The Effect of Using Electronic Assessment Based on Mobile-Installed Programs to Measure Students' Tolerance and Discipline Characteristics on Jordanian Teachers

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Abstract—With the entry of technology into all fields, technology has created a new concept: electronic evaluation, which works continuously during electronic educational situations and diagnoses and discovers the strengths and weaknesses of the student electronically. Given the importance of this type of assessment, the study aimed to explore the response of teachers in Jordan to electronic assessment based on the programs installed on mobile devices with the student's personality, discipline and endurance. This data set was collected monthly during The academic year 2023 in three schools in Amman, Jordan, for 110 students in the ninth, tenth and first grades of secondary school. Data were collected through the Tukey HSD questionnaire, and the quantitative data were analyzed using the 'one-way ANOVA' method. In contrast, the qualitative data were processed using the Miles and Huberman technique. The results of the study showed that the response to the use of electronic assessment based on the programs installed on the mobile phone among teachers was outstanding and positively affected students' discipline and tolerance.

Keywords—e-assessment, students' personality, tolerance, discipline

1 Introduction

The world is showing great interest in e-learning, especially in recent years, due to the health disasters that the earth has gone through, which forced the world to switch to distance learning and the use of technology in learning [61; 62]. Among the world's countries, Jordan was one of the first countries to use e-learning and the electronic calendar to find out the impact of this on the students and their personalities. This study came to study the electronic calendar in Jordan. This study presented a set of data, including information about the response of teachers in Jordan to the electronic assessment based on the programs installed on mobile devices on the student's personality, discipline and tolerance. In the first semester of the academic year 2023, in three

schools in Amman, 110 students in the upper grades, ninth and tenth grades and secondary ones are Standing on the strengths and weaknesses in applying this calendar electronically.

2 Related work

2.1 Electronic assessment

An electronic assessment provides knowledge and development for a deeper un-distending of students' sub-skills by collecting and discussing information from multiple sources [59; 60]. It is based on the use of digital technology for evaluation to make evaluation more efficient [31]. Studies [18; 19; 20] emphasized the positivity of electronic assessment in terms of student achievement and the development of their cognitive levels, and both [2] emphasized. The effectiveness of electronic assessment in relieving psychological stress on students, reducing exam anxiety among students and providing feedback. It allows students to re-evaluate more than once, as it seeks to diagnose and improve weaknesses.[28] Confirmed the interactive use of electronic assessment tools in the educational process. Studies have shown [14; 13] That there are challenges to e-learning in the following points: online student feedback is limited, e-learning can cause social isolation, e-learning requires strong self-motivation and time management skills, failure to develop students' online communication skills, preventing cheating during sessions Online is complex Online teachers tend to focus on theory rather than practice. E-learning lacks face-to-face communication. In this digital technological era, information related to students can be accessed in all respects, whether from cognitive, physical, social, or personal aspects. Now teachers are in the era of modern technology that relies on modern technologies such as mobile devices and use them to evaluate their students during teaching and learning. [22; 23]. We acknowledge the existence of many traditional teachers who believe in the old traditional ways and resist change, which reduces the effectiveness of their teaching because they need to keep up with the requirements of the times [26; 27]. The evaluation system that uses modern technology that relies on modern technologies such as mobile devices needs further study that sheds light on weaknesses and strengths so that the process can be diagnosed, identified and addressed [28; 29]. What is now required is a qualified evaluation that is accurate, easy and rapid [30; 31]. E-evaluation represents every technical method based on modern software that can be used in the evaluation process [33; 34]. E-assessment also relies on many practical activities [38; 39]. This has a significant impact on facilitating the assessment process conducted by teachers [40; 42]. On the other hand, electronic assessment based on software installed on mobile devices helps, supports and significantly develops teachers' capabilities in assessment [43; 44]. Electronic assessment is fast and accurate [45; 46]. This type of evaluation saves teachers much time for evaluation [48]. In the education process, evaluation is the basis for all educational activities. It is the essential component that supports all educational activities. The electronic calendar provides exceptional support for each educational activity through its speed, accuracy, and saving time and effort [49; 50], which enhances the

student's personality through active participation in these activities evaluated electronically [47; 48].

2.2 The relationship of assessment to the personal characteristics of students

The study showed [46; 47] that electronic assessment affects students' characteristics, as it is helpful in several aspects. Among these benefits is saving time, suspense, and fun through interaction, which affects the educational environment [38; 39]. Electronic assessment enhances the interaction between teachers and students, which positively impacts students' char-act eristics [41; 42]. In addition, e-assessments dependent on cellular devices store data automatically and permanently [24; 25]. This means that you do not have to worry about data loss of any size [36; 37]. Considering all this, we stand in front of the fact that the electronic assessment application relies on software installed on cellular devices to assess the personality during the learning process and activities and control the personality behaviour of the students can be controlled by monitoring the activities of the students through data recording electronic, identifying personal values they possess such as tolerance and discipline [18; 19]. The process of assessing personality, tolerance and discipline depends mainly on affirming the values that the student must realize and thus build attitudes that lead them to apply them through a sense of responsibility and discipline, which return to their learning process with pleasure and kindness [7]. It achieves the goal of building positive people towards their homeland: to have a positively prepared person for life [14].

Moreover, it has been shown that students' personal qualities influence school activities [36]. That is, students' characteristics play a fundamental role in the success of the educational learning process [17]. Many international studies on personality assessment have been conducted in many countries. In India, they have focused on values, but despite this, a group of students still have negative personal values. This is due to many teachers' need for more interest in assessing students' personalities [33]. However, in New York, the teacher needs help with assessing personality because he still applies the traditional methods of personality as-assessment [60; 612]. Africa has a limit that is described as minimal in terms of personality values because teachers find it challenging to conduct personality as-assessments [20].

2.3 Study problem and study question

In Jordan, as in all countries, we need to know how correct the use of modern technologies in education is and how positive they are. Electronic assessment is one of the most important of these technologies that need a process that highlights its impact on students, especially their personalities, to know the impact of this on students and their personalities. The study was conducted on student personality discipline and tolerance in the first semester of the academic year 2023 in three schools in Amman, on 110 male and female students in the ninth and tenth grades and secondary. This raises the central question in this study: Is there an effect of using electronic assessment based on the programs installed on the mobile phone to measure students' tolerance and discipline characteristics in Jordanians?

3 Methodology

3.1 The study sample

The data was taken in the first semester of the academic year 2022/2023 in three schools in Amman, Jordan, for 110 male and female students in the ninth, tenth, and first-second grades. This dataset was collected monthly from September through the twelfth month.

3.2 Research design

This research is developmental. The research used was designed and developed through the ADDIE model, which is a developmental model that produces systematic learning outcomes [11; 13]. The ADDIE model consists of five successive stages: analysis, design, development, implementation, and evaluation. ADDIE applies effective process design to the instruction approach [17; 19]. The methodology of this research uses the hybrid explanatory approach, prioritizing a mixture of quantitative and qualitative data to support the quantitative results of the study. Literature analysis was performed in the first phase of the research. The researcher designed and developed a questionnaire to assess the personality of tolerance and discipline among students based on the electronic assessment, and educational experts verified it to ensure its validity, then entered the implementation stage by applying it to students, see Table 1.

3.3 Character questionnaire

Outcomes for Students' Tolerance and Discipline Personality Assessment Toward the Electronic Assessment-Based Personality Assessment. For the Tolerance and Discipline Personality Questionnaire Network, see Table 1. The personality questionnaire consists of two variables: the first variable is tolerance and discipline, and each variable contains sub-variables, and the tolerance variable contains sub-variables (fear, love, respect each other, appreciate the differences between others, you value yourself, appreciate kindness from others, openness and acceptance rest and life), while the second variable, discipline, contains sub-variables (discipline enforces rules, a system of behaviour, a system of worship).

To validate the product, use a questionnaire. The questionnaire was developed and adapted to validate the validity of an expert and media. The questionnaire contains 35 statements with 5 Likert scales [12]; see Table 2. An interview questionnaire with teachers is divided into three variables. Each variable has three indicators as well; first: the job variable has three indicators (sufficiency, accuracy, achievement); reliability has three indicators (maturity, error tolerance, recovery); and efficiency has three indicators (time, accuracy, Real-time resources). See Table 2. Inferential data were tested with a test for normality (see Table 5) and level of homogeneity see Table 6. Then, the hypothesis was tested by ANOVA test see Table 7.

Table 1. Character questionnaire grid

Variable	Sub Variable	Items
Tolerance	Fearlessness	1,2
	Love	3,4,5
	Respect each other	6,7
	Appreciate the differences of others	8
	Appreciate yourself	9,10
	Appreciate the kindness of others	11,12
	Open	13
	Receptive	14
	Comfort and life	15,16
Discipline	Time discipline	1, 2, 3, 4, 5, 6, 7
	Discipline enforces the rules	8, 9, 10, 11, 12
	Attitude discipline	13, 14, 15, 17
	Discipline of Worship	18, 19, 20, 21

Table 2. Media expert grid

Variable	Indicator	Items
Functionality	1. Suitability 2. Accuracy 3. Fulfillment	3, 7, 8, 9 4, 5, 6 1, 2
Reliability	1. Maturity 2. Fault Tolerance 3. Recovery	15, 16 10, 11, 12 13, 14
Efficiency	1. Time 2. Real Time 3. Resource	28, 29 31, 32, 30, 33

Validation questionnaire data were collected, and teacher interview data were obtained for three schools in Amman. Data were taken in the first semester of the academic year 2022/2023 in three schools in Amman, Jordan, using a purposive sampling method for 110 male and female students in the ninth, tenth, and first-second grades. This dataset was collected monthly from September through the twelfth month. The teachers using the e-assessment were interviewed in a structured way with open-ended questions. The researcher asked several questions to ensure the teachers responded to the student application. To assess the student's disciplinary personality. The results of the interviews aimed to standardize the collection of results for the teachers' responses to the questionnaire. After obtaining the questionnaire results, they were analyzed through inferential descriptive data. Metadata Frequencies average, average, median, position, maximum, minimum. [3]. The management of the inferential data is made through hypothesis testing. The data must be tested using the test of normality and normality of homogeneity. Then test, the hypotheses by ANOVA test. Interview data were collected to complement the quantitative data, and then the literature studies were analyzed using the Miles & Huberman model analysis [3].

4 Results and discussion

4.1 Description of tolerance character

The questionnaire data were analyzed using descriptive statistics. The first school had a good class of 37 students with an average age of 68% and a perfect class of 15 with an average age of 40%. The mean is 86, the median is 85, the mode is 84, the minimum is 65, and the maximum is 96. This indicates positive results for this school. The second school had a class of 35 students with an average of 64% and a good class of 19 students with an A score of 34.1%. Then the mean is 88.41, the median is 89, the mode is 89, the minimum is 69, and the maximum is 94 see Table 3.

Table 3. Description of tolerance character

School	Category	f	%	Mean	Median	Mode	Min	Max
First School	Very Bad	0	0	86	85	84	75	96
	Bad	0	0					
	Enough	0	0					
	Good	39	68					
	Very Good	15	40					
Second School	Very Bad	0	0	87.1	85	86	69	94
	Bad	0	0					
	Enough	0	0					
	Good	19	34.1					
	Very Good	35	64					
Third School	Very Bad	0	0	85	87	88	65	90
	Bad	0	0					
	Enough	0	0					
	Good	41	67.2					
	Very Good	18	29.5					

4.2 Discipline character description

Disciplinary character description. For the third school, 41 students scored 67% in the good category, 18 scored 29.5% in the very good category, and two scored 3.3% in the appropriate category. Then the mean is 86.05, the median is 87, the mode is 88, the minimum is 70, and the maximum is 93 see Table 4.

Table 4. Discipline character description

School	Category	f	%	Mean	Median	Mode	Min	Max
first school	Very Bad	0	0	87.60	87	86	76	102
	Bad	0	0					
	Enough	0	0					
	Good	36	65.5					

School	Category	f	%	Mean	Median	Mode	Min	Max
	Very Good	19	34.5					
second school	Very Bad	0	0	85.88	86	85	71	95
	Bad	0	0					
	Enough	1	1.7					
	Good	36	62.1					
	Very Good	21	36.2					
third school	Very Bad	0	0	89.20	89	88	70	97
	Bad	0	0					
	Enough	1	1.6					
	Good	29	47.5					
	Very Good	50.8	50.8					

4.3 Discipline in three schools

The first school had a good class of 36 students with an average of 65.5% and a Very Good class of 19 students with a rate of 34.5%: average 87.60, Average 87, Mode 86, Lowest 76, Maximum 102. The second school had a good class with 36 students with an average of 65.5% and a very good class with 19 students with an average of 34.5% (Average 87.60, Average 87, Placing 86, Lowest 76 students, Maximum 102). The third term was good, with 36 students at 65.5% and a very good class with 19 students at 34.5%. Mean 87.60, median 87, mode 86, minimum 76, maximum 102. The researcher used the normality and homogeneity tests to determine whether the data was correct and distributed normally (see Table 5).

Table 5. Normality test

Character	School	Statistic	df	Sig.
Tolerance	first School	0.110	56	0.077
	second School	0.106	57	0.095
	Third school	0.108	60	0.087
Discipline	first School	0.109	54	0.092
	second School	0.109	53	0.081
	Third school	0.093	60	0.202

Based on the analysis of the data see Table 6, it can be observed (Sig.) of the tolerance personality in the SD of the two schools Sig value 0.197 > 0.05, it can be concluded that the variance of the tolerance personality data in the three schools is the same or homogeneous. The value of significance (Sig.) for personality discipline in schools is 0.181. Because the Sig value of 0.181 > 0.05, the discipline in the three schools is homogeneous. The data were distributed in the normal and homogeneous form, and then an ANOVA test was performed. Results see Table 7.

Table 6. Homogeneity test

Character	Levene Statistic	df1	df2	Sig.
Tolerance	1.015	2	173	0.195
Discipline	1.180	2	173	0.182

Table 7. One-way ANOVA test

Character		Sum of Squares	df	Mean Square	f	Sig.
Tolerance	Between Groups	167.027	2	84.002	4.200	0.034
	Within Groups	4200.81	171	25.001		
	Total	4325.792	173			
Discipline	Between Groups	342.21	2	170.364	7.200	.002
	Within Groups	4180.300	171	26.009		
	Total	1630.159	173			

The ANOVA test results for personalities, tolerance, and discipline see Table 7.

Because the Sig value is 0.034 < 0.05, it can be concluded that the mean results for the tolerance of characters in schools are significantly different. As for the nature of the discipline, a value (sig.) of 0.0027. Because the Sig value is 0.002 < 0.05, it can be concluded that the mean results for the tolerance of NPCs in schools are significantly different—the meaning of the differences in using the electronic assessment of the student's measurement. Further testing can be done by ad hoc testing using the Tukey HSD test. Results Tukey HSD's love for the patriot character is shown see Table 8.

4.4 Tukey HSD test tolerance

In Table 8, there are differences between the meaning between schools 2 and 3. The mean difference is 2.365. (Sig.) for the two primary schools is 0.025 < 0.05. Therefore, there is a significant difference in the average character tolerance of the results. The Tukey HSD Disciplinary Test is shown see Table 9.

Table 8. Tukey HSD test tolerance

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	*Upper Bound*
first	second	-1.268	0.923	0.356	-3.45	0.91
	third	1.096	0.912	0.456	-1.06	3.25
second	first	1.268	0.923	0.356	-0.91	3.45
	third	2.400*	0.899	0.025	-0.24	4.45
third	first	-1.096	0.912	0.453	-3.25	1.06
	second	-2.400*	0.899	0.025	-4.49	-0.24

Test results for subjects controlled by the Tukey HSD test. See Table 9. Variations exist in the disciplinary mean between schools 3 and 2; the mean difference is 3,317 (Sig.) for the two schools, 0.001 < 0.05. Therefore, the difference in the mean character of the discipline indicates a significant mean difference.

Table 9. Tukey HSD test Disciplinary

(I) School	(J) School	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	*Upper Bound*
first	second	-1.368	0.913	.158	-3.45	0.391
	third	1.196	0.902	196	-1.06	0.58
second	first	1.268	0.913	.158	-0.91	48.
	third	-3.317*	0.809	.001	-0.24	-1.17
third	first	-1.196	0.912	196	-3.25	3.78
	second	3.317*	0.809	.001	1.17	5.47

A product validation test was conducted to determine the validity of the evaluation of the electronic stamp. The evaluation experts of the products developed to make the product ready for use. See Table 10.

Results to validate the product. In Table 10, the auditor's evaluation results showed that the overall average is 82.90%, which is very good, meaning that the product is valid. The highest scores for the job aspect got an average score of 86%, then reliability with 83.33%. As for the usability of 82%, the usability side scored 80%. For the average score for each aspect, three of the four aspects of the evaluation are In the very good category. As for the results of the second reviewer, which is comprehensive, the average score is 82.56%, which is very good, meaning that the product is valid. The highest score for usability is 85%, then the two sides are efficiency and functionality at 83.33%. Reliability got 78.57%. Based on the average score for each aspect, three of the four aspects of the evaluation are in the Very Good category. Results of the electronic assessment product to measure character for school students see Table 10.

Table 10. Product validation test results

n	Assessment Aspect	Validators I			Validators II		
		Mean	*Percentage*	*Category*	*Mean*	*Percentage*	*Category*
1	Functionality	3.44	86%	Very Good	3.33	83.33%	Very Good
2	Reliability	3.33	83%	Very Good	3.14	79%	Very Good
3	Usability	3.28	82%	Very Good	3.403.	85%	Very Good
4	Efficiency	3.2	80%	Very Good	3.33	84%	Very Good
Overall average		3.4	82%	Very Good	3.3	82%	Very Good

Student personality assessment. The analysis compared percentages with the first school that obtained the score. From 67.3% to 37 students are in a good category. The percentage in the second school was 63.8%, which is very good. In the third school,

67.2% are good. After that, the second school got the largest number with a score of 88.41, the first school got the second place with a score of 87.15, and the third school got the last place with a score of 86.05. The discipline, then the third school, was the highest see Table 10.

Table 11. Student character assessment

No.	Name	NIS	Religious		Honest		Tolerance	
			Score	***Category***	***Score***	***Category***	***Score***	***Category***
1	first	1111	4.34	Very Good	4.71	Very Good	4.28	Very Good
2	second	1112	3.93	Very Good	4.5	Very Good	4.33	Very Good
3	third	1113	4.59	Very Good	4.5	Very Good	4.74	Very Good

Descriptive tests of tolerance and discipline were analyzed by comparing percentages. The result describing the personality of tolerance in schools 2 and 3 got 67.3%. Schools 1 and 3 scored 63.8%; School 1 got the highest score with an average of 88.41, School 1 came in second place with an average of 87.15, and School 3 got third place with an average of 86.05 Describing the character of discipline in School 2 and School 1, 65.5% is a good category. In SD School 1, I got 62.1% in class good. In School 1, 50.8% is in the very good category. Then the two schools 1,3, got a disciplined personality with an average of 89.20, SD School 3 ranked second with an average of 87.60, and School 1 ranked third with an average of 85.88.

4.5 Personal interviews

The nature of discipline among students when using electronic assessments based on software installed on mobile devices based on personal interviews was as follows. "I like the Enhanced E-Assessment because it is easy to use." "Software-based e-assessment installed on cellular devices saves effort and paper. In e-assessment, data is arranged and can be referenced at any time. Searching is easy, and classification is excellent." Reliance on electronic software. "The electronic assessment based on software installed on mobile devices with tolerance and discipline provides the teacher with the necessary information about the students." The interviews concluded with a positive number of advantages of e-assessment. This raises the central question in this study: This raises the main question in this study: Is there an effect of using electronic assessment based on the programs installed on the mobile phone to measure the characteristics of endurance and discipline among students towards Jordanians? The answer is yes; there is a positive and noticeable effect.

5 Conclusions

The teachers had an unprecedented positive response, and it was found through this study that the teacher's response to the electronic assessment that depends on the programs installed on the cellular devices of the student's personality was positive towards the assessment of tolerance and discipline. [52]. The study's results answered the central

question: the positive effect of using electronic assessment based on portable programs to measure students' tolerance and discipline characteristics in Jordanian teachers. By comparing the results of the study that were reached through the research process to assess personality in three schools that were chosen to apply the electronic assessment to them, it was found that the use of electronic assessment on mobile devices was positive.

All teachers had excellent responses to applying the Electronic Personal Measurement of Tolerance and Discipline in Schools. Tolerance was the second highest in the school, scoring 88.41. Discipline, the third school, has the highest GPA of 89.20. There were differences in the average results of the study that were reached through searching for tolerance using the electronic calendar in the third and second schools. There were differences in the average results of the study that were reached through researching tolerance using the electronic assessment of disciplined personalities in the third and the first schools. Electronic assessment based on programs installed on mobile devices stimulates interaction between teachers and students, and electronic assessment based on personal mobile devices organizes the classroom. It increases the teacher's ability to control educational activities when he becomes aware. The student's characteristics mean that the teacher has new tools through an electronic assessment based on programs installed on cellular devices that suit their students and show the results of the new study reached through research. Electronic assessment based on software installed on cellular devices is very beneficial compared to traditional assessment devices. Therefore, we recommend using the electronic calendar in all educational fields. In light of the results of this study, we recommend the following: The need to hold training courses for teachers on the use of modern technologies, especially in the field of using computers, the Internet, and e-learning techniques and in the field of electronic evaluation - focusing on holding training courses for new teachers, especially teachers in the field of electronic evaluation. We recommend that researchers conduct more research on aspects of the impact of electronic assessment on student personalities from different perspectives, parents, teachers, students themselves, and educational experts.

6 References

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