Digital Education and Testing and Their Processing by Using SPSS

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ABSTRACT

This study aims to investigate the meaning of digital education, and its role in facilitating the testing process. The research describes the digital education, test, and its results. SPSS was used to calculate the results. The study is divided into three sections, and seven subsections. Section one examines digital education, its types, and advantages and disadvantages. This section includes four subsections, the first one concentrates on defining digital education linguistically and terminologically; the second one is about the types of electronic digital education; the third is about advantages and disadvantages of digital education.

Section two deals with defining the test, its advantages; disadvantages; and evaluating it. The second section includes three subsections: the first one considers the definition of the test linguistically and terminologically. The second subsection examines the importance of the test and the negative factors, the third one deals with the main types of tests, and the fourth considers the evaluation and its importance.

Finally, section three discusses the results of data analysis that examined the difference between participants' preference of the digital and traditional tests. Data were collected by giving participants in both groups a questionnaire about the two kinds of tests, SPSS was used to calculate the results.

Limitations of the Study and its Terminologies

The present study followed a descriptive approach utilizing the survey method as it is suitable to deal with the problem of the study. The sample for this study comprised of 70 students enrolled in the Iraqi University -Department of Religion Fundamentals. All students were in the seconds stage

Statement of the Problem

This study examined whether the impact of digital education on university students is negative or positive.

Importance of the Study

The importance of this study lies in selecting the types of questions that help university students develop their skills and abilities and raise their scientific level within a right scope.

Hypotheses and Objectives of the Study

To achieve the aim of the study, the following null hypothesis was formulated

Null hypothesis: There is no statistically significant difference between the digital test and the traditional test.

Alternative Hypothesis: There is a statistically significant difference between the digital test and the traditional test.

Aims of the Study

This study aims to consider the best types of tests that motivate university students to learn using a more effective way that focuses on comprehension than a traditional method that relies on memorization. The study also aims to encourage students to try the distance learning.

Introduction

The world is going through a different kind of crisis after the epidemic of Corona virus hits the world. The spread of this virus causes a crisis, which forced governments to put a quarantine on people, and suspend the official working hours of many institutions and companies to face this crisis. The educational institutions presented the biggest challenge, which was maintaining the educational process in spite of all the surrounding circumstances. So, the best solution to achieve the educational aim was distance learning.

Distance learning is considered as one of the modern educational systems. This type of education is not restricted to the specific place, and it is not affected by the distances among the students, the professor, and the study group. The educational institutions often resort to this type of education when the students face a problem that prevents them from attending universities, colleges and educational institutions. For example, wars, health conditions, or any other reasons that obstruct the regular educational process in the educational institutions.

Perhaps the most important advantage in digital education is time investment and planning for not waste it. In addition, the facility of tests in digital education reduced the tension that occurs to students in the exam. Moreover, digital education contributes to invest the little time by providing considerable knowledge, useful science, and the attempts to develop man himself by keeping pace with education.

Currently, the role of educational institutions is an important role in stimulating motivation and encouraging learners by all means of education. For example, holding conferences, seminars, virtual workshops, electronic meetings and the distance work meetings. These activities make the learner feels happy; because he did not stop his work, his skills and experience even with this crisis. Thus, the learner will not leave the scope of science and knowledge and he will keep pace with the times.

Digital education has benefited many professions who have tried to manage their affairs that have become idle for a long period of time. professions have been forced to work with digital education especially when they have learned that the end of this crisis is unknown. They observed the ease of doing business by electronic means.

In the light of this crisis, digital education has presented a great service to education and learning in, and we as Muslims are the first people who should learn through the digital education. The Prophet Muhammad, peace and blessings be upon him, said, "wisdom is the lost property of believer wherever he finds it, he has the right to have it more than others" (Sunan Al-Tirmithi, 1998:348)

Section One

 Digital Education, its Types, Advantages and Disadvantages

1.1 Definitions of Digital Education

Education is defined terminologically as "the systematic and intentional design of experience that help the learner achieve the desired change in performance. It is also the education management that the teacher manages" (Al-Helah, 2007: 81).

One kind of education is digital education, which is defined as "the education that depends on the use of electronic media in communication among the teachers, learners and the whole educational institution" (Al-Muhaisin, 2002).

Another definition of digital education is: "the education that takes place through information technology media and digital communication such as the computer and its networks, television cable network, and satellite broadcasting" (Hussein and Ali, 2008:18).

1.2 Types of Electronic Digital Education

Digital education according to the time of its occurrence is divided into two types:

1.2.1 Synchronous E-learning

It is the kind of education that requires the presence of learners at the same time in front of computers to conduct discussion and conversation between students-students and students- teacher and through chatting rooms or receive lessons through virtual classrooms.

Some of the advantages of this type of education are the immediate feedback the learner gets, reducing the costs of studying, and there is no need to go to the school campus.

However, one of the disadvantages is its need for modern devices and a good communication network. Digital education is the most sophisticated and complex type of e-learning, where the teacher and student meet on the Internet at the same time simultaneously. The tools used in simultaneous e-learning include the following:

1. Whit Board.
2. Videoconferencing
3. Audio conferencing
4. Chatting Rooms

1.2.2 Asynchronous E-learning

This type represents the indirect e-learning that does not require the presence of learners at the same time, since it depends on obtaining information through websites

available on the network or CD-ROMs, or through e-learning tools such as e-mail or mailing lists.

One of the advantages of this type is that the student can access the study materials any time at his convenience with the effort he would like to present. The student can also review the material electronically whenever he needs to.

however, one of the disadvantages of the Asynchronous E-learning is the inability of the student to obtain immediate feedback from the teacher, and it may lead to introversion because this kind of learning occurs in isolation (site Net). The tools used in asynchronous e-learning include the following:

1. E-mail.

2. Forums.

3. Interactive video.

4. Textile network

1.3 The Advantages and Disadvantages of Digital Education

Digital education is one of the modern developments created due to the requirement of the present age. This demand for digital education has increased at the present time cause the world is going through this epidemic circumstance that made every country needs it without differentiating between developed and developing countries. It has become the backbone of life.

Digital education is characterized by advantages and disadvantages (Mahmood, 2018:18-19). Some of its advantages are:

1. Improving the quality of educational courses and programs; by designing them accordance to the international curricula to accommodate new sciences and knowledge. The universality of learning has no limit in capacity, nor in space or time.

2. Achieving equality of educational opportunities without restrictions to make learning a pleasure for students. Also increasing the students' motivation to learn. These achievements will increase learning opportunities.

3. Enhancing teacher capabilities; because digital education is characterized by the richness of science, knowledge, and the availability of multiple resources. All these characteristics contribute to the development of teacher performance.

4. Reducing the amount of time and facilitating the teaching process that burdens the teacher follows the traditional processes. The educational curricula are available on the Internet, and tests are easily corrected and sent automatically to students. Therefore, the process of communication becomes easier between the teacher and the student.

5. Cost reduction of learning and teaching as well as reducing the educational process expenses in long term effect.

1. 4 The Disadvantages of Digital Education.

Although there are many advantages of the digital education, it has a number of disadvantages.

1. One of the first disadvantages of e-learning is the need for computers, and a high-speed Internet connection. In addition, the cost of its application is very high.

2. Decreasing students' motivation to learn, due to spending a lot of time in front of a computer screen and websites.

3. Difficulty of evaluation and development of its standards, as it reduces the level of creativity and innovation in the answers of tests. The student has to write down the same answer key of the program and there is no way to discuss the answers in a different way.

4. The need for e-learning specialists to manage the digital education; because this system requires study and intelligence in the implementation and application. So, there must be a qualified staff capable of managing this technical system.

5. A large number of teachers are unable to use digital technology in a way that enables them to deal with it and use it in teaching, so intensive courses must be held to help them.

6. Digital education lacks the human factor. In the absence of effective dialogue and discussion, some students are unable to reflect their ideas in writing, and they need direct communication to express it.

7. According to the previous points, it seems that the digital education is a controversial issue. This is because its use constitutes a lot of flexibility and effectiveness in the educational process in terms of time, place and speed of achievement. On the other hand, it is problematic, it may be a cause for laziness and delay. Knowledge exists whenever the student wants to learn, so some delay is acceptable.

8. Time management is very important, and available opportunities must be exploited. Time that goes away does not come back.

Section Two

Definitions of Testing, its Advantages, Disadvantages, and its Evaluation

2.1 Definitions of Testing Linguistically and Terminologically.

First: Test is defined linguistically as a type of exam that measures the level of intelligence and mental ability, and the test is considered as a mute teacher (Omar, 2008: 607). Examination is also explained as a one meanings of the test (Al-Dinuri: 304). Al-Jarjani (1982) defines a test as "the performance of what the thing appears" (14).

Second: test is defined several timed terminologically, some of these definitions are;

1- The test is used to know the students 'ability to acquire scientific knowledge by transforming it into practical situations (Zaitoon, 1999: 358).

2- The test is defined as one of the measuring tools that the teacher uses based on the curriculum. Tests are available at the end of each unit or semester to determine the level of achievement (Al-Baghdadi, 1998:22).

5- The test is everything that measures the learner's achievement in the prescribed curriculum, and to what extent students can understand them. It also indicates the skills that he gained from learning the prescribed academic subjects through tests that take into account the formulation of certain conditions, with experimental steps that achieved what the conditions for a good test (Al-Ahmed and Yousif, 2001: 203).

2.2 The Importance of Testing and Negative Factors.

The importance of the test appears in its reliance on planning and structured analysis of educational aims in terms of form and content, therefore, it works to evaluate the effectiveness of the lesson and contributes to transfer students from one stage to another. The achievement test is affected positively and negatively by many factors, that can reduce or raise its level (Shehata et al., 2002: 5).

First: Positive Factors.

1- The academic achievement motivation is the most important factor that increases the level of students' achievement.

2- Using the modern, well-organized teaching methods.

3- The importance of parents' role in raising their children academic achievement.

4- Taking into consideration the individual differences between the professors by selecting the good model.

5- Students' positive attitudes towards their professors, and academic subjects.

6 - The students 'high ambition and the level of their future goals.

Second: Negative Factors

1 - The distracted students mind.

2 - The negative attitude towards the subject, and its lack of palatability.

3 - Individual differences between teachers in presenting scientific material.

4- The traditional methods of teaching that some professors follow, and their failure to follow modern teaching methods (Yasseen, 2006: 4).

2.3 The Main Tests: Their Advantages and Disadvantages

Although there are many kinds of tests, all these tests are divided into two types: the essay test and the substantive test. By clarifying these two kinds of tests, the traditional test and the digital test showed which are the subject of the research. So, the researcher will try to clarify the advantages and disadvantages of each one.

2.3.1 Essay Test

It is considered one of the oldest types of test questions, the student can answer these questions in his own words. So, student can show his ability and skills when he reflects his ideas in presentation and in logical analysis to answer the question (Aql, 2000:514). This test considers as constructive or written and some of its forms are (*discuss*, *clarify*, *summarize*, *mention*, *number*, *list*, *talk about*, *conclude*). The answer to this kind of questions can consist of several lines until tens of pages, and here the student's ability will appear when he tries to create, synthesize, build, and present Ideas and also when he starts to connect and discuss ideas, or in interpretation and explanation (Al-Najjar, 2010: 88).

2.3.1.1 Advantages of the Essay Test:

1- In the essay test, student is given enough time to think and write down his answer, so he feels more freedom to show his own ideas.

2- Essay test is a tool for measuring the student's ability to analyze information and facts to answer the question, as well as reducing the possibility of cheating.

3- The use of essay questions eliminates the problem of guessing (Aql, 2000:248).

4- Essay test is easy to construct, and it stimulates the student to write, organize thoughts, and improve handwriting. These points have an impact on the assessment of student's score (Attia, 2008: 306).

2.3.1.2 Disadvantages of Essay Test:

1- one of the disadvantages of this test is the answers are not specified. If the questions are given to a number of professors, the answers will be varied and different, and the same is true for students, their answer will be different.

2- The essay test is difficult to correct and takes longer time to grade.

3- The essay test requires a long time if the topic is comprehensive

, and after spending much time students may not include all the required material.

4- Correcting the essay test depends on the personal opinion of the professor (Al-Najjar, 2010:91).

2.3.2 The Objective Test.

The objective test is one of the modern types of tests. Each item in this test usually has only one potential correct answer or limited number of correct choices. students are asked to select one correct answer among a number of choices. A specialized machine is used for grading or Some teachers use a formula that gives points for the correct answer (Al-Essawi, 2003:58). The objective test was defined as those questions in which students are asked to select only correct answers from the choices offered as a list (Zaitoon, 1999:88).

The objective test is also defined as the test that does not give the teacher any role in assessing the test score; simply because the correct answer is already specified (Al-Dhahir, and others, 1999:91).

The objective test is the most common one in the higher education. This test measures student achievement if it is prepared in a good way and put the characteristics appropriate to it. Therefore, it can be regarded as the best type.

2.3.2.1 Some Types of Objective Tests

1- Multiple choice questions.

2- True and false tests: yes or no.

3- Matching tests

4- Complementary tests with a short answer, such as filling the gap (Melhem, 2005: 219).

2.3.3 Advantages of the Objective Test

1- A significant feature of the objective test is its thematic. The mood of the teacher in no way affects scoring. So, students' estimation does not differ from time to time, nor from one teacher to another. In addition, there is no effect due to the weakness of style, language skills, and accuracy of grammar and spelling. 2- The objective test is characterized by comprehensiveness, as it covers all or most of the curriculum (Abu Hatab, and others, 1987:401). 3- The objective test is used to measure varying degrees of understanding and knowledge.

4- The objective test does not require much time and effort to correct, and it enables the teacher to diagnose weaknesses or defects in students' answers and enables the student to know his academic level depending on his answers.

5- The student does not skip the objective test; Because it is very simple to answer (Zayer and Ayiz, 2011: 278-279).

6- The objective test is easy to correct when using the key answers, and it also facilitates the analysis of statistical results (Chalabi, 2005: 226-227).

2.3.4 Disadvantages of Objective Test

1- The objective test is easy to cheat.

2- preparing the Objective test requires time, effort and great skill. Failure to master the design rules for question can be counterproductive.

3- The printing and making copys of the objective questions requires a high financial cost, in addition to preparing many answer forms (Zaitoon 1999:364).

4- The objective test does not give the student any room to express himself; Because it is designed for the student who is not fluent in writing or expressing his own style (Al-Najjar, 2010: 95).

2.3.5 Four Ways to Improve Objective Tests

1- The teacher must determine the curriculum and measure the test with its results. Good tests should cover the contents and the important aspects of the curriculum.

2- Due to the ease of cheating in this test, it is assumed that the circumstances have been created in a way that could prevent the Risk of Cheating.

3- Questions should be as complete and clear as possible. So that the student be able to know what the requirement is.

4- The order of the correct choices should be arranged randomly, and all the answers to the questions must be on one side successively.

2.4 Definitions of Evaluation and its Importance.

1. Evaluation means to assess and judge something, and to correct what is wrong with it by using simulations of levels with various standards (Saadeh 1997: 446).

2- Evaluation is also defined as a process of valuation and measurement in the field of judgment and quality in the educational process. Its purpose is to make judgments about a program, to improve its effectiveness
at the end of educational process (Karajeh, 1997:150).

3- Evaluation is also defined as a process that is performed at the end of a specified period, such as monthly or quarterly evaluations, after the completion of an educational program (Al-Zyoud, 2005: 53).

4- Evaluation is explained as "those procedures that teachers follow to assess students' achievement and judge them according to some criteria in order to evaluate the results of the educational process" (Hassan, 1994:77).

5- Evaluation is a process that clarifies the path of learning and teaching. it is not possible to know the progress achieved by the teacher and the learner without evaluation. and we do not know the extent of compatibility or difficulties that the teaching and learning process go through. The evaluation process clarifies the correct action and identifies the problems and difficulties to be addressed, whether they are inside the classroom or outside the educational institutions (Dawoud, 2001: 1).

2.4.1 The Role of Evaluation and its Importance

The role of evaluation is one of the most significant elements in the educational process, and its most prominent activities and most related to educational development. Evaluation is the means by which the effectiveness of education is judged by its various elements.

It also shows accurate information to educational leaders about the effectiveness of the entire educational process in order to be able to issue their decisions, and to modify their strategies regarding the renewal and development of the educational system. Finally, evaluation clarifies the practical lines for the implementers of these decisions and directs educational process to serve the learners (Khater, 1989:447).

Evaluation is descriptive judgment that represents a qualitative evaluation of performance, and this judgment is useful in making a specific decision regarding the degree that the learner obtains to suggest an appropriate action. Therefore, evaluation can be regarded as a means used to know the effectiveness of educational processes, and a general strategy that speeds up educational change (Allam, 2000:31).

Evaluation is also seen as "assessment educational of the validity or suitability of a thing in light of a related purpose, i.e., the evaluation aims to make a decision about the suitability or validity of the educational work to achieve the purpose or educational purposes" (Shoala 2005:22). Evaluation helps select educational goals indirectly, it also clarifies these goals, and motivates the educational institution to formulate theirs goals and express them in behavioral terms.

The process of selecting the goals is not a simple matter that is directly judged, but it is one of the matters that requires a comparison between valuable and standard systems (El-Demerdash, 1983:18).

Evaluation is one of the pillars of development in education by relying on its results. Without evaluation, no development can occur in the aims and content of the educational curriculum. since it identifies and diagnoses weaknesses and strengths, it becomes a therapeutic diagnostic process.

The educational process cannot progress unless specialists assess the level of the learner's achievement to know the extent of its success and change in his behavior (Al-Maliki 1982: 21).

Evaluation is one of the most important steps in implementing any program because it makes a comprehensive study of it (Al-Wakeel, 82:36).

These can be explained by the following points that evaluation presents:

1- finds out success and failure rates.

2. - Determines the standards on which students pass from one stage to another.

3- Distributes students into departments to get specialized scientific certificates.

4- Determines the grades obtained by students, and the effectiveness of the professor, educational curricula and universities (Al-Rifai, 1987:110).

5- Clarifies the performance level of teachers, and what they have achieved in terms of learning objectives and providing them with a clear picture of what they have achieved depending on their students' achievement (Attia, 2008:293-294).

6- The evaluation provides important outputs in the teaching of academic subjects and their curricula through research, investigation, planning, adjustment and development in the teaching of academic subjects (Ebeid, and others p. 2001: 204).

7- Good evaluation works to raise the level of the educational process (Al-Bazouri, 2001:164-165) via survey and prediction (Al-Hadi, 1999: 33).

Much research has been conducted to study the achievement tests given each week in the academic subjects; discuss their results and extract the individual errors; formulate the final exam questions in a way similar to those tests. The results of these studies showed that the achievement of low-level students will be higher than in those with the less frequent evaluation. In contrast, the abilities of high-level students are different unless each test contains difficult questions to show their ability (Ahmed, 1899:110).

Some researchers found that the results of providing learner with instructions regarding learning and choosing the correct answers can increase the energy, activity and effort of that learner more than that came from taking the tests (Suleiman, 1977:339).

The two main problems of evaluation can be presented in the following points:

1- The ineffective use of the two kinds of evaluation: diagnostic and formative. The educational process confirms the importance of evaluation. The length of the imposed curricula and the attempts to complete them should not be a reason to ignore evaluation.

 it is impossible to diagnose the weaknesses without evaluation (Degenber 2008: 30).

2- The cognitive side may outperform the skill side; the professor may not be able to determine the students 'skill competencies while preparing the tests as required in

the curriculum. The teacher may not concentrate on the important aspects of the student's personality like the skill aspects or attitudes related to his external environment, or those that are related to the social, economic, and cultural environment (Al-Shamikh, 2018:14).

Section Three

A Questionnaire about Digital & Traditional Tests and their Pprocessing by Using SPSS

In this section, the researcher clarifies how the students in both groups show their preference concerning digital and tradditional learning by asking them to answer a questionnaire. The results of the two independent samples were analyzed by SPSS to find out the preference of one type of test over the other through the outputs that appeared using the tables. The test was conducted according to the digital and traditional methods for a number of students studying Iraqi university / Department of Fundamentals of Religion. The sample of the study consisted of 70 students, they have been asked to answer this question, "which one do you prefer the digital test or the traditional test

The answer of 63 students who preferred the digital test was about 90%, while only 7 students preferred the traditional test, and their percentage was 10%, as shown in Table (1).

Students' Results of the two types of exam Table (1)

Sample	Digital test	Percentage	Traditional test	Percentage
70	63	90%	7	10%

After that the researcher asked a professor from the same university for the test scores of his students for the two types of tests: digital and traditional in the Islamic creed for the second stage. An independent-samples t-test was conducted to determine if there was a significant difference between the two samples (Suleiman, 140-145), SPSS was used to analyze data, and calculate the results (Bashir, 2003:88-90).

An independent-samples t-test was run using an alpha of .05 to determine the effect of the two tests on students

Null hypothesis (Ho)): there is no statistically significant difference between the digital test and the traditional test.

Alternative Hypothesis (H1): there is a statistically significant difference between the digital test and the traditional test.

That means:

$H0 : \mu1= \mu2$

$H1 : \mu1\neq \mu2$

The results that the students got are shown in this table as

Table (2) Students' Scores

Traditional test	Digital test	Scores
2	4	100
1	11	95
6	13	90
10	12	85
9	14	80
11	11	75
15	3	70
9	2	60

4	-	55
3	-	45

Table (3): The Results of Analyzing Students' Scores

traditional	digital	
73.93	84.43	**mean**
75.00	85.00	**median**
12.537	9.071	**s. deviation**
45	60	**lowest percentage**
100	100	**highest percentage**

The results of analyzing students' scores in Table 3 show that students used the digital test (M= 84.43, SD= 9.071) worked better than those used the traditional test (M= 73.93, SD= 12.537).

Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted. This is evident in the following graph:
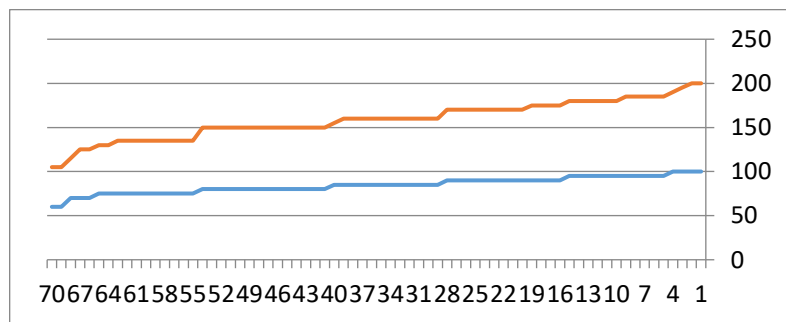
Traditional

Conclusions

1. Digital education facilitates the possibility of communication between the teacher and the student with the variety of communication programs that they communicate with, such as FCC, Zoom, Meet and others.

2. Digital education provides teacher with enough time to follow the students when they carry out their tasks. This solves many problems, such as the increase in the number of learners joining the classroom, the small size of the classrooms, and the lack of available resources.

3. Digital education contributes to increase the effectiveness of the teacher, through the diversity of teaching methods. Therefore, it facilitates the selection of the suitable methods for students to receive lessons. As a result, it reduces time, effort, and increase competencies that achieve educational goals.

4. Digital education is a rich source of information, so the student receives feedback continually. It also facilitates access to sciences and knowledge within a short time. In addition, it helps to overcome the obstacles that prevent students who live in a remote place or outside the borders of countries to receive the scientific curricula.

5. Digital education is accessible to all students because it reduces the costs. It also compensates for faculty shortage by using virtual classrooms.

6. The teacher and the student's perceptions can be improved by using electronic links that are related to scientific, theoretical, and entertainment interests.

7. Students using digital learning tools can access the scientific curriculum easily. The curriculum and the programs can be easily changed when necessary without high costs.

8. All that I have mentioned makes the teacher and the student take great steps by overcoming the biggest obstacle, which is time, controlling time and investing it better. Thus, it becomes clear that the best advantage of digital education is the right investment of time.

9. The most useful characteristic of digital education is time-saving. The teacher and students can save time in a right way

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