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ATTITUDES AND LEARNING EFFECTIVENESS IN DISTANCE EDUCATION: A COMPARATIVE ANALYSIS

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Article Info

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Abstract

This research aimed to develop and apply a comprehensive measurement scale to assess students' attitudes toward distance education at Amman Arab University, a private institution in Jordan. The evaluation encompassed students' attitudes, opinions, and perceptions regarding the effectiveness of distance learning. The study involved 731 participants, and a meticulously crafted scale comprising 45 items was employed. Rigorous assessments confirmed the validity and reliability of the scale, revealing a single-factor structure through Factor Analysis, as corroborated by the scree plot. The findings indicated a generally positive attitude toward distance education, with encouraging levels of interaction between teachers and students. Importantly, no statistically significant differences were observed in mean attitudes based on student gender. This suggests an overall favorable disposition among students towards distance learning. The insights gained from this study offer valuable feedback for university decision-makers, shedding light on challenges associated with distance education. The outcomes provide essential guidance for students and administrators in navigating these challenges and fostering a successful implementation of an e-learning system at the university.

Introduction

The rapid advancements in technology over the past decades have significantly transformed educational requirements and teaching methodologies, necessitating a departure from traditional pedagogical approaches (Gonzalez & Louis, 2018). The emergence of distance learning has become instrumental in addressing the limitations of traditional education, especially with the increasing accessibility and affordability of personal computers and educational applications (Williams, Paprock, & Covington, 1998).

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In the pursuit of excellence in education aligned with global needs, the Jordanian government emphasizes the importance of providing quality education to cultivate generations capable of creativity and excellence. Education is deemed indispensable for prosperity, necessitating the continuous pursuit of learning under all circumstances (Ngussa & Mbuti, 2017). Attitudes, a significant aspect of human behavior, occupy a central role in educational and psychological research, with their construction and measurement being critical components (Crano & Prislin, 2006).

The COVID-19 pandemic has further accelerated the adoption of e-learning globally, compelling universities to transition from traditional teaching methods to distance education to ensure the continuity of education while adhering to social distancing measures (Daniel, 2020). This shift prompted diverse approaches to distance learning, varying across countries and institutions based on their technological capabilities and infrastructures (Dhawan, 2020). In response to this global crisis, the Jordanian Ministries of Education and Higher Education leveraged e-learning to sustain public and higher education, facilitating the downloading of learning materials to mobile devices through collaborations with telecommunications companies (Adedoyin & Soykan, 2020).

The prominence of distance learning is not only driven by educational needs but also serves as an avenue for personal growth, allowing for group interactions through audio and video conferencing (Yuzer & Kurubacak, 2015). Assessing the learning processes and outcomes has gained increasing importance, demanding accurate and fair assessments to gauge individual competence in various university courses (Liguori & Winkler, 2020). This becomes particularly relevant with the adoption of e-learning, where the evaluation of electronic tests involves considerations of content and electronic presentation (Liguori & Winkler, 2020).

Distance learning, with its liberating philosophy emphasizing equal opportunities and broadening educational access, transcends traditional constraints of space, time, content, testing, and attendance. It offers educational opportunities to individuals facing limitations in traditional educational settings due to economic, geographical, social, or vocational constraints (Mahruf & Shohel, 2012).

Despite its potential benefits, distance learning presents challenges for faculty members, including financial, administrative, and professional hurdles, as well as issues related to evaluation and planning of e-learning. Faculty members' lack of awareness about distance learning can impede its effective implementation, requiring additional effort and preparation to navigate this modern educational paradigm (Gamage, Sliva, & Gunawardhana, 2020).

The sudden implementation of remote teaching in response to the COVID-19 pandemic posed challenges for both faculty and students. Evaluating the distance teaching experience using platforms like Zoom provides valuable insights into student satisfaction and the obstacles encountered during this unprecedented educational experiment (Pace, 2020).

In this era of information and communication technology, instructors play a crucial role in the success of distance learning. The use of digital devices and e-learning platforms enriches courses, satisfying students' educational needs. The 21st century has witnessed a surge in the use of digital devices for various educational programs, with e-learning, m-learning (mobile learning), and d-learning (digital learning) becoming integral components (Basak, Wotto, & Bélanger, 2018; Chen, 2010).

In light of these transformations and challenges, this study aims to conduct a comparative analysis of students' attitudes and learning effectiveness in distance education. By examining the experiences, opinions, and perceptions of students at Amman Arab University, this research seeks to contribute valuable insights into the evolving landscape of distance learning, particularly in the context of the COVID-19 pandemic. Through the development and application of a comprehensive measuring scale, the study endeavors to shed light on the factors influencing students' attitudes and the effectiveness of distance education, offering actionable feedback for

decision-makers and educators in navigating the challenges and opportunities presented by this evolving educational paradigm.

Statement of the Problem

The importance of the current study comes from its topic, novelty, and its seriousness, as this study seeks to construct a scale to measure the students' attitudes toward distance learning. Nowadays, we find most universities use what are called "Learning Management Systems" as part of their educational system, but in light of this pandemic, many different electronic platforms have also been used, including the Zoom platform or (Microsoft Teems), and other different applications, whether in education or conducting student assessments. All of this led to a major challenge at the level of students and the teaching staff in dealing with technology as the only option to complete the educational process.

Objectives and Questions of the Study

This study aims at constructing an attitudes scale towards distance learning with acceptable psychometric properties and investigating the attitudes of students towards the first experience of implementing remote teaching through the Zoom platform. It is also an attempt to unfold the factors that contribute to the general attitudes and to give some recommendations to help overcome them. To achieve the objectives mentioned above, the study attempted to answer the following questions:

1. What are the implications of the validity of the student attitudes scale towards distance learning?
2. What are the indications of the reliability of the student attitudes scale towards distance learning?
3. What is the level of student attitudes towards distance learning?
4. Are there statistically significant differences at ($\alpha = 0.05$) between the arithmetic mean of student attitudes toward distance learning attributed to faculty and gender?

Significance of the Study

The importance of the study stems from constructing a scale with good psychometric properties that researchers can use in their future researches. Also, this may provide feedback to decision-makers at the university to reveal the distance learning challenges facing them. The outcomes will help students and administrative in taking decisions concerning these challenges and how to overcome them to implement a successful e-learning system at the university.

Procedural Definitions

Distance learning: Learning which is based on the use of computers and the Internet, with a remote place to teach educational content to learners through communication between the learner and the teacher, and between the learner and the educational content in an interactive way that enables him to learn simultaneously or consecutively.

Attitudes: Attitude refers to a set of emotions, beliefs, and behaviors toward a particular object, person, thing, or event, often result from experience or upbringing, also they may have a strong impact over person behavior.

LITERATURE REVIEW

Several factors can affect student perceptions of learning experiences and identify the value of a course. Students' achievements in online instruction reflect to what extent they have benefited from the given course.

Sadeghi (2019) explained how the improvement in technology caused the demand for innovative ways of delivering education. Thus, there are changes in the learning and teaching methods. Furthermore, choosing the style of learning depends mainly on the required qualifications for the learners where the researcher extensively explained the history, theories, advantages and disadvantages of distance learning.

Unger and Meiran (2020) performed a study to examine the attitudes of undergraduate students towards moving quickly to a fully online learning environment during the Coronavirus pandemic. The study sample consisted of

82 students of Wingate University, North Carolina undergraduate students. The findings showed there is a consensus among students' responses that distance learning would not be so effective as traditional learning which had a significant score (92%). Moreover, numerous students highlighted the misleading on COVID-19 information in media (97%), on the other, the student perception of being well informed from official news media hand significant different from social media. Several students (76%) explained their urge to finish the online course as fast as they could due to their anxiety and worry. Besides, around (84%) of students discussed disease transmission actively, yet only (60%) felt well prepared for emergencies. Accordingly, students felt that taking preventative measures should be based on good science and medical knowledge.

Mirahmadizadeh et al. (2020) carried out a study aimed at evaluating students attitude and emotions towards the sudden closure of schools during the COVID-19 pandemic, study sample consisted of (20,697) participants (70.3%) of them were females, the findings demonstrated a satisfactory level of students emotions regarding schools and education during the closure of schools and institutions.

Valantinaite and Paciauskien (2020) performed a study aimed to highlight the findings of a study on favorable and unfavorable factors of using online learning environments in the study process as a digital learning strategy to advance education for continual development. The study sample was 106 secondary school students. Favorable factors of using an online learning environment identified by students at the beginning of the quasi-experiment were grouped in five categories: material resources/base; teacher personality; student personality, information presentation, and enhancement the accessibility at the institutional level. The participants emphasized other favourable factors: continuous uploading of materials, the convenience of use, and the promotion of online learning environments for studies in all subjects towards the end of the project.

Bray, Aoki, and Dlugosh (2008) conducted a study on Japanese distance learning satisfaction. The students are allowed to complete all course requirements for a university degree via online distance learning. The results of the questionnaire revealed that students are satisfied with learning considering five important factors; teacher interaction, content interaction, student interaction, computer interaction, and student autonomy as well as students who were good at using computers. Moreover, in the American Education Conference in 1996, Distance Learning was portrayed as a system or process connecting the various learning resources and learners (Lewis, 2000).

Another study accomplished by Isik, Karakis, and Güler (2010) where they examined the postgraduate students attitudes towards Web-Based Distance Learning (WBDL). The questionnaire and demographic survey were applied to (64) postgraduate students at Gazi University. Results showed generally positive attitudes towards distance learning. Females showed a more positive attitude than males. Although students felt bored while studying on the web, they found themselves more comfortable in distance learning and distance learning was more efficient than traditional learning.

Kuo, Walker, Belland, and Schroder (2013) executed a study aimed at predicting student satisfaction in online learning at a Western University, the study sample consisted of all undergraduate and graduate students enrolled in summer online courses at the College of Education at Western University. An online survey was conducted for these students, the results show that the learner-teacher interaction, the learners interaction - the learning content, and the self-efficacy of the Internet were good indicators of student satisfaction, and the strongest indicator was the learners interaction with the learning content which confirms the importance of interaction in online learning. However, the interactions between students Self-organized learning did not contribute to achieving student satisfaction. The results revealed a significant impact of gender and class level on the learner-learner interaction, and the impact of time spent each week on the Internet was largely influencing the Internet self-efficacy and self-regulation. Based on these outcomes, teachers and course designers should pay attention to the content

organization for its significance in achieving student satisfaction, encouraging students to interact and ask questions during interaction online.

Students' attitude is considered as a long-lasting and reliable psychological response to objects. The questionnaire of Distance Learning Attitudes of students in this study, therefore, refers to the research aspects proposed by Simonson, Smaldino, Albright, and Zvacek (1999).

Hanson and Maushak (1996) and Simonson (2002) have presented assessments of distance learning literature tackling research on and about distance learning. Several outcomes were given by Hanson and Maushak concerning distance learning. They suggest that both traditional and distance learning are beneficial regarding learner outcomes. Generally, students seem to have positive attitudes toward distance learning than traditional learners. Moreover, much research confirms that distance learning is an effective method for teaching and learning.

Studies on the effectiveness of online language teaching on the advancedlevel online Spanish grammar course showed great improvement of the online learning which is indeed equivalent to that shown in the facetoface teaching (Enkin & Mejías-Bikandi, 2017).

This leads us to autonomy in learning. Autonomy is a critical factor of self-learning which motivates learners for distance learning students. Students begin their first step toward lifelong self-learners, as they are responsible for their learning. For this reason, autonomy has great importance in distance learning (Firat, 2016; Jacobs, Renandya, & Power, 2016). According to Zimmerman (2002), learner autonomy (independence) is a major role in the e-learning environments success where learners take responsibility for their learning. Lynch and Dembo (2004) agreed that without autonomy learners cannot be successful as it is a crucial factor for online distance learning. Nevertheless, Zigerell (1984) mentioned how it has become easy with modern communications technologies to link educational institutions to homes, work-sites, and community centers that have made adult education a matter of national policy.

There is a massive potential for widening access to higher education and increasing the variety of student populations who anticipated informal distance learning as online technologies provide opportunities to learn anywhere, anytime from anyone (Traxler, 2018). He added that new technologies facilitated greater collaboration at two levels; locally and globally. Due to the development of technology, there is an increase in using online and distance learning approaches at universities and colleges. This enabled them to compete in more distant markets (Traxler, 2018).

In the same vein, Liu and Yen (2014) explained how the improvement of computers in the past two decades has resulted in many changes in the education system. The Ministry of Education and colleges sought great attention to the computer hardware and platforms which resulted in the development of Distance Learning. The research was conducted on 472 college students in the Department of Public Administration. The questionnaire survey findings show that students seem to have significantly positive effects on Curriculum Instruction and management in learning effectiveness as well as on Technological Media in learning effectiveness.

Williams et al. (1998) clarified some facts about the importance of distance learning for governments. Unfortunately, many countries such as America, France, and China have a large number of students with limited universities or financial shortages. Therefore, in the late 1990s, distance learning became an excellent solution. Around 30 million students, mostly adults, enrolled in distance learning programs worldwide. It is, nonetheless, a new, vibrant, and rapidly developing field of study.

"Traditionally, governments have introduced distance education provision to: increase access to learning and training opportunity; provide increased opportunities for updating, retraining, and personal enrichment; improve

the cost-effectiveness of educational resources; support the quality and variety of existing educational structures; enhance and consolidate capacity."(UNESCO, 2002).

STUDY PROCEDURES AND METHODOLOGY

Methodology Study Methodology

A descriptive analytical approach has been used for its suitability for the purposes of this study.

Population of the Study

The study population consists of all students of Amman Arab University who are enrolled in master's and bachelor's programs in all the faculties, they are 2130 male and female students for the academic year (2019/2020).

Sampling Procedures

The sample of the study consisted of 731 male and female students of the graduate and undergraduate student community at Amman Arab University, where the sample was chosen in an accessible way by sending the distant learning attitude scale link to the faculty members of the university, concerning the faculty and gender variable as shown in the Table 1:

Table 1 *The Study Sample Individuals According to Gender, Faculty, and Academic Program Variables*

Variable	Scientific	Humanistic
Faculty	428	303
Total		731
Variable	Male	Female
Gender	388	343
Total		731

Study Instruments

After identifying the attitudes towards distance learning concept by benefitting from the previous literature such as Unger and Meiran (2020) and Valantinaite and Paciauskien (2020). The researchers wrote 50 items taking into consideration all the criteria emphasized by Shrigley (1983). The researchers used a five-pointer Likert scale; five points to (strongly agree), four points to (agree), three points to (neutral), two points to (disagree), and one point to (strongly disagree).

Validity and Reliability of the Test

To ensure the validity of the attitudes scale the researchers have done the following:

First: Content validity: The content validity of the scale was verified by presenting it to a group of experts in the English language, measurement, evaluation, curricula, and teaching methods. The number was 9 experts, and adjustments were made in light of the comments received from the experts so that amendments to the items were made by adding or deleting until the scale reached its final version of 45 items.

Second: Indicators of construct validity: The Indicators of construct validity are verified by finding the correlation coefficients of each item with the total degree of the scale. The results show that the values of coefficients correlation are higher than (0.30), which indicates that the test has adequate constructive validity.

Third: The reliability of the study tool: The reliability of the study instrument was verified in two ways:

• Test-retest procedure and Cronbach alpha: The scale was applied to an exploratory sample consisting of 30 male and female students who are not included in the study sample, and after two weeks it was re-applied, and the correlation coefficient between the two applications was calculated as (0.83), which is suitable for the current

study, as the internal consistency of the Cronbach's Alpha was calculated as its value reached (0.89). This indicates the stability of the scale.

Forth: Correction of the study instrument: The Likert (five gradients) scale is used as follows; five The Likert (five gradients) scale is used as follows: five points to (strongly agree) four points to (agree), three points to (neutral), two points to(disagree), and one point to (strongly disagree).

Evaluating the arithmetic averages was through the following formula: (the highest value in the gradient - the lowest value) / 3(5-1) / 3 = 1.33. Thus, the categories are as follows: From (1- 2.33) is low; (2.34 - 3.67) moderate; (3.68 - 5) high.

Fifth: Statistical processing: The statistical tests used for this study are Arithmetic means, and standard deviations, Correlation coefficients, Exploratory factor analysis of the first order using orthogonal axes. Also, the Standard measurement error method is used as a stability indicator.

Limitations of the Study

This study was restricted to Amman Arab University students for the second semester of the academic year (2019/2020) - The results of this study depend on the validity and reliability of this study tool.

RESULTS AND DISCUSSION

The first question: What are the implications of the validity of the student attitudes scale towards distance learning?

To answer this question, indicators of construction validity were extracted, that is, the correlation of items with the total score and Table 1 illustrates the following:

First: Construction Validity

The validity indicators of the building are verified by finding the correlation of the items with the overall scale as shown in Table 2.

Table 2 *Item Correlation Coefficients Values With the Overall Scale*

Item No.	Correlation Coefficient	Item No.	Correlation Coefficient	Item No.	Correlation Coefficient
1	0.12	16	0.48**	31	0.62**
2	0.60**	17	0.57**	32	0.71**
3	0.59**	18	0.63**	33	0.48**
4	0.45**	19	0.61**	34	0.47**
5	0.50**	20	0.46**	35	0.51**
6	0.49**	21	0.56**	36	0.42**
7	0.52**	22	0.49**	37	0.46**
8	0.46**	23	0.63**	38	0.46**
9	0.45**	24	0.61**	39	0.12
10	0.62**	25	0.57**	40	0.52**
11	0.43**	26	0.63**	41	0.51**
12	0.42**	27	0.40**	42	0.09**
13	0.10	28	0.47**	43	0.45**

14	0.60**	29	0.56**	44	0.55**
15	0.52**	30	0.54**	45	0.03-

** α = (0.01) * α = (0.05)

The results of Table 2 reveal that the values of the correlation coefficient are all positive because they are more than (0.30) and statistically significant at the level (α = 0.01) except for five item which are (1, 45, 13, 42, 39).

Second: Factor Analysis Validity

The validity of the overall scale is verified by conducting an exploratory factor analysis of the highest degree over the sample as a whole using the principal component method for the responses of individuals to the test items, and carrying out the process is using Varimax Rotation for factors for which the Eigenvalues was greater than (1), also normality assumption was investigated through using a Kolmogorov-Simonov test its value reached (0.160) with a significance level (0.080), this indicates that the responses on the scale are distributed normally, then Eigen Values and explained Variance were calculated for each factor, as Table 3 shows.

Table 3 *Eigen Values , Explained Variance, Cumulative Explained Variance for the Factors Explaining the* ***Performance on the Attitudes***

Factors	Latent Root	Ration Contrast Explanation	Cumulative Ratio Contrast Explanation
1	19.245	48.113	48.113
2	3.031	7.575	55.690
3	1.075	2.688	58.378
4	0.760	1.899	60.278

It is clear from Table 3 results that there are only three factors whose Eigenvalues exceed (1). The Eigenvalue of the first factor reached 19.245% and explained 48.113% in the total variance on the attitude scale performance. The Eigenvalue of the second factor reached 3.031 and explained 7.575% in the variance on the scale. It is noted from the results of Table 2 that the ratio of the first Eigenvalue on the second exceeds 2, which means that this scale measures a single trait.

The following figure 1 shows the graphical representation (Scree plot).

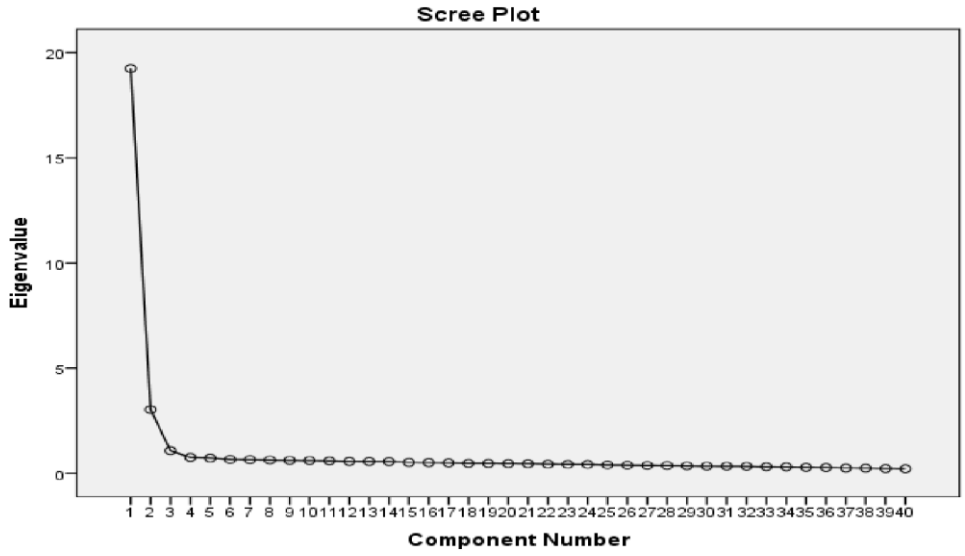

Figure 1 *Graphical Representation of the Values of the Eigenvalues of the Distance Learning Attitudes Scale*

Figure 1 shows the factors with the Eigenvalues that explain the variation in performance on the distance e-learning attitude scale. The first factor Eigenvalue is larger if compared to the second eigenvalue. Unexpectedly, the second factor has a slight shift in the curve, which is observed where it remained close to the rest of the dependencies. Therefore, it could be inferred that the availability of a one-dimensional trait of performance on this scale is the dominance of the first factor.

The second question: What are the indications of the reliability of the student attitudes scale towards distance learning?

The researchers verified the stability coefficients by the following two methods:

- First, To achieve internal consistency, the Alpha Cronbach's equation is used. It is extracted on the main sample ($N = 651$) and its value 0.87 is high which in return suitable for the current study.
- Stability using the mid-point segmentation: Its value is 0.84, and it is considered a suitable value for the purposes of this study. Moreover, standard measurement error was found for each of the total degrees, as the standard error is used as an indicator of stability, its value has reached 0.005 which indicates a high and suitable stability factor.

The third question: What is the level of student attitudes towards distance learning?

To answer this question, arithmetic means and standard deviations are extracted from the items of the distance learning attitude scale as seen in Table 4.

Table 4 *Arithmetic Means and Standard Deviations of the Student Attitude Toward Distance Learning Ranked in* ***Descending Order***

Sr.	Item	Mean	*SD*
40	The timing of the lectures was very suitable for me.	4.39	1.10
2	Distance learning gives me the courage to participate in the lecture	4.37	1.11
7	The available educational material is sufficient for the distance learning system	4.29	1.24
6	Distance learning helps the learner to develop himself	4.27	1.11
14	Distance learning enabled me to interact with the lecturer	4.24	1.09
4	Sufficient information has been provided for the use of the educational material website	4.15	1.19
11	Distance learning takes into account individual differences	4.12	1.00
12	Distance learning saves time and effort	4.11	1.31
39	The teacher has used varied strategies to improve student achievement	4.11	1.20
37	My concentration during distance learning is better than traditional learning	4.08	1.15
9	Distant learning teaching is not very different from the classroom teaching	4.04	1.16
20	I can send educational materials without any obstacles	3.98	1.22
8	The content displayed is interesting and not boring	3.92	1.34
29	I had a problem hearing the lecturer's voice	3.90	1.28
36	I can receive educational materials without any obstacles	3.90	1.20
35	I make better use of my time with distance learning	3.80	1.19

30	I don't feel that I have an educational atmosphere during distance learning lecture	3.73	1.39
33	The teacher answers any questions the students have	3.73	1.71
26	I am having difficulty following up on distance learning lectures because of the surrounding distractions	3.72	1.52
38	The teacher does his/her best to keep the students motivated during distance learning	3.71	1.19
23	My evaluation is done continuously during the education process	3.64	1.50
17	I face obstacles in distance learning	3.62	1.00
1	I can access the educational material easily	3.61	1.54
19	I can easily communicate with my teacher	3.55	1.72
13	Distance learning helped me to understand the educational material	3.52	1.65
25	Evaluation takes place in a variety of ways	3.40	1.56
27	I feel comfortable with distance learning lectures	3.40	1.43
32	I can take any notes during the lecture	3.33	1.32
3	I can attend the lecture without interruption	3.30	1.73
5	There are those who help in case of problems by entering the distance learning system	3.29	1.69
24	The assessment methods used are appropriate	3.27	0.91
21	I can focus more on distance learning than classroom lecture	3.18	1.60
31	The teacher adapts effectively to distance learning	3.18	1.76
15	Distance learning has improved my thinking skills	3.16	1.40
18	The teacher provides us with a recording of the educational material	3.14	1.55
16	I feel comfortable with the distance learning experience	3.11	1.42
34	I believe that the distance learning tests evaluate my cognitive achievement and skills well	2.94	1.71
10	There are exercises and assignments that help me learn	2.88	1.55
28	Internet outages often occur	2.80	1.38
22	Distance learning keeps up with electronic programs and applications while implementing the content.	2.54	1.77
	Total	3.64	0.95

A closer look at Table 4, the findings reveal that the student attitudes toward distance education were moderate since the arithmetic average reached 3.64 with a standard deviation of 0.95. The arithmetic mean has various levels: high, moderate, and low levels as it ranges between 4.39 - 2.35, this may be attributed to the good preparation that the Amman Arab University had done and the good training for the faculty members on using electronic learning platforms such as (ZOOM). This result agreed with the findings of Mirahmadizadeh et al. (2020) study which demonstrated a satisfactory level of students' emotions regarding schools and education during their lockdown. Relatively this result also aligned with the outcomes of Unger and Meiran (2020) study clarified the wide range of responses that students displayed, by expressing their high anxiety toward online

learning, disappointment regarding graduation ceremony, and online learning is different from in-class standard learning.

Fourth question: Are there statistically significant differences at ($\alpha = 0.05$) between the arithmetic mean of student attitudes towards distance learning attributed to gender and faculty?

To answer this question, the means, standard deviations for student attitude toward distance learning were extracted, and Table 5 shows that.

Table 5 *Arithmetic Means for Student Attitude Toward Distance Learning According to Gender and Faculty*

Gender	Faculty	Mean	Std. Deviation	*N*
Male	Human	3.62	1.01	139
	Scientific	3.51	0.90	204
	Total	3.55	0.95	343
Female	Human	3.68	0.94	164
	Scientific	3.73	0.97	224
	Total	3.71	0.96	388
Total	Human	3.65	0.97	303
	Scientific	3.62	0.94	428
	Total	3.64	0.95	731

There is a notable difference between the arithmetic means of the student attitude toward distance learning and to figure out if these differences are statistically significant, the researchers analyzed the data by using the two-way ANOVA as seen in Table 6 below.

Table 6 *The Two-Way ANOVA Analysis of Student Attitude Toward Distance Learning*

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
gender	4.429	1	4.429	4.877	0.028
Faculty	0.131	1	0.131	0.144	0.705
Error	661.105	728	0.908		
Total	10330.850	731			
Corrected Total	665.693	730			

Interestingly, the results of Table 6 demonstrate no statistically significant differences between the mathematical averages of the level of e-learning quality according to the faculty, while there were statistically significant differences according to gender as the value of "*F*" (4.877) at the level of ($\alpha = 0.05$) favored to the female students. This may be attributed to the fact that female students may find distance learning more convenient for them as the majority of them are workers and also married students with families and children, and staying at home is very suitable for them. The result of this study is compatible with the result of Isik et al. (2010) where females have a more positive attitude towards distance learning. However, males are more satisfied with distance learning as Bray et al. (2008) have explained in their study. Several factors affect the process of learning such as student autonomy, the relation between the student and teacher as well as computer interaction. Thus, male students enjoy this kind of competition as it tackles their sense of independence.

CONCLUSION

Distance learning has limitless opportunities soon. Undoubtedly, distance learning programs and courses have become an essential way of teaching and will increase in the coming years. The results confirm that distance learning can be as effective as traditional classroom learning under certain situations, however, e-learning cannot replace traditional classroom learning. Like any kind of educational program, distance learning comes with many advantages and disadvantages. With the convenience of information technology, students at Amman Arab University had a successful experience in the second semester of the Academic year (2019-2020) where it could be deduced from their positive attitude toward distance learning. Moreover, teachers' encouragement to students played an important role in students learning step by step and enhancing their autonomy learning as well as students are motivated to interact through voice and images.

RECOMMENDATIONS

Based on the analysis of the findings of the current study, the researchers suggest the following recommendations to be taken into consideration in the future:

- Reducing the obstacles which impede the access to the e-learning system and learning of the students.
- Encouraging teachers to apply new teaching methodologies by implementing distance learning effectively where students can learn in a better environment.

LIMITATIONS

The generalizing of the study findings may be limited due to sample properties which are limited to private university students where private universities may have fewer students more facilities than public universities in Jordan.

Another limitation can be the web-based approach that was used for this survey, due to COVID-19.

Future studies are suggested to be conducted using the proposed scale, which had a very acceptable psychometric property, as the findings of this study proved. Furthermore, the researchers recommended conducting similar researches using different samples.

Conducting more studies regarding other variables to see to what extent the results obtained here match those obtained from other universities to achieve a more comprehensive view of distance learning among various countries and universities.

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