The Effect of Using the Smart Board in Developing 10th Grade Primary Pupils' Achievement in the Hashemite Kingdom of Jordan

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Abstract
The study aims to identify the effect of using the smart board on developing achievement for the 10th-grade students in the Hashemite Kingdom of Jordan. The two researchers use two different research approaches, namely the descriptive analytical approach used to extrapolate the related literature on the independent variable and the dependent variable, and the experimental approach to measure the independent variable (The smart board). The study sample consists of the tenth elementary grade students randomly selected in the Hashemite Kingdom of Jordan. They are distributed into two groups, the experimental group taught using an educational program based on the use of the smart board and a control group taught in the traditional method. The researchers have designed a 30-question achievement test in the second semester of the year 2018-2019. The results of the study show that there is an effect on the use of smart board among the tenth-grade students in the Hashemite Kingdom of Jordan due to the excellence of the experimental group over its control group in the achievement test.
Keywords: effect, smart board, achievement, 10th grade

1. Introduction

Contemporary science is in accelerating development and always makes several small or great changes in the field of education to build a balanced personality for the student during his educational, academic and cultural life, and adapt and impose new systems such as the smart board, electronic library, and computer to develop the mentality, capabilities, skills, and abilities of students.

Today, the world witnesses a great development in the various methods used in education, and among the most important of these methods is what is known as the smart board, which began to be widely used at the level of private schools and some government schools. Presently, smart board is considered one of the important educational methods used in schools (Omari, 2014).

Patricia (2010) confirms that the smart board has captured a lot of interests from academic and educational institutions, and it has empowered these institutions to prevail over other technologies. Britain is one of the first countries to start equipping its schools with this technology at the end of the nineties of the last century as the smart board's importance and usefulness, and positive results are seen through numerous studies related to it in the educational process. The smart board is one of the latest technological means in the field of education, which has contributed to enriching and improving the educational process with its great potentials and advantages. The smart board is a revolution in presentation methods and the development of the educational process. By using the smart board, the student can write, save and send by email, surf the internet, and print everything explained on the blackboard, and the matter does not stop there because all these advantages are through using the board's electronic pen without the keyboard or mouse.

The smart board is a special type of smart sensitive boards that are dealt with by touch and used to display the various applications on the computer screen. It is a sensitive electronic screen (panel) that is handled using the sense of touch (with a finger, digital pens, or any pointers), which is connected to a computer, or a Data Show device, that displays and interacts with various applications stored on a computer, or available on the Internet, either directly or after a while (Badawi, 2010).

The interactive smart board's significance lies in the ability to write on it electronically, as the student and the teacher can interact with it and show computer applications on it by touch or pen, and it can also be linked to the Internet. With the development of education throughout the various ages, different types of teaching and learning, tools, and materials are created and used to facilitate the process of attaining learning by learners, and the process of achieving goals for teachers. There is no doubt that the invention of the computer in the forties of the last century and its entry into the world of education in the sixties of that century has led to the emergence of modern forms of learning, education, and training systems and tools associated with and dependent on it such as blended learning, distance education, e-learning, and mastery learning. Several modern tools are also used in this process such as various electronic devices, namely the smart board (Omari, 2014).

Of note, the smart board user can save and store what has been explained to others, print or send it via e-

mail, publish it via the Internet when needed, and use most computer software applications, which help to display the material in attractive ways. An interactive whiteboard is an ideal tool in any use that needs to have visual communication (Higgins, 2010, Morgan, 2008); (Rumuh, 2006).

2. Problem of the Study

The sense of the problem stems from the researchers' review of studies, research, literature, books, and recommendations of many researches in the field of e-learning and the use of technological innovations (smart board), which indicate the need to pay attention to educational technology innovations. It also stems from the knowledge of researchers about the poor level of the student achievement because of their experience as English language teachers at the Jordanian Ministry of Education. In light of the foregoing, the problem of study is to explore the effect of using smart board applications on developing achievement for 10th grade students in the Hashemite Kingdom of Jordan.

3. Questions of the Study

In light of the problem of the study, the following question is articulated.

- Is there a statistically significant difference at the significance level ($\alpha = 0.05$) among the means of the scores of students of the experimental group and the control group in the post-application of the cognitive achievement test in favor of the experimental group?

4. Objectives of the Study

The following objective is formatted to answer the question of the study.

- Examine the effect of using the smart board on developing achievement for the 10th-grade students in the Hashemite Kingdom of Jordan.

5. Significance of the Study

The significance of the research is seen through several areas such as shedding light on the importance of the smart board in developing academic achievement, informing learners about the possibilities of using the smart board in the education process, contributing to raising the efficacy of educational institutions in the Hashemite Kingdom of Jordan and helping them to face the novel challenges and developments of the times and directing the attention of those in charge of the educational process to the effective role in using some applications of the smart board in developing academic achievement.

6. Previous Studies

Several previous studies have been done on the importance and application of the smart boards in the educational process. Marzano's study (2009) aims to identify the effect of teaching using smart whiteboards on achievement. The results of the study show that the use of smart whiteboards leads to a 16% increase in students' achievement. This means that we expect the student's score to increase from 50 to 66 if the technology of smart whiteboards is used. Gruber's study (2011) aims to examine the use of the smart board in middle school classes and its impact on learners' attitudes, as well as communication and peer interaction, professional development, and academic achievement.

In the meantime, Minor et al., (2013) aim to explore the professional development model for an integrative technology teacher. This model focuses on the use of a smart board to improve the achievement of algebra. The importance of the study lies in the comparison between middle school students in Southeast Virginia State with low level pre-assessment of the standard of learning in algebra over three years with other students from the same province and state. The methodology adopts a pre and posttest for one group and collects data from four teachers and (240) students who use the standard for learning in algebra and a survey form for the technological efficacy of the smart board. The results of the study show that there is an increase in students' degrees in mathematics and of teachers' efficacy in using the smart board through the pre and posttests. Phillip's study (2013) aims to identify the efficacy of using the keyword and presentation method using the smart board to teach vocabulary to students with poor achievement. The study is applied to the third grade in a Catholic school. The 10-week study sample consists of five students between (8-10) years. The students use the traditional method to learn reading and vocabulary for social subjects while using a smart board to display vocabulary with keywords as stimulating words and a picture to display the vocabulary by practice and review words to enhance learning. The results of the study show that students' scores have improved significantly in the short test to gain vocabulary in reading and social studies.

As for Farra's study (2014), it aims to identify the efficacy of the smart board in developing the achievement of English vocabulary and its memorization among tenth-grade students in Gaza and their attitudes toward language. The researcher uses an achievement test of the vocabulary (pre-post-postponed) and a measure of trends (pre and post) to determine students' attitudes towards the English language and a teacher's guide based

on the smart board. The results of the study show that there are statistically significant differences at the level of significance ($\alpha = 0.05$) in the level of achievement of students of the experimental and control groups on the post-measurement of the achievement test in favor of the experimental group due to the efficacy of the smart board.

Furthermore, Shafy's study (2016) aims to examine the impact of integrating some communication tools (synchronous and asynchronous) within the strategy of cognitive journeys in developing the skills of using the smart board of education technology specialist. The research is applied to a sample consisting of (22) education technology specialists in Beheira Governorate divided into two experimental groups. The research's results show the efficacy of integrating synchronous communication tools (chat room and Skype program) and asynchronous communication tools (discussion forum and Facebook group) within the strategy of cognitive journeys in the development of the cognitive and skill aspect of using the smart board of the education technology specialist. In light of the previous studies and research related to using smart boards in teaching, whether in achievement, motivation, developing critical thinking skills, and creative thinking skills. It can be seen that the current study differs from previous studies as it examines the effect of using the smart board in developing 10th-grade primary pupils' achievement in the Hashemite Kingdom of Jordan.

7. Terms of the Study
Having reviewed studies and literature on research variables, the following terms can be procedurally defined as follows:

Effect: it can be procedurally defined as an indication of the extent of the role of using some smart board applications in bringing about development in achievement and the aspects of learning targeted by programs.

Academic Achievement: it can be procedurally defined as the extent of knowledge and information that students acquire through mobile learning applications in the English language for the 10th grade and will be measured using the achievement test, which the researchers will prepare for research purposes.

The 10th primary grade: it can be procedurally defined as students who study in the upper primary stage according to the Jordanian educational scale whose age is about 15 years.

Smart Board: it can be procedurally defined as an active whiteboard with a touch screen, in which the teacher touches the whiteboard to control all computer applications such as linking to another page on the Internet, taking notes, drawing shapes, clarifying ideas, and displaying key information via the news. Through the smart board, lessons that the teacher transfer to students' devices can be saved or sent to them via e-mail, and any multimedia file can be played to present to students via smart board (Momani, 2011).

8. Limitations of the Study
This study is limited to explore the effect of using the smart board in developing 10th-grade primary pupils' achievement in the Hashemite Kingdom of Jordan. It is also limited to randomly selected tenth-grade students from schools belonging to the Directorate of Education in the Northern Mazar District. Moreover, it is applied in the 2nd semester of the academic year 2018/2019.

9. The Methodology of the Study
To achieve the research objectives, the semi-experimental approach is used.

10. Study population
The study population consists of all tenth-grade students in the schools of the Hashemite Kingdom of Jordan.

11. Study Sample
The sample of the study consists of 72 students divided into two groups; one is experimental with 36 students and the other is control with 36 students

12. Study Instrument
To achieve the objectives of the study, reference is made to the theoretical literature and previous studies that address the diversity of the smart board such as Shafy's study (2016) and other related studies.

13. Instrument's Validity
To verify the validity of the content of the study instrument, the content is presented to a group of experts and specialists in Jordanian universities to express their views in the questionnaire items in terms of clarity of meaning, linguistic construction, and the degree of suitability for the field to which it belongs, and any other appropriate modifications and notes. (80%) of the validators' comments are taken into consideration to achieve the objectives of the study.

14. Instrument's Reliability

To ensure the reliability of the study instrument, it is checked through the test-retest method, along with calculating the internal consistency coefficient according to the Cronbach alpha equation. Table (2) shows the internal consistency coefficient according to the Cronbach alpha equation and the reliability of the return for the fields and the instrument as a whole and these values are considered appropriate for this study.

The criterion for calculating the means of the study instrument is determined by dividing it into three degrees: low, medium, and high, according to the following formula:

Category length = Highest value of the substitute - the minimum value of the substitute / Number of levels

1.33 = 3 / (1 - 5) =

Accordingly, the following criterion is used to calculate the responses of the study sample:

The low score is less than 2.33.

The medium score is from 2.34 to 3.67.

The high score is from 3.68 to 5.00.

15. Results and Discussion

The research's main question: Is there a statistically significant difference at the significance level ($\alpha = 0.05$) among the means of the scores of students of the experimental group and the control group in the post-application of the cognitive achievement test in favor of the experimental group?

To answer and to test the validity of this question, athematic means, standard deviations, and (T) test results for independent samples are calculated to ensure the statistical significance of the differences between the experimental and control groups. The two groups are compared at the levels of linguistic grammar, reading and listening skills, and cognitive levels (understanding, memorizing, applying), according to the standards of the tenth grade English language textbook.

Table 1 .*Results of the T-Test in the Post-Application of the Experimental and Control Group at the Reading Level*

Test Parts	Group	Number N	AM	SD	T Test		
					T value	Degrees of Freedom	Sig.
Reading	Experimental	36	9.6389	0.72320	10.123	70	0.01
	Control	36	4.7778	2.78887			

Table 1 shows that there are statistically significant differences between the experimental and control groups at the reading level in favor of the experimental group, where the calculated value of t is greater than the tabular t and this value is significant at the level of (0.01). It can be inferred from these values that teaching using the program based on using smart board applications is effective in improving reading skills in the English language for tenth-grade students in the Hashemite Kingdom of Jordan.

Table (2): *Results of the T-Test in the Post-Application of the Experimental and Control Groups at the Listening Level*

Test Parts	Group	Number N	AM	SD	T Test		
					T value	Degrees of Freedom	Sig.
Listening	Experimental	36	8.5833	0.64918	9.038	70	0.01
	Control	36	5.6944	2.79611			

Table 2 shows that there is a clear difference between the means of the experimental group and the control group at the listening level where the mean of the experimental group is (8.5833), while the mean of the control group is (5.6944) and this difference is significant at the significance level of (0.01) and this is evident from the value of t, where the value of the tabular t is greater than the calculated t.

Table (3): .*Results of the T-Test in the Post-Application of the Experimental and Control Groups at the Linguistic Level*

Test Parts	Group	Number N	AM	SD	T Test		
					T value	Degrees of Freedom	Sig.
Linguistic Grammar	Experimental	36	11.4167	3.28090	7.853	70	0.01
	Control	36	5.0833	3.55668			

Table 3 shows that the value of the mean of the experimental group is higher compared to the control group and this difference between the means is significant at the level of (0.01) and this significant difference is clear by the value of t, where the calculated value of t is greater than the value of the tabular t. Therefore, it can also be said that teaching using the program based on the use of smart board applications will lead to a more effective impact on developing linguistic grammar in the tenth-grade students in the Hashemite Kingdom of Jordan.

Table (4): *Results of the T-Test in the Post-Application of the Experimental and Control Group at the Total Sum Level in the Test*

Test Parts	Group	Number N	AM	SD	T Test		
					T value	Degrees of Freedom	Sig.
Sum	Experimental	36	29.5000	3.73784	9.791	70	0.01
	Control	36	15.5556	7.68466			

Table (4) shows that there are statistically significant differences between the mean of the experimental group and the mean of the control group at the level of significance of (0.01) in favor of the experimental group at the level of the total sum test of the English language, which included the skills (reading, listening and linguistic grammar).

Table (5): *Results of the T-Test in the Post-Application of the Experimental and Control Group at the Memorizing Level*

Test Parts	Group	Number N	AM	SD	T Test		
					T value	Degrees of Freedom	Sig.
Memorizing	Experimental	36	12.9722	1.97825	7.789	70	0.01
	Control	36	7.8611	3.39876			

Table 6 shows that there are statistically significant differences between the experimental group and the control group in favor of the experimental group at the significance level of 0.01.

Table (6): *Results of the T-Test in the Post-Application of the Experimental and Control Group at the Understanding Level*

Test Parts	Group	Number N	AM	SD	T Test		
					T value	Degrees of Freedom	Sig.
Understanding	Experimental	36	8.2500	1.84197	3.461	70	0.01
	Control	36	6.0556	3.32904			

Table (6) shows that there are statistically significant differences between the experimental group and the control group at the level of understanding in favor of the experimental group, as the value of t in the previous table shows the significance of the difference between the means of the experimental group and the control group and this is significant at the level (0.01) at the level of understanding. The next table includes a comparison between the two groups at the applying level.

Table (7): *Results of the T-Test in the Post-Application of the Experimental and Control Group at the Applying Level*

Test Parts	Group	Number N	AM	SD	T Test		
					T value	Degrees of Freedom	Sig.
Understanding	Experimental	36	8.3056	2.82660	10.298	70	0.01
	Control	36	1.6667	2.64035			

Table 7 shows that there are statistically significant differences between the experimental group and the control group at the applying level in favor of the experimental group at the significance level of 0.01. It is clear from the above that the experimental group is higher than the control group in the post-application, and thus the research's main question is accepted.

Table (8): Arithmetic Means, Standard Deviations, Results of (T) Test and Effect Size (Eta- squared) for Differences in Post-application between the Two Research Groups in Reading Skill

Level	Group	Number	AM	SD	Degree of Freedom	Value of T	Value of Sig.	Sig. at 0.005	Size Effect (Eta-squared)
Reading Skill	Experimental	36	2.7208	0.5048	93	7.636	0.003	Significant	0.385 Great
	Control	36	1.6255	0.7730					

Table (8) shows that there are statistically significant differences at the level of (a ≤ 0.05) between the mean of scores of students of the experimental group and the mean of scores of students of the control group in reading skill in favor of the experimental group, as the value of (t) denoting the difference between the means of the two groups is (7.636), which are statistically significant at the significance level (a= 0.003). Therefore, we accept the research's hypothesis "There is a statistically significant difference at the level (a ≤ 0.05) between the mean of scores of students of the experimental group, and the mean of a score of the students of the control group in the post-application of the teaching activities test at the level of reading skill in favor of the experimental group".

The value of the effect size using the Eta-squared on reading skill is (0.385), which is a great and appropriate value, and indicates that a great percentage of the differences are due to the generative model, where Cohen believes that the effect that explains (from 15% or more) of the total variance of any independent variable of dependent variables is considered to be significant.

To measure the efficacy of the generative model on developing reading skill, the Black (Gain) equation is

used to compare the pre- and post-mean to teaching activities test in reading skill, according to the equation:
Modified Gain Ratio = $\dfrac{Y-X}{V} + \dfrac{Y-X}{V-X}$

Where

Y: mean of student's scores in post-application.

X: mean of student's scores in post-application.

V: The maximum value of the skill level.

Table (9) shows these results.

Table (9): *Calculating the Reading Skills Efficacy with Black's Modified Equation*

Level	Group	Mean of scores of pre-application	Mean of scores of post-application	Efficacy	Modified Gain Ratio	Statistical level
Reading Skill N=3	Experimental	1.5492	2.7208	0.81	1.21	Accepted
	Control	1.5553	1.6255	0.049	0.072	Refused

Table (9) shows that the effect of the generative model was acceptable for the experimental group compared to the control group, where the Black's modified gain ratio is equal to (1.21), and it falls in the range that Blake has determined for the efficacy of (1-2), and this confirms the efficacy of the generative model In developing reading skill. The results of the current study are consistent with the results of the study of Alaa Shafy (2016); Farra (2014); Ibrahim Jubaili (2014); Ibrahim Hassan (2013); Hassan Bani Domi and Hamza Daradkeh (2013); Minor et al., 2013; Phillip (2013) Gruber, (2011); and Marzano, (2009) that have paid attention to the academic achievement and this is similar to current research.

The results show that there is a statistically significant difference between the mean of scores of students of the experimental group and the control group in the post-application of the cognitive achievement test in favor of the experimental group taught using the program based on the use of smart board applications, compared to the control group taught by the traditional method. This also indicates that the use of the program based on the use of smart board applications affects increasing academic achievement in the English language for the tenth-grade students in the Hashemite Kingdom of Jordan.

Importantly, this result may be attributed to the lessons prepared through the educational program focusing on the important and required information and concepts that have had an effective impact on their learning each according to his speed in learning and at the appropriate time and place for him. With that, learning using the smart board leads to a great role in increasing the desire to learn, along with a tremendous increase in their achievement. More importantly, this result is due to the features of the smart board, as the applications of the smart board have found a huge approval from students because they have learned in a new way other than the traditional method raising their enthusiasm and their desire to learn better and increase their achievement.

Recommendations

In light of the aforesaid results, the following has been recommended:
1. Paying more attention to provide the teachers, during the service, with all knowledge and skills related to smart board applications, especially educational applications to use them in the educational process.
2. Urging teachers to use the smart board in teaching subjects of the English language in particular, and other subjects in general.
3. Programming and designing some English lessons at all levels of education from the primary stage to use them in teaching with a smart board.
4. Providing smart board technology with its various accessories in all schools because of its special importance in motivating students, raising their motivation, and increasing their active and positive interaction with educational content and applied activities.
5. Conducting studies on the use of the smart board in teaching different subjects at different levels of study, and its effect on some different learning outcomes.

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