schools in the north of Riyadh. Additionally, the study aimed to investigate whether there are statistically significant differences in using second-generation tools due to variables of specialization, teaching experience, and the number of training courses. The study relied on the descriptive survey approach, and the study sample included 70 teachers in public schools in the north of Riyadh. The data was collected using a questionnaire. The study reached several results, the most important of which is that the level of using web tools in teaching in middle schools is low. Moreover, it was found that Wikipedia is considered one of the most used web tools. The study concluded that teachers do not use web tools due to technological, social, and administrative obstacles.

[12] aimed to identify the degree to which students at King Abdulaziz University in Jeddah benefit from using the e-learning system, and to consider the challenges that faced them in order to improve and develop the experience of using the e-learning system at King Abdulaziz University. The descriptive approach was followed, and a questionnaire was designed to collect data from a sample that consisted of 570 students and 115 faculty members. The most prominent challenges were the high cost of the Internet, the difficulty of technical support and maintenance required for the system, and the lack of incentives, mainly giving students bonus marks while using the system. The study reached many results, the most important of which is the overall degree to which students benefited from the e-learning system reached an average degree of (3.86), the degree of challenges faced by the student while using the e-learning system reached (1.04), and the item which got the highest percentage of 25.4% focused on developing the system and updating the version in line with the requirements of the era from the students' point of view to improve the experience of King Abdulaziz University in using the e-learning system.

[7] aimed to identify the reality of using e-learning to develop teaching and learning in secondary schools from male and female teachers' points of view, identify the attitudes of the teachers working at Al-Qadisiyah Secondary School towards e-

learning strategies, and discuss the existence of the needed electronic means to fulfill this task. The study sample consisted of 97 teachers: 72 were teachers of scientific subjects, and 25 were teachers of humanitarian subjects. The study revealed that there are very few equipped classrooms to teach the curricula online and that there is a limited number of computers and a poor Internet connection, i.e., there is a shortage of financial allocations. Moreover, findings showed that teachers are weak in dealing with computer programs and applications and that there is difficulty in following up with the students individually. It also was found that students lack the necessary computer competence, and that e-learning may facilitate the work of teachers since the use of e-learning increases the interaction with the teaching material.

[8] conducted a study to examine the extent to which second-generation web applications were used by faculty members at Mu'tah University and the problems facing them. The study relied on the descriptive-analytical method. A questionnaire consisting of 54 items was constructed, and a random sample consisting of 250 faculty members was chosen. The results indicated that there was an average degree of using second-generation web applications by faculty members and a high degree of using applications such as WhatsApp, YouTube, and Facebook. In addition, the degree in which second-generation web applications were used by faculty members was average. One of the technical obstacles that faced them was the high cost of equipping the classrooms with the necessary hardware and software and having a weak level of English was one of the administrative obstacles.

[14] designed a study in order to analyze students' attitudes towards using e-learning in higher education in Pakistan. The data was collected by distributing a questionnaire and conducting interviews. The sample consisted of 2180 participants, where 2160 students were chosen randomly, and 20 teachers who are specialized in information technology formed the stratified sample. Results showed that male students showed more positive attitudes towards using e-learning in Pakistan compared to female students. The improvement of pedagogical and technological factors was proposed by the government through developing the infrastructure and allocating a budget to develop the network and information technology service centers.

[13] conducted a study to identify the role of distance education in developing self-learning skills of Zarqa Private University students in light of the Covid-19 pandemic from the students' point of view. A questionnaire consisting of two parts was used to collect data and examine the level of using distance education and the level of self-learning at Zarqa Private University from the students' point of view. The study sample consisted of 138 students studying at Zarqa Private University. Results showed that students' attitudes towards the level of distance education and self-learning were average and that there was a statistically significant relationship between distance education and self-learning.

[9] studied the challenges of teaching English oral skills using online learning for Jordanian students by secondary school teachers. Additionally, the study proposed effective solutions to overcome the challenges students and teachers encounter and the ways in which teaching/learning oral skills online may be promoted. The researchers used the qualitative data elicitation tool, in particular the semi-structured

interviews conducted on thirty teachers and twenty students, in order to obtain their opinions and experiences of online learning. After the interviews were conducted, the reasons that might hinder the process of teaching English oral skills using online learning were discussed. The results of the study indicated that some of the challenges faced by the teachers are similar to those faced by the students, such as time management, teaching methods, lack of encouragement and motivation, and lack of knowledge regarding online teaching tools. The study also recommended some solutions to help both, teachers and students, overcome the obstacles facing them and develop students' English oral skills.

Since the experience of distance e-learning in Jordanian universities is recent and emerged in exceptional circumstances, this study aims to reveal the reality of distance e-learning at the University of Jordan in light of the Covid-19 pandemic from students' perspective. The researchers believe that their study is different from previous studies as it dealt with the reality of distance e-learning at the University of Jordan in light of the Coivd-19 pandemic from the students' points of view to end up with recommendations to improve the reality of e-learning at the University of Jordan. Accordingly, this study aims to provide answers to the following research questions.

1. To what extent do faculty members use e-learning applications in education from students' points of view?
2. What are the attitudes of University of Jordan's students towards distance learning?
3. What problems have students encountered during e-learning?
4. Do students' assessments differ based on the extent to which faculty members use e-learning applications in education, their attitudes towards distance e-learning, and the problems faced by them in relation to gender and the faculty?

# 4 Methodology

## 4.1 The sample

The study used the descriptive survey approach to survey a sample consisting of students at the University of Jordan studying in six scientific and humanitarian faculties, namely the faculties of Engineering, Agriculture, Information Technology, Arts, Foreign Languages, and Educational Sciences. A number of 826 students were selected randomly out of 17676 students studying at the University of Jordan, i.e., the study sample represented 5% of the study population. Table 1 represents the population of the study, and Table 2 shows the distribution of the study sample.

**Table 1.** Distribution of the study population according to the study variables

| Variables | Category | Number | Total |
|---|---|---|---|
| Gender | Male | 5631 | 17676 |
| | Female | 12045 | |
| Faculty | Science | 8306 | 17676 |
| | Humanity | 9370 | |

**Table 2.** Distribution of the study sample according to the study variables

| Variables | Category | Number | Total |
|---|---|---|---|
| Gender | Male | 171 | 826 |
| | Female | 655 | |
| Faculty | Science | 294 | 826 |
| | Humanities | 532 | |

### 4.2 Study tool

To achieve the objectives of the study, the study tool was developed based on the relevant theoretical literature such as the studies conducted in [2] and [4]. The tool consisted of a questionnaire to examine the degree of using e-learning applications and tools by faculty members at the University of Jordan from the students' perspective, their attitudes towards using these applications and tools, and the problems facing them. The questionnaire was distributed online via e-mail and WhatsApp groups. The tool consisted of four parts. The first part included personal data such as gender (male or female) and faculty (scientific or humanitarian). The second part included 16 items that measure the degree of using e-learning applications by faculty members at the University of Jordan from the students' points of view. The five-digit Likert scale ranging from 1 to 5 was used to measure the degree of using e-learning applications as follows: very large, large, medium, few, and very few. The third part, consisting of 25 items, concerned students' attitudes towards distance e-learning using the Likert pentatonic scale including strongly agree, agree, neutral, disagree, and strongly disagree. The fourth part measured the problems facing students in distance e-learning. The students answered the questionnaire consisting of 19 items using the Likert pentatonic scale ranging from very large, large, medium, few, and very few. The degree of using e-learning applications and the problems facing students were measured according to the average of their use as follows: (1-2.33) low, (2.34 - 3.67) medium, and (3.68-5) high.

**Reliability and validity of the study tool.** To verify the reliability and judge the validity of the study tool, the questionnaire was presented to a group of competent and experienced arbitrators from the faculty members in the Departments of Educational Sciences and Information Technology, and 10 arbitrators from Mu'tah University. The arbitrators checked the accuracy and clarity of the language used to write the questionnaire items as well as the appropriateness and comprehensiveness of the questionnaire. The researchers considered the opinions of the arbitrators and made

some adjustments by adding and deleting some of the items to end up with 60 items in the questionnaire.

**Stability of the study tool.** The stability of the study tool was ensured using Cronbach Alpha coefficient as shown in Table 3.

**Table 3.** Internal consistency coefficient (Cronbach Alpha)

| Area | Cronbach Alpha coefficient | Number of items |
|---|---|---|
| Applications use | 0.898 | 16 |
| Students' attitudes | 0.898 | 25 |
| The problems facing students while using the applications | 0.923 | 19 |
| Total | 0.895 | 60 |

Table 3 shows that all questionnaire items have a high degree of stability since the Cronbach Alpha value for each of them was higher than (0.70), i.e., it is between (0-1). In general, if the Cronbach Alpha value is less than (0.4) the stability is low, if it is between (0.4-0.7), the items are considered to have medium stability, and the stability is considered high if the value is above (0.7).

### 4.3 The study procedures

To achieve the objectives of the study, the researchers adopted the following procedures. First, the previous literature and studies which addressed the same topic were reviewed. Second, the study tool was developed by checking its validity and stability. Third, the questionnaire was distributed among the study sample using the Microsoft Teams platform and WhatsApp groups due to the difficulty of distributing it manually during the Covid-19 pandemic. Fourth, the responses were collected four weeks after the questionnaire was first distributed. Fifth, appropriate statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS) software to calculate the means and standard deviations of the responses to the first, second, and third questions of the study. In order to analyze the answers to the fourth question, a T-test was conducted.

## 5 Results and discussion

To answer the first question that is concerned with the degree of using e-learning applications in education by faculty members from students' points of view, the means and standard deviation values were calculated as shown in Table 4.

**Table 4.** Means and standard deviations of the degree to which faculty members use e-learning applications in education from the students' points of view, arranged descendingly according to the means values

| Order | Number | Item | Mean | Standard deviation | degree |
|---|---|---|---|---|---|
| 1 | 4 | Microsoft Teams | 4.58 | .872 | high |
| 2 | 6 | Moodle | 3.78 | 1.215 | high |
| 3 | 12 | WhatsApp | 3.45 | 1.270 | medium |
| 4 | 7 | e-mail | 3.21 | 1.211 | medium |
| 5 | 9 | FLICKER | 3.20 | 1.308 | medium |
| 6 | 10 | Google Drive, iCloud | 3.02 | 1.255 | medium |
| 7 | 5 | Zoom | 2.92 | 1.391 | medium |
| 8 | 1 | Facebook | 2.87 | 1.221 | medium |
| 9 | 8 | Educational blogs | 2.82 | 1.267 | medium |
| 10 | 15 | Google Docs and websites | 2.78 | 1.269 | medium |
| 11 | 11 | Educational forums | 2.56 | 1.205 | medium |
| 12 | 13 | Messenger | 2.54 | 1.203 | medium |
| 13 | 16 | Google classroom | 2.36 | 1.230 | medium |
| 14 | 14 | Blackboard | 2.10 | 1.094 | low |
| 15 | 3 | Instagram | 1.97 | 1.114 | low |
| 16 | 2 | Twitter | 1.86 | .977 | low |
| | | Total | 2.88 | .754 | medium |

It is noted from Table 4 that the average degree of using e-learning applications in education by faculty members from students' points of view was medium in general with a mean of (2.88) and a standard deviation of (0.754). Two of the 16 applications indicated a high level of use. The mean of Microsoft Teams was (4.58) and the standard deviation was (0.872), followed by Moodle with a mean of (3.78) and a standard deviation of (1.215). Such results are considered logical after switching to Microsoft Teams due to the advantages this platform provides to students such as enabling them to hold meetings that host a large number of users in one place at the same time and allowing them to divide students into groups [11]. Moodle is an e-learning management system that allows the teacher to create asynchronous virtual classes, follow up with students, and perform tests and assignments.

As shown in Table 4, the faculty members use 11 applications, ordered from 3 to 13 in the table, at a medium level with a mean ranging between (2.36-3.45). This can be attributed to the ease of using these applications, i.e., they do not need high skills to be used. Moreover, they are free applications available to and popular among all age groups. For example, Facebook and WhatsApp allow teachers to create groups, attach files, and share them easily turning them into interactive platforms. Other applications such as YouTube are also considered rich learning environments that provide students with free educational videos that suit different types of learners. The researchers believe that these applications did not get a high value due to the decision taken by the Ministry of higher education regarding using Microsoft Teams and Moodle in the educational process. The remaining three e-learning applications have

been used at a small rate with a mean that ranged from (1.86-2.10). This can be attributed to the fact that some applications, such as BlackBoard, are open-source applications that are not allowed to be used without a license. Instagram and Twitter are not commonly used by students and teachers. The results of this study go in line with [8] which showed that the degree of using second-generation web applications by faculty members at Mu'tah University was medium. However, results do not match what [2], [5], and [18] have shown that the degree of using second-generation web applications was low.

To check the attitudes of the University of Jordan students towards e-learning, the means, standard deviation, and one sample T-test values were calculated as represented in Table 5.

**Table 5.** Means, standard deviations, and statistical significance of the University of Jordan students' attitudes towards distance learning

| Number | Item | Means | Standard deviation | Sig. | Attitude |
|---|---|---|---|---|---|
| 1 | I see that using e-learning applications is essential for every student. | 4.12 | 1.051 | .000 | positive |
| 2 | I believe that e-learning applications contribute to improving student's performance. | 3.06 | 1.327 | .218 | neutral |
| 3 | I enjoy when using distance e-learning in education. | 2.48 | 1.373 | .000 | negative |
| 4 | I believe that distance learning takes into account individual differences among students. | 2.22 | 1.260 | .000 | negative |
| 5 | I believe that distance learning achieves continuous communication between students. | 2.55 | 1.335 | .000 | negative |
| 6 | I think time passes quickly when using distance e-learning in education. | 3.05 | 1.356 | .305 | neutral |
| 7 | I see that the use of e-learning applications in education is a waste of time. | 2.86 | 1.293 | .002 | negative |
| 8 | I see that the traditional teaching method gives better results than using distance e-learning. | 1.81 | 1.128 | .000 | negative |
| 9 | I think distance learning increases student's interaction. | 2.45 | 1.251 | .000 | negative |
| 10 | I believe that distance learning helps solve many of traditional education problems. | 2.45 | 1.251 | .000 | negative |
| 11 | I see that using e-learning applications in education is stressful. | 3.35 | 1.245 | .000 | positive |
| 12 | I feel isolated if I use distance learning in education. | 2.29 | 1.231 | .000 | negative |
| 13 | I support the use of e-learning in all educational material. | 3.85 | 1.256 | .000 | positive |
| 14 | I see that the use of e-learning applications in education gives students freedom to express themselves. | 2.19 | 1.307 | .000 | negative |
| 15 | I believe that distance learning is an effective educational system to meet the nowadays challenges. | 2.84 | 1.281 | .000 | negative |
| 16 | I think e-learning helps in the exchange of experiences and information among students. | 2.93 | 1.274 | .141 | neutral |
| 17 | I prefer to use traditional teaching methods as lectures rather than distance learning. | 2.74 | 1.267 | .000 | neutral |
| 18 | I see distance learning adding a greater burden to the | 1.91 | 1.187 | .000 | negative |

| | | | | | |
|---|---|---|---|---|---|
| | student at the University. | | | | |
| 19 | I believe that distance learning increases the creative skills of university students. | 3.99 | 1.180 | .000 | positive |
| 20 | I think distance learning distracts students from the topic of the lesson. | 3.39 | 1.254 | .000 | positive |
| 21 | I think distance learning increases students' motivation towards learning more than face-to-face learning. | 3.72 | 1.249 | .000 | positive |
| 22 | I believe that distance learning develops students' self-learning. | 2.37 | 1.333 | .000 | negative |
| 23 | I believe that e-learning remotely instills information in the student's mind and conveys the impact of learning. | 3.20 | 1.341 | .000 | positive |
| 24 | I believe that distance learning should be adopted as a university teaching strategy. | 2.53 | 1.319 | .000 | negative |
| 25 | I think distance learning enables students to learn more information with less effort than traditional learning. | 2.59 | 1.427 | .000 | negative |
| Total | | 2.838 | .578 | .000 | negative |

Table 5 shows that the mean of the students' attitudes towards distance e-learning was (2.84) which is less than the value of (3) indicating that their attitudes towards e-learning were negative. This may be due to the sudden shift from traditional face-to-face learning to distance e-learning. For example, the way most lectures were being delivered shifted from the audiovisual method, in which students listen and interact with the lecturer to receive information in a classroom environment, to the method in which students listen to the lecture only. As is known, the more senses used in the learning process, the more it is kept and maintained in the students' minds. The role of students has also changed from being a recipient of information in the traditional face-to-face system to being a researcher, and this increased the burden on students. This may also be due to the sudden shift from traditional face-to-face learning to e-learning, as there is not enough time for students to practice using e-learning applications. This may also be due to problems encountered by students during e-learning. For example, not all teachers were recording e-lectures for the students to access them when needed. There also was a difficulty in studying some materials through e-learning applications, having poor Internet connection, lacking computers by some students, and lacking the direct interaction between students and the teacher. All of this led to having negative attitudes from students towards e-learning. This result differed from the result reached in [13] which showed that students' attitudes toward distance learning were positive. The results showed that item 1 (I believe that the use of e-learning applications is necessary for each student) had the highest value in terms of means with an average of (4.12) and a positive attitude followed by item 19 (I believe that distance learning increases the creative skills of university students) with an average of (3.99) indicating that students consider the use of e-learning applications in their education essential as they help them to improve and learn in exceptional conditions without interruption and provide them with the knowledge they need.

To investigate problems that University of Jordan students faced during e-learning, the means and standard deviation values were calculated as represented in Table 6.

**Table 6.** Means and standard deviations of the problems encountered by students during e-learning

| Order | Number | Item | Means | Standard deviation | Degree |
|---|---|---|---|---|---|
| 16 | 1 | Not recording e-lectures in the platforms to be referred to when needed. | 4.19 | 1.087 | high |
| 3 | 2 | Not having a personal computer. | 4.15 | 1.032 | high |
| 2 | 3 | Difficulty in studying certain subjects through e-learning applications. | 4.11 | 1.095 | high |
| 11 | 4 | Teachers' poor skills in using e-learning tools. | 3.91 | 1.204 | high |
| 19 | 5 | The high financial cost of e-learning and its tools. | 3.89 | 1.161 | high |
| 10 | 6 | Lack of direct student-teacher interaction. | 3.87 | 1.235 | high |
| 8 | 7 | Teacher's non-compliance with lecture schedules. | 3.74 | 1.379 | high |
| 18 | 8 | Difficulty to establish collective participation in thinking activities. | 3.67 | 1.242 | medium |
| 15 | 9 | Not using simultaneous virtual classes. | 3.50 | 1.221 | medium |
| 17 | 10 | The lectures mainly focus on indoctrination. | 3.41 | 1.343 | medium |
| 14 | 11 | Difficulty of making any intervention or query during e-learning distance. | 3.34 | 1.294 | medium |
| 12 | 12 | E-learning does not achieve justice as some students depend on cheating on tests and assignments. | 3.31 | 1.297 | medium |
| 4 | 13 | Not having one of the smart devices that allow distance e-learning. | 3.27 | 1.482 | medium |
| 13 | 14 | Difficulty to access electronic tests. | 3.19 | 1.256 | medium |
| 6 | 15 | Vulnerability in English prevents me from using some e-learning apps. | 2.85 | 1.406 | medium |
| 5 | 16 | I have poor skills in using e-learning apps. | 2.84 | 1.407 | medium |
| 9 | 17 | Internet outage while delivering electronic tests. | 2.82 | 1.401 | medium |
| 7 | 18 | Internet packages are insufficient for life meetings. | 2.70 | 1.432 | medium |
| 1 | 19 | Disconnection while learning due to constantly weak internet. | 2.64 | 1.363 | medium |
| | | Total | 3.44 | 1.281 | medium |

Table 6 indicates that the average of the problems faced by students while using e-learning applications in education at the University of Jordan is medium with a mean of (3.44), and a standard deviation of (1.281). Table 6 also shows that (7) problems out of (19) problems had a high degree ranging from (3.74-4.19). One of the problems is not recording the lectures by the teachers to be accessed by students when needed, because some students rely on such recordings to follow up with the lectures in an asynchronous manner if they missed the live lectures. Other problems are not having a computer, the difficulty of studying some materials using e-learning applications, and the lack of direct interaction between teachers and students. The sudden shift to e-learning has put more pressure on parents to provide their children with the needed electronic devices that can help them in their online studying. In addition, starting to use electronic platforms suddenly made it difficult to fully prepare such platforms to store the huge number of lectures and study materials, and this was a challenge for

students, too. This also goes in line with the voting made by the students as they voted 'high' on the item that states (E-learning and its tools need a high financial cost). The results of this study go in line with the findings reached in [7], [12], and [4], which showed that the high cost of using the Internet and e-learning tools is among the most significant challenges that students and teachers might face during e-learning. On the other hand, the results showed that students felt that teachers had poor skills in dealing with e-learning tools, and this was due to the direct shift made under exceptional circumstances from face-to-face learning to e-learning without having time for faculty members to be trained on how to use online platforms and tools. This finding differs from [8], which showed that the degree of applying poor skills and knowledge in using second-generation web applications was medium and average, not low as shown in this study. Another problem concerned teachers' lack of commitment to the schedules of lectures, and this may be due to the fact that the study was conducted during the holy month of Ramadan, which caused teachers to change the starting time of lectures if they are scheduled to start in the early morning. The rest of the 12 problems are of a medium degree with a mean value ranging between (2.64-3.67). One of the problems is related to the difficulty of increasing collective participation in thinking activities. In addition, some online lectures rely mainly on indoctrination and that e-learning does not provide students with equal opportunities, as some students rely on cheating in tests and assignments. Moreover, having a poor Internet connection is also a major problem since most educational and non-educational institutions have relied on the Internet as a plan B to pursue their work during the pandemic, and this led to having a weak network and constant interruptions. These problems resulted in not providing faculty members with the training necessary to employ interactive tools of educational platforms such as screen sharing, using whiteboards, and creating question banks. Students were also demotivated by their teachers, and this is one of the results caused by the problems discussed above.

To answer the fourth question, which investigates the differences between the students' attitudes towards the degree to which faculty members use e-learning applications in education and their attitudes towards distance e-learning, along with the problems they have faced in relation to both variables, the means, standard deviation, and T-test values were calculated as shown in Table 7 and Table 8. Table 7 concerns the gender variable and Table 8 concerns the faculty variable.

**Table 7.** Means, Standard deviations, and T-test values in relation to the gender variable on the responses of the study sample

| Variable | Category | Number | Means | Standard deviation | T Value | Freedom degree | Sig. |
|---|---|---|---|---|---|---|---|
| The degree of use | Male | 171 | .292 | .820 | .802 | 824 | .423 |
| | Female | 655 | .287 | .736 | | | |
| Students' attitudes | Male | 171 | 3.007 | .622 | 4.336 | 824 | .000 |
| | Female | 655 | 2.793 | .546 | | | |
| The problems facing them during e-learning | Male | 171 | 3.38 | .899 | -2.297 | 824 | .022 |
| | Female | 655 | 3.54 | .809 | | | |

Table 7 indicates that there was no statistically significant difference at α=0.05 in the students' attitudes towards the degree to which faculty members use e-learning applications in relation to the gender variable. Such a result is expected since the researchers argue that all students received the same form of education from the same teacher, regardless of their gender. However, there was a statistically significant difference at α=0.05 between the students' attitudes towards e-learning related to gender, and it was in favor of males. The researchers believe that the reason may be due to the fact that male students prefer to study without having to move from one place to another, and this gives them more time to spend at work, as many male students study and work at the same time. This result is similar to a result reached in [14]. Moreover, male students are more familiar with e-learning applications than female students. There was a statistically significant difference at α=0.05 regarding the problems that have faced students in relation to gender, and it was in favor of female students, as females normally hate and avoid change, and as mentioned above, males are more familiar with e-learning applications, so the problems they might face would be fewer. The results related to the faculty variable are shown in Table 8.

**Table 8.** Means, standard deviations, and T values in relation to the faculty variable on the responses of the study sample

| Variable | Category | Number | Means | Standard deviation | T Value | Freedom degree | Sig. |
|---|---|---|---|---|---|---|---|
| The degree of use | Science | 294 | 2.77 | .772 | -3.053 | 824 | .002 |
| | Humanity | 532 | 2.94 | .738 | | | |
| Students' attitudes | Science | 294 | 2.79 | .580 | -1.578 | 824 | .102 |
| | Humanity | 532 | 2.86 | .576 | | | |
| The problems facing them during e-learning | Science | 294 | 3.39 | .851 | -3.100 | 824 | .002 |
| | Humanity | 532 | 3.57 | .812 | | | |

There was a statistically significant difference at α=0.05 in the students' attitudes towards the degree to which faculty members use e-learning applications in relation to the faculty variable, and it was in favor of the humanitarian faculty. This may be because teachers in humanitarian faculties often teach theoretical materials through simultaneous meetings, dialogues, and discussions, and they share PowerPoint presentations using screen-sharing tools. Moreover, these materials do not require high skills to be prepared and presented to students. Conversely, materials in scientific faculties require delivering practical presentations, conducting laboratory experiments, and solving mathematical problems, and this requires using specialized programs, devices, and applications that may not be available to faculty members. Therefore, some teachers in scientific faculties rely on recording videos while teaching. Furthermore, there was no statistically significant difference at α=0.05 in the students' attitudes towards e-learning related to the faculty variable. This may be due to the fact that the University adopts the same applications in teaching both humanitarian and scientific subjects, and this results in having no differences in students' views or attitudes towards e-learning. There also was a statistically

significant difference at $\alpha$=0.05 in the students' attitudes towards the problems that encountered them in relation to the faculty variable, and it was in favor of the scientific faculties. In other words, the problems that faced students in the scientific faculties are fewer than the problems that faced students in the humanitarian faculties. This may be due to the fact that students of scientific faculties are more familiar with e-learning applications and more serious about studying and following up on distance e-learning than students of humanitarian faculties.

## 6 Conclusion and recommendations

The study relied on the descriptive-analytical approach to investigate the distance learning system followed at the University of Jordan during the Covid-19 pandemic according to the students' perspectives. A questionnaire, made of 60 items, was designed to achieve the aims of the study. A random sample of 826 students from the University of Jordan was used to collect the data. The researchers found that the degree of using e-learning applications in education by faculty members was medium. Moreover, it was found that students at the University of Jordan had negative attitudes towards e-learning. Additionally, it was found that the degree to which students face problems tends to be medium. There are statistically significant differences at the significance level ($\alpha$= 0.05) in relation to the attitudes of the University of Jordan students towards distance learning regarding the gender variable, and it was in favor of male students. Additionally, there was a statistically significant difference at the significance level ($\alpha$= 0.05) in relation to the problems that encountered students during distance learning in relation to the gender variable, and it was in favor of females. Regarding the faculty variable, statistically significant differences at the significance level ($\alpha$= 0.05) appeared in the responses got by the study sample to the problems that faced them during distance learning, and it was in favor of the humanitarian faculties. Considering the study results, the researchers made some recommendations. They firstly highlighted the need to develop and enhance the capabilities of faculty members to use distances learning techniques and applications by running courses with the help of the Computer Center. Second, they demonstrated the importance of creating high-tech learning resource centers to produce educational content in different styles such as e-books, training videos, simulation programs, and interactive programs. Third, the necessity of overcoming the problems facing students and motivating them to improve their attitudes towards distance e-learning was emphasized. Fourth, the idea of expanding the Internet connection services using fiber optic technology was highlighted to address issues such as having poor internet connections and reducing the cost of Internet services. Last but not least, the researchers hope to open the doors for further research to validate and generalize broader results.

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