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Students' Attitudes at the University of Jeddah Towards E-Tests

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Abstract

This study identifies students' attitudes at the University of Jeddah towards e- tests in view of variables of scientific specialization, gender, and academic level. To achieve this objective, the comparative descriptive approach was used. In addition, the Aptitudes Scale toward E-tests was applied to a sample of 1294 male and female students at the University of Jeddah from the second to the eighth level in different colleges. The ages ranged from 18 to 22 years selected by the random stratified method of those who underwent e-tests during the academic year 2019-2020. The findings revealed that there is an average attitude among the study sample towards electronic tests. There were statistically significant differences in the attitude towards electronic tests according to gender, the dimension of student's self, and the dimension of test administration in favor of males. Also, the dimension of the test content, the dimension of electronic tests nature, and on the scale as a whole in favor of females. Furthermore, there were differences in the attitude towards electronic tests according to specialization on the dimension of the student self, the dimension of the test content, the dimension of the nature of electronic tests, and on the scale as a whole in favor of scientific specialization. In addition, there were no differences in the attitudes towards electronic tests according to academic level on the four dimensions and the scale as a whole. Also, there were no differences in the attitude towards electronic tests according to age, on the dimensions, and on the scale as a whole. In light of the research findings, several recommendations were presented.

Disciplinary: Education (Machine Learning), Wireless Communication (Antenna Parameters Optimization).

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1 Introduction

Evaluation represents a major axis in a comprehensive process targeting the improvement of university education in general. This is in consideration of the fact that evaluation has become a prerequisite required by all international academic accreditation bodies. Indeed, some of those bodies, such as the Accreditation Board for Engineering and Technology (ABET) raised the importance they give to the evaluation process in the year 2000/2001 during the review of their conditions for program accreditation. In addition, the International Academic Accreditation Commission (ACSB) reconsidered its requirements for academic accreditation to give the evaluation process a more important role (Shehadah, 2003).

Achievement tests are one of the educational evaluation tools playing a prominent role in measuring achievement. They represent the tool used to determine the achievement level of the learner, identify the level achieved by the curriculum in the desired learning outcomes, and reveal the strengths and weaknesses in such a process. With the development of educational methods in teaching and their impact on scientific evaluation, achievement tests have gained a great deal of attention.

Electronic tests are one of the e-learning products, which have become imperative for societies in light of the rapid technological changes. Schools and universities have recently witnessed the resort of many teachers and faculty members to the use of this type of test due to its several merits as it overcomes the difficulties and cons related to traditional paper-based tests.

So, the University of Jeddah applies electronic tests to achieve the goals of the university, which fall within the strategic plan to transform into a paperless university. The university, represented by the Deanship of E-Learning and Distance Education, started applying electronic tests for male and female students of the preparatory year during the first semester of the academic year 2019/2020 on the preparatory year courses and general courses for university students.

Although many studies deal with the design of attitudes scales, it is clear that studies - especially Arabic – dealing with the design of such scales according to the paragraph response theory are rare. Thus, this study uses the paragraph response model, especially the Samejima Model to build a measure of the attitude towards electronic tests.

The modern era has witnessed the tremendous impact of computer technology in all areas of life, especially education. However, its use in tests was not at the same level as in teaching and training.

Al-Khazi and Al-Zekari (2011) believe that the use of electronic tests in education in the Arab world has two approaches: the first is impulsive towards its use while the other is apprehensive. Those with an impulsive attitude believe that they will have the same effect on teaching and learning, while those in the other opinion believe that the use of electronic tests represents a kind of unnecessary risk because it has the credibility and reliability that are available in paper tests. Both approaches are not supported by logical justification or scientific studies.

Hence the importance of studying attitudes towards electronic tests, considering that the attitude means "a psychological tendency expressed in evaluating a particular subject, with one degree or another of preference or lack of preference. The evaluation refers to the cognitive, emotional and behavioral preference responses, whether explicit or implicit (Eagley & Chaiken, 1993). Attitudes according to cognitive theories are associative networks that act as mental representations within the brain. These representations consist of cognitive units that are linked to emotional units.

This study aims to

- Identify the level of students' attitudes towards the application of electronic tests.
- Identify the differences in students' attitudes towards applying electronic tests according to scientific specialization (scientific/humanitarian) and gender (male/female) academic level preparatory year higher levels.

2 Literature review

Al-Khayat (2017) identified the attitudes of students and teachers towards computerized tests at the College of Business at Al-Balqa Applied University, consisting of 338 male and female sample students. A scale was developed to measure students' attitudes towards tests, the researcher also used the method of semi-structured interviews with members of the study sample of teachers. The study findings revealed positive attitudes among students towards computerized tests. Also, the findings showed different attitudes of students towards computerized tests according to the variable of student gender in favor of male students.

Hassanein (2017) identified the attitudes of open learning students towards electronic tests. The research sample consisted of 283 male and female students from the Education Program at the Arab Open University - Jordan Branch. A nine items scale was applied on the sample. The research findings concluded that students prefer using electronic tests over paper tests, because of the ease of performing such types of tests, and the speed of extracting their results.

Hassan and Al-Maree (2016) identified the attitudes of faculty members and students of the College of Education at Najran University towards electronic tests. The sample consisted of 53 faculty members and 218 students of the second and sixth levels. The participants responded to a questionnaire It was prepared by the researchers to identify the attitude towards electronic testing. The researchers adopted the descriptive approach, and the study concluded that the students' attitudes were positive to some extent. There were no differences in the direction according to the gender variable.

James (2010) detected students' attitudes towards using computerized tests at the College of Education, Department of Psychology, University of New England, Australia. The study sample consisted of 221 male and female students. The researcher applied a fifteen-item questionnaire designed according to the five-point Likert model. the study findings showed unanimous of the sample members on the role of computerized tests in relieving their level of anxiety as well as low costs of such tests.

Atallah (2016) concluded the existence of a positive attitude among students at Mansoura University towards electronic evaluation. It also showed no statistically significant differences attributed to gender and academic class variables.

Berg & Lu (2014) identified the attitudes of students at the undergraduate level towards the use of computerized tests compared to the traditional tests in Taiwan, with a measured five-point Likert scale consisting of 14 items. The findings revealed positive attitudes among students towards the use of computerized tests on the condition that time is not specified when answering the test items.

Haykal (2015) showed that students who experienced the electronic test were more supportive than those who did not. The average of females was statistically significantly higher than the average of males in the total degree of the attitude towards electronic assessment.

Ismail et al. (2010a) showed that the level of students' tendency towards assessment systems for electronic tests is average. There were no statistically significant differences due to gender or academic class.

Ismail et al (2015b) identified students' attitudes at Zagazig University and Qunfudhah University College. The study concluded that the level the degree of the Egyptian and Saudi students' tendency towards the evaluation systems of electronic tests is moderate. There were statistically significant differences in the attitudes of the Saudis towards electronic evaluation attributed to the school year and to gender in favor of males. However, there are no statistically significant differences in the attitudes of Egyptian students towards electronic evaluation attributed to the gender and school year variables.

Bayazit & Asker (2012) identified the students' opinions about computerized tests compared to the traditional objective tests in Turkey. The study sample consisted of 40 male and female students, for computerized tests and a hard copy of the same 30 multiple choice questions test. A seven-item questionnaire was applied. The study findings indicated the unanimity that the computerized tests are easier to use, and more acceptable than the traditional tests.

Ahmed (2015) measured the effectiveness of computerized tests in the educational process using the descriptive experimental method. Questionnaire, observation, interview, and test were used for data collection. The use of the computer in the tests increases learners' motivation, increases the effectiveness of students' performance, improves self-learning skills, and provides immediate feedback. Also, computerized tests lack embarrassment when making mistakes compared to traditional tests. The study also revealed the possibility of students getting their grades in a short time. The computer makes the test easier and faster. In addition, the application of the computer-based test meets the educational needs of learners taking into account individual differences. The use of the computer in the test shortens the time and reduces fear in the test among students.

Stowell and Bennett (2010) revealed the effect of electronic tests in relieving test anxiety that university students suffer from paper and electronic tests. The test anxiety scale was applied.

The results showed a decrease in the anxiety rate among students who take the electronic test compared to their colleagues who underwent the paper tests.

This study matches with previous studies in measuring the attitudes towards electronic tests, but it differs from them in that it is an experiment that was circulated to all students at the University of Jeddah and was not limited to individual works belonging to some university faculty members. The significance of this study lies in:

1. Measuring attitudes in the field of education because of its importance, as its results do not benefit students and faculty members only, but are of interest to the decision-makers. These results depend, to a large extent, on the psychometric properties of the tool used to measure such attitudes. Hence, the importance of this study appears, as it used an attitudes scale towards electronic tests. Its psychometric properties were verified according to the single response theory in a previous study, the graduated response model.

2. Supplementing the Arabic library with a study in the field of electronic tests.

3. Providing recommendations beneficial in issuing certain regulatory decisions for the application of electronic tests at the University of Jeddah.

2.1 Electronic Tests

It is procedurally defined as a means of evaluating the student electronically through the computer using the Question Mark Program approved by the University of Jeddah. The test items are true/false and multiple-choice are displayed on the screen and the student answers them directly using the input tools (keyboard, mouse). The exam is corrected automatically, ensuring credibility, transparency, and objectivity.

2.2 Attitude Towards Electronic Tests

It is procedurally defined as the attitude of the student towards electronic tests, and this position appears in the extent of his/ her acceptance or rejection of them, as well as the extent of appreciation of their importance. The attitude towards electronic tests in the current study is measured by the total score obtained by the student on the scale prepared for this purpose.

3 Theoretical Frame

3.1 Attitude

There are many definitions of attitude as the case in many idioms of humanities. However, there is a common denominator that unites such definitions, as most of them agree that the attitude is "a set of ideas, feelings, perceptions, and beliefs about a subject, situation, person or issue, positively or negatively, for acceptance or rejection. Therefore, attitude is responsible for directing the behavior of the individual and determining his position.

Gordon Allport's definition of the psychological attitude is the most comprehensive of these definitions, as he describes attitude as one of the states of nervous mental preparation and readiness organized by experience, and hardly proven by attitude than it goes on affecting and

directing the individual's responses to different things and situations. Hence, attitude is a general dynamic" (O'Keefe, 2002).

Abdurrahman (1998) mentions that forming attitudes goes through three basic stages. The first stage is the Cognitive of Perceptual stage. At this stage, attitude is a perceptual or cognitive phenomenon including the individual's direct recognition of certain elements of natural and social environments that are from the nature of the general content of the nature of the society where the person lives. Thus, attitude may crystallize in its inception around material things such as a quiet home and a comfortable seat, a special type of individuals such as brothers and friends, around a specific type of groups such as the family and the club group, or around some social values such as generosity, honor, and sacrifice.

In the Stage of Tendency Development Towards Certain Things, this stage is characterized by the individual's tendency towards a specific thing, for example, that any food may satisfy the hungry, but the individual tends to some special types of food. In addition, he may tend to have his food on the beach. More accurately, this stage of attitude formation is based on a mixture of objective logic self-feelings, and emotions.

In the Stability Stage, Attitude with different types and degrees becomes stable when it is developed into a psychological attitude. Stability is the final stage of the attitude formation process.

3.2 Attitude Measurement

Verbal methods for measuring psychological attitudes are considered one of the most advanced methods as they rely on direct contact with the case(s) to be measured as well as obtaining answers from a large number of people in a short time. They can be summarized in the following methods (Fodah, 2007).

Voting Method: This method is one of the general methods that is easy to use and analyzes its results. It depends on the referendum consisting of a group of names or topics in the form of social situations. The individual has to choose the most beloved, the most important, or the most hated of these topics to him, or any other aspects to be measured.

Rank Order Method: This method depends on the method of arranging the subjects of the scale essentially based on the type of attitude to be measured. So, the scale consists of a limited number of subjects. The response of the examined individual is summarized in the order of these subjects in relation to the degree of his tendency or aversion towards them to such subjects, or otherwise. of psychosocial attitudes.

Paired Comparison Method: This method is that the individual prefers one attitude to another towards the subject being measured. This method mainly depends on the pairwise comparison as each of the referendum questions consists of comparing two subjects, then giving preference to one over the other, in relation to the objective of the direction to be measured.

Rating Method: This method depends on the gradation of the attitude range from beginning to end, so that each degree of grading indicates a specific value of the attitude strength.

This study adopts the Likert method: The researcher prepares a number of phrases (sentences) related to the attitude to be measured and then put in front of each phrase a certain degree of agreement and objection, such as: strongly agree - agree - neutral – disagree, or strongly disagree.

The respondent is asked to put an (X) sign on the answer expressing his opinion about each phase included in the Scale. So, the respondent's attitude is classified within definitive negation, to moderate negation, to complete neutrality, to moderate affirmation, to definitive affirmation.

In general, there are necessary steps the researcher has to follow in papering this type of scale as follows:

The researcher collects a large number of phrases related to the attitude to be measured.

These statements are distributed to a sample or group of individuals to whom the referendum will be given, and asking them to put an (X) mark in front of the class showing the degree of their agreement or disagreement with it. Then the score of each individual is calculated by adding the degrees of his responses to all the phrases. The highest scores are for positive attitudes while the lowest for negative ones.

After that, delete all the phrases with a low correlation coefficient between the scores and the total score.

The experiments conducted in this field confirmed the preference for this method, due to its ease as well as its high degrees of stability and accurately showing the degree of individual's attitude degree towards the problem.

4 Electronic Tests

The use of electronic tests in the field of personality and intelligence began in the late 1960s in the US Department of Defense and relied on clinical psychologists in preparation; As for the use of Electronic Tests in education, it came late after 1986, after carrying on studies focusing on the equivalence between electronic and paper-based tests, and determining the factors affecting the performance of users of electronic tests (Kuikka et al., 2014). Since then, interest in electronic tests has increased, especially in the field of education in developed and developing countries, as the results of studies have proven the importance of this type of test.

Electronic tests are a form of achievement tests that are represented in a set of stimuli, items, paragraphs, or questions that require specific answers by the respondent, but they differ from traditional tests in that they are conducted electronically using one of the designed programs and in the presence of a question bank where the supervisor of the bank stores the test items representing the actual studied content. Correction is done immediately after the student finishes answering the test.

Electronic tests are associated with e-learning. In addition, the results of electronic tests are linked to feedback, which modifies and evaluates the course of education, making the teaching-

learning process proceed in a coherent way (Yazdi and Zandkarimi 2013). Salameh (2004) considers that electronic tests are distinguished with the following:

The uniqueness of education: the student reads the questions himself and then answers them on his own, and this increases his self-confidence, enhances his ability to take responsibility, and increases tendency and desire for research and curiosity.

Paying attention to the individual differences between students, as the student moves from one question to the other according to his ability. Providing students with immediate feedback, which increases motivation to learn and helps correct mistakes.

The student's responses are evaluated immediately, revealing the mistakes made and directing them towards the appropriate information.

The student does not feel embarrassed due to making mistakes.

Electronic Tests are featured that the chance of cheating among students is almost nonexistent as the program distributes questions randomly. Thus, the test of each student differs from his peer. This gives the electronic test the advantage of accurately detecting the achievement level of each student (Bawarith et al., 2017).

In addition, Fendler et al., (2018) believe that the mistakes made during correction and recording marks by faculty members do not occur in electronic tests as students' answers are corrected and their marks are recorded automatically. Furthermore, electronic test saves a lot of time for both the teacher and the student.

Bayazit & Asker (2012) indicates that the most important characteristic of computerized tests from traditional tests is that first make the student feel more relaxed, not be exposed to problems related to traditional tools such as pens, extra paper, clarity of the answer, and the ability to change or cancel the answer easily as well as getting immediate feedback on the student's result.

5 Methodology and Analysis

The study adopted descriptive correlational and comparative methods. The study community and sample consist of all students (of the preparatory year, and the following years) at the University of Jeddah registered in the second semester of the academic year (2019/2020) tested using electronic tests, in a total number of participants 1294.

5.1 Survey Sample

To verify the psychometric properties of the study tool, a measure of attitude towards electronic tests was applied to the exploratory sample of (70) male and female students from the University of Jeddah from outside the study sample. So, the total sample size was (1296) male and female students from the University of Jeddah. Tables 1, 2, 3, and 4 show the distribution of the sample members according to the demographic variables of the sampled individuals.

Table 1: Distribution of the Study Sample according to Gender Variable

Gender	Repetition	Percentage
Male	668	51.6 %
Female	626	48.4 %
Total	1294	100 %

Table 2: Distribution of the Study Sample according to Specialization Variable

Specialization	Repetition	Percentage
Scientific	604	46.7%
Literary	960	53.3%
Total	1294	100%

Table 3: Distribution of the Study Sample according to Age Variable

Age	Repetition	Percentage
18	248	19.2%
19	337	26.0%
20	294	22.7%
21	216	16.7%
22	199	15.4%
Total	1294	100%

Table 4: Distribution of the Study Sample according to Academic Level Variable

Age	Repetition	Percentage
2	255	19.7
3	176	13.6
4	194	15.0
5	177	13.7
6	169	13.1
7	160	12.4
8	163	12.6
Total	1294	100%

The researchers designed a scale of students' attitudes towards electronic tests at the beginning of the first semester of the academic year (1440-1441 AH corresponding to 2020-2016 AD), after distributing an open questionnaire to a group of students of the preparatory year at the University of Jeddah to write down their impressions and reactions about it. In light of the students' answers, and previous literature review about the design of measures of attitudes towards electronic tests, the researchers prepared a scale consisting of 27 items. After presenting the questionnaire to 7 specialists in assessment/evaluation in Saudi universities, and in light of the opinions of these arbitrators. Paragraphs were deleted/modified. Thus, the scale in its initial form consists of 23 items. The scale consists of two parts: the first includes the basic data of the student, and the second part consists of 23 items to measure the attitude towards electronic tests and the scale is designed According to the five-point Likert model. The response on the scale items is done by choosing one of the five-Likert scale answers (strongly disagree, disagree, neutral, agree, strongly agree): (1, 2, 3, 4, 5) respectively in case of positive paragraphs. As for negative items, the values are reversed.

Table 5: Distributing Items on Aspects

S.	Items Numbers	Aspects
1	1، 2، 11، 14، 16، 17، 18، 20	Aspects student self
2	6، 8، 9 ، 12 ، 22	Aspect related to test content
3	5 ، 10 ، 15، 19، 21	Aspect related to test management
4	3، 4، 7 ، 13	Nature of e-tests

5.2 Validity and Reliability

The scale was applied in its initial form at the beginning of the first semester of the academic year (2020/2021) on a sample of (80) male and female students at the University of Jeddah, who may have taken the periodic electronic test, and from outside the study sample. The internal consistency was calculated using Pearson's correlation coefficient between the degree on the paragraph and the total degree on the scale. The values of all correlation coefficients were significant at the level of significance (a = 0.05) using factorial validity.

With regard to the stability of the scale as a whole, the value of Cronbach's alpha stability coefficient was 0.91. The stability coefficient of Cronbach's alpha was also calculated for the sub-scales (dimensions) that make up the scale, where the value of the stability coefficient of the first dimension (1092), the second dimension (1089), the third dimension (90), and the fourth dimension (0.88), and all these values are considered high values indicate the stability of the scale.

Also, during the study procedures according to the stability according to the paragraph response theory and using MULTILOG7 program, the value of the reliability coefficient for the scale as a whole was (1089), for the first dimension (0.91), the second dimension (90), the third dimension (0.88), and the dimension Fourth (0.87).

To verify the validity of the Attitude Scale for electronic tests, the researchers used both the validity of the arbitrators and the internal consistency validity.

5.2.1 Internal Consistency Validity

The researchers applied the scale to a survey sample of 70 male and female students from the University of Jeddah and from outside the study sample. Scale items with the total score on the dimension to which that item belongs using the Pearson correlation coefficient. Table 6 shows that the correlation coefficients between each of the scale items and the total degree of the dimension to which the item in the attitude scale towards electronic tests is statistically significant at 0.01 and 0.05 level, which confirms the achievement of the internal consistency of the scale items.

Table 6: Pearson correlation coefficients between each item and the total score on the dimension to which the item belongs Scale the attitude towards electronic tests

Item No.	correlation coefficients	Item No.	correlation coefficients	Item No.	correlation coefficients
1	0.87**	9	0.72**	17	0.92**
2	0.91**	10	0.41**	18	0.77**
3	0.76**	11	0.43**	19	0.67**
4	0.81**	12	0.67**	20	0.91**
5	0.70**	13	0.76**	21	0.39*
6	0.81**	14	0.92**	22	0.58**
7	0.89**	15	0.26*		
8	0.82**	16	0.66**		

** Statistically significant at (0.01) * Statistically significant at (0.05)

The internal consistency was ensured by calculating the correlation coefficient between the total score for each dimension and the total score for the scale. Table 7 shows these results as it is clear that the values of the correlation coefficients between each dimension of the scale of the

attitude towards electronic tests and the total score of the scale were statistically significant at (0.01) level and (0.05) ensuring the achievement of Internal Consistency Validity.

Table 7: Pearson correlation coefficients between one dimension of the scale and the total score of the Scale the attitude towards electronic tests

Dimension	correlation coefficient
First Dimension	0.89**
Second Dimension	0.91**
Third Dimension	0029*
Fourth Dimension	0.63**

** Statistically significant at (0.01) * Statistically significant at (0.05)

5.2.2 Stability of Attitude Scale Towards Electronic Tests

The stability of the attitude scale towards electronic tests was verified using both Cronbach's alpha and Spearman-Brown's half-segmentation methods for each of the scale dimensions. Table (8) shows these results.

Table 8: Stability coefficients of Attitude Scale towards Electronic Tests

Dimensions of Attitude Scale towards Electronic Tests	half-segmentation	Cronbach's alpha
First Dimension	0.072**	0.76
Second Dimension	0.79**	0.75
Third Dimension	0.76**	0.74
Fourth Dimension	0.74**	0.72

** Statistically significant at (0.01) * Statistically significant at (0.05)

6 Results

To conduct statistical processes, the following statistical programs were used:

- SPSS® for calculations of Cronbach's stability coefficient, factorial analysis, correlation coefficients
- MULTILOGY® for calculations of Paragraph parameters, stability, (Likelihood Ratio).

The first question: What are the attitudes of Jeddah University students towards electronic tests? To answer this question, the arithmetic mean and standard deviation of the responses of the sample members were calculated on the scale of attitude towards electronic tests and on the dimensions of the scale. Table 9 shows these results.

Table 9: Pearson's correlation coefficients between one of the dimensions of the scale with the total score on the scale of the attitude towards electronic tests

Dimensions	Arithmetic mean	SD
Student Self	3.06	1.10
Test Content	3.03	1.04
Test Management	2.94	.570
Nature of E-Tests	3.30	1.19
Whole Scale	3.07	.710

As the scale consists of 5 levels ranging between (1) strongly disagree and (5) strongly agree, the value between (1.00–2.33) will be considered as indicating a weak attitude, and the value in the range (2.34-3.67) indicates It indicates a medium attitude and the value in the range (3.68-5.00) indicates a high attitude. Accordingly, it can be said that students' attitudes towards electronic tests were moderate.

This finding is consistent totally with the findings of Ismail et al. (2015a) and partially with the findings of Bayazit & Asker (2012), Al-Khayat (2017), Hassanein (2017), Hassan and Al-Marei (2016), Atallah (2016), Berg & Lu (2014).

The second question: Do Jeddah University students' attitudes towards electronic tests differ according to gender? To answer this question, a t-test for independent samples (samples t-test) was used. Table 10 shows these results:

Table 10: Results of T-Test of Independent Samples

Dimension	Gender	Number	AM	SD	T-Value
First	Male	668	3.14	1.12	2.56**
	Female	626	2.98	1.08	
Second	Male	668	2.78	1.02	-9.07**
	Female	626	3.29	1.01	
Third	Male	668	3.07	0.62	8.55**
	Female	626	2.81	0.50	
Fourth	Male	668	2.58	1.04	-28.65**
	Female	626	4.06	0.81	
Whole scale	Male	668	2.94	0.73	-6.89**
	Female	626	3.21	0.67	

** Statistically significant at (0.01) * Statistically significant at (0.05)

Table 10 shows that there are differences in the attitudes of Jeddah University students towards electronic tests according to gender, on the first and third dimensions in favor of males, on the second and fourth dimensions, and on the scale as a whole in favor of females.

This finding partially agrees with the findings of Haykal (2015), where the average of females was statistically and significantly higher than the average of males in the total degree of attitude towards electronic evaluation, Al-Khayyat (2017), Ismail et al. (2015b), where positive attitudes were found among students towards computerized tests for male students.

However, this finding does not match the findings of Hassan and Al Marei (2016), Ismail et al.(2015a), and Atallah (2016), which found that there are no differences in the direction according to gender variable.

The third question: Do Jeddah University students' attitudes towards electronic tests differ according to the specialization (scientific - literary)? To answer this question, a t-test for independent samples (samples t-test) was used. Table 11 shows these results.

Table 11: Results of T-Test of Independent Samples

Dimension	Gender	Number	AM	SD	T-Value
First	Scientific	604	3.98	0.72	44.76**
	Literary	690	2.26	0.66	
Second	Scientific	604	3.65	0.89	23.85**
	Literary	690	2.49	0.86	
Third	Scientific	604	2.96	0.57	1.08
	Literary	690	2.93	0.58	
Fourth	Scientific	604	3.53	1.12	6.73**
	Literary	690	3.09	1.22	
Whole scale	Scientific	604	3.59	0.51	33.67**
	Literary	690	3.61	0.53	

** Statistically significant at 0.01; * Statistically significant at 0.05, Free Marks = 1292

Table 11 shows that there are differences in the attitudes of Jeddah University students towards electronic tests according to the specialization on the first, second and fourth dimensions and on the scale as a whole in favor of the scientific specialization. These findings are consistent with the findings of Atallah (2016), Haykal (2015), and Ismail et al. (2015b).

Fourth question: Do Jeddah University students' attitudes towards electronic tests differ according to the academic level? To answer this question, one-way ANOVA was used. Table (12) shows these results.

Table 12: Results of ANOVA.

Dimension	Variance source	Total squares	Free Mark	Square mean	F-Value	A a
First	Intra groups	0.28	4	0.07	0.06	
	Inter group	1572.92	1289	1.22		
	Total	1573.20	1293			
Second	Intra groups	0.84	4	0.21	0.19	0.94
	Inter group	1414.75	1289	1.09		
	Total	1415.59	1293			
Third	Intra groups	2.56	4	0.64	1.91	0.11
	Inter group	431.35	1289	0.34		
	Total	433.92	1293			
Fourth	Intra groups	8.779	4	2..19	1.54	0.19
	Inter group	1834.35	1289	1.42		
	Total	1843.13	1293			
Whole scale	Intra groups	0.545	4	0.14	0.27	0.90
	Inter group	658.61	1289	0.51		
	Total	659.16	1293			

Table (12) shows that there are no differences in the attitudes of Jeddah University students towards electronic tests according to the specialization on all dimensions and on the scale as a whole.

Fifth question: Do Jeddah University students' attitudes towards electronic tests differ according to age? To answer this question, one-way ANOVA was used. Table (13) shows these results.

Table 13: Results of ANOVA.

Dimension	Variance source	Total squares	Free Mark	Square mean	F-Value	A a
First	Intra groups	0.54	6	0.09	0.07	0.99
	Inter group	1572.67	1287	1.22		
	Total	1573.20	1293			
Second	Intra groups	4.02	6	0.67	0.61	0.72
	Inter group	1441.58	1287	0.09		
	Total	1415.59	1293			
Third	Intra groups	1.754	6	0.292	0.87	0.52
	Inter group	432.16	1287	0.336		
	Total	433.92	1293			
Fourth	Intra groups	7.49	6	1.249	0.88	0.51
	Inter group	1835.64	1287	1.426		
	Total	1843.13	1293			
Whole scale	Intra groups	1.02	6	0.17	0.33	0.92
	Inter group	658.14	1287	0.51		
	Total	659.16	1293			

Table 13 shows that there are no differences in the attitudes of Jeddah University students towards electronic tests according to the age on all dimensions and on the scale as a whole.

7 Conclusion

By the effects of the information and communication revolution and technologies of electronic devices on human personality in all areas of life including education, students accept the integration of these technologies in the educational field. However, the research sample's attitude towards the e-test was average. This may be attributed to the recent experience of electronic tests for university students at different academic levels as this research was conducted during the first application of e-tests in 2019/2020. Actually, this type of test is different from other ordinary tests students used to in the past. Man won't fear the unknown, as this experience may find a kind of resistance representing a threat. individuals often act according to motives, attitudes, and experiences that reflect their psychological characteristics towards this change. Students may feel the objectivity of change and the clarity of its objectives and their lack of participation in the decision-making of change.

In addition, the findings may be explained through the actual reality of this experience, as the researchers felt a shortage in the preparation process for these tests. University faculty members need high skills and training to prepare E-tests. Also, measuring higher thinking skills in this type of test is not easy. Furthermore, there occurrence of some malfunctions such as the delay in starting tests for minutes, and the need for sufficient experience for some students in using the test system, may negatively affect the performance of this type of electronic test on male and female students.

The findings may be attributed to the variation in some components of male and female students' attitudes towards electronic tests, where the psychological readiness or nervous mental preparation of positive or negative response towards this type of tests. The findings may also be explained in light of the lack of information, ideas, and beliefs related to this type of test. The degree of an individual's influence on the subject of attitude and emotion leads him to make a conception about this subject and thus affects performance in the test.

With regard to the absence of statistically significant differences in the attitude towards e-tests in view of the variables of academic level and age. This may be attributed to the students' exposure to the same university environmental stimuli in terms of the electronic educational provided services, quality of tests and questions, and test conditions.

8 Availability of Data and Material

Data can be made available by contacting the corresponding author.

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