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Investigating the Importance of Teaching and Learning with SMART Board/IWB Technology in Sudanese School.

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ABSTRACT

The purpose of this paper is to investigate the importance of using Smart Board/IWB technology in teaching and learning at Sudanese classrooms. The researcher used the descriptive and analytical method of research. The data of the study was collected by the use of a questionnaire which was addressed teachers of secondary school in Khartoum State who represented the sample of the study. The respondents of the study were 70 secondary school teachers, both male and female teachers. The data which obtained was analyzed by using (SPSS) Statistical Package for Social Science. The main findings of the research revealed that most of teachers have positive attitudes towards the use of Smart Board/IWB technology in classrooms. Also it showed that the majority of the teachers are not sufficiently trained to use Smart Board/IWB technology in the classroom and Smart Board/IWB technology is not available in most of secondary schools. The researcher recommended that teachers should be encouraged to acquire technology knowledge and skills which will enable them to use Smart Board/IWB technology in the classroom. She also recommended that regular in-service computer skills and Smart Board/IWB technology training should be held, if the Smart Board/IWB technology is going to be used effectively.

Keywords: Smart Board/ Interactive White board (IWB)/ Descriptive and analytical method/ Training/ classroom settings.

المستخلص

تهدف هذه الورقه الى دراسة اهمية استخدام السبوره الذكيه اوالتفاعليه للتدريس فى المدارس السودانيه . استخدم الباحث منهج البحث الوصفى التحليلى فى هذه الدراسه. تم جمع المعلومات من مدرسى المرحله الثانويه بولاية الخرطوم وهم يمثلون عينة الدراسه. تم توزيع الاستبيان على عينة تتكون من 70 مدرسا من المرحله الثانويه وقد شملت الجنسين الذكور والاناث معا. استخدم الباحث برنامج الحزم الاحصائيه للعلوم الاجتماعيه لتحليل بيانات هذا البحث والمعروف اختصارا ب(SPSS). تشير اهم نتائج البحث الى ان: معظم المدرسين لهم اتجاهات ايجابيه نحو استخدام السبوره الذكيه اوالتفاعليه فى التعليم والتدريس. معظم المدرسين غير مدربين التدريب الكافى الذى يمكنهم من استخدام السبوره الذكيه او التفاعليه. عدم توفر السبوره الذكيه او التفاعليه فى معظم المدارس الثانويه. اوصى الباحث ان يشجع المعلمين على اكتساب المعرفه والمهارات التقنيه التى تمكنهم من استخدام السبوره الذكيه او التفاعليه بطريقه فعاله داخل الصف. كما اوصى ان تكون مهارات الحاسب الالى و السبوره الذكيه اوالتفاعليه من ضمن المهارات الاساسيه فى تدريب المعلمين لضمان استخدامها بكفاءة عاليه فى التدريس.

الكلمات الرئيسيه: السبوره الذكيه /السبوره التفاعليه/المنهج الوصفى التحليلى/ التدريب/غرف الدراسه.

INTRODUCTION

The classroom environment today is completely different from the traditional classroom we are all used to years ago. The new technology in the classroom such as document cameras,

Interactive white Boards (IWB) and classroom response systems, have added not only excitement but also student engagement and true interactivity with the classroom. Whiteboards have replaced chalkboards, interactive whiteboards have replaced regular whiteboards and now interactive whiteboards technology is replacing conventional whiteboard such as Smart Board.

Recently, Sudanese school teachers have Smart Boards or interactive whiteboard (IWB) technology in their classrooms, but many teachers do not make use of these instructional technologies in a way that may enhance teaching and learning. Sudanese government have spent a lot of money equipping their schools with Smart Board/IWB technology without a plan to help teachers integrate this technology into effective teaching and learning in their classrooms. A long with hardware for the classroom, the teachers have been required to attend an initial training event. The initial training event usually comes with the onset of new equipment, but any training costs more. Moreover, the ongoing demands of upgrades, upkeep, and training for instructional technology is challenging yet crucial to effective practice that integrates or incorporates this technology into instruction. Nowadays, Smart Board/IWB technologies have equipped many schools with interactive method for engaging students during instruction in Sudan especially in Khartoum, but these Smart Boards are an expensive asset for the classroom, and teachers need to have adequate training to use them effectively.

In this paper, I identified the benefits teachers and learners have when using Smart Board/IWB technology in the classroom and challenges and barriers teachers face while incorporating the Smart Boards into the daily routine of teaching. I explored what skills and resources teachers need to incorporate this new technology in their classrooms. Results from this study designed to help teachers use the Smart Boards effectively and efficiently.

This study has raised two questions:

1- What are the benefits from using Smart Board/IWB technologies in daily classroom activities?

2- What barriers and challenges are preventing teachers to integrate Smart Board/IWBs to its fullest potential?

The researcher has devised two hypotheses to investigate the importance of equipping classrooms with Smart Board/IWB technology in a way that enhance teaching and learning in Sudanese schools by answering the questions of this study as follows:

1- There are benefits from using Smart Board/IWB technologies in daily classroom activities.

2-There are barriers and challenges that prevent teachers to integrate Smart Board/IWBs to its fullest potential.

2- Objectives of the Study

This study aims at investigating the importance of integrating the Smart Board/IWB technology in Sudanese teachers' classroom. It is also intended to identify the challenges and barriers that face teachers while integrating this technologies in their daily classroom activities.

3. Literature Review

The Concept and the Origin of Smart Board

No one can deny the importance of technology in the improvement of teaching and learning which emphasize the interaction among learners and that is seen as a fundamental component for acquiring knowledge. The adoption of technology within classroom and the competency of teachers regarding technology and its adoption to their classroom instruction were the main conceptual of this study. The adoption of technology for classroom usage is an important idea that teachers must follow and teachers' self-efficacy is one of the foundations of using the Smart Boards in the classroom (Holden& Rada, 2011).

David Martin began Smart company in 1987 as the Canadian distributor for U.S. Projector Company. The revenue which it collected from the projectors was put into research and developed on the Smart Board interactive whiteboard to provide touch control of computer applications and the ability to write over standard Microsoft windows applications (Wikipedia). The Smart Board is an interactive whiteboard that uses touch detection for user input (e.g. scrolling and right mouse-click) in the same way as normal PC input devices. Smart Board is used in teaching, training, conducting meetings and delivering presentations.

The Smart Board and interactive whiteboard operates as part of system that includes the interactive whiteboard, a computer, a projector and whiteboarding software. The components are connected wirelessly or via USB or serial cables. A projector connected to the computer displays the desktop image on the interactive whiteboard. The whiteboard accepts touch input from a finger, pen or solid object.

Teacher beliefs in technology usage have an effect on lessons presented in the classroom. When teachers do not have confidence in using the technology, they are not as likely to use that technology in a lesson. In addition, the overuse of the same technology can cause stagnation in the learners of the classroom (M. Ryan, 2013). The use of Smart Board technology in the classroom creates a place where learners are able to explore deep meaning of the objectives of the lesson. Smart Boards are a meaningful addition to the lesson and have a significant part in helping teachers explain lesson objectives (Jones et al, 2011). The interactivity of the Smart Boards allows for the gathering of media and rich materials and they make them easy accessible to the teachers while teaching classroom lessons.

Professional Training

Practices in teaching lead to an increase in student learning that is the center of instructional strategies. Teachers should know their strengths and weaknesses and attend professional training to help strengthen their weaknesses. Inadequate Smart Board professional development leaves teachers with many more questions about incorporating the Smart Board in daily classroom activities (Lewis et al, 2008). In some Sudanese schools teachers attend trainings to help them use the Smart Boards/IWBs in daily classrooms activities but teachers still have more many questions about the use of this technologies. However, placing the Smart Boards/IWBs in the classroom, and only providing minimal professional development to teachers, does not support to teachers (Jones & Vincent).

Applying different trainings in the teaching professional allows the teachers to provide best practices in the classroom. Best practices in teaching lead to an increase in student learning that is the center of instructional strategies. Teachers trainings provides them with needed information to connect strategies and learning opportunities for students learning in the classroom (Taylor, 2011).

Cost of Implementation

The cost of implementation for the Smart Boards in all classrooms may hinder some schools to implement this technologies into the classroom. Much of the implementation of the technology will depend on the budget of the department of the government. One of the more difficult aspects of incorporation this technology into classrooms is the cost. Each classroom needs a computer, a projector and Smart Board which need a lot of money. Dealing with space issues involved in setting up the equipment in classrooms, access to electrical connections, and the need for teachers to take the time and training needed to develop comfort with the equipment (Fernandez, 2013). Schools need to incorporate the cost of training programs and technical support for teaching staff when taking on the task of implementing this technology in the curriculum (Hall & Higgins, 2005). Moreover, it is more important to look at how the technology is used in the classroom rather than how much money a locality spends on the technology. If the technology is not used correctly or to it is potential, it is not worth it. In order to teach successfully with technology, teachers have to be prepared by understanding the hardware and software they use (Rivero, 2006).

Smart Board Support Teachers

Smart Boards can be a tool to assist the teacher providing different strategies to help learners understand the major point of the lesson. Smart Board tools provide different learning aspects for the class learners (Robertson & Green, 2012). Teacher can create a Smart notebook file that incorporates rich material from media to diversify the lesson. Using a variety of sources to incorporate diversity throughout the lesson (Thopson, 2013). The succession of technological advances in the past years have had many innovations (Rushby, 2013). The use of technology has a positive effect on the learners' outcomes. The use of technology in the lesson keeps the attention of the learners (Jacobs, 2012). Students need to have a variety of strategies for learning to keep them motivated in the classroom. It is important to the teachers to understand that it is their responsibility to be technologically literate (LoSchiavo, 2013).

4- Methodology of the Research

Sample of the Study

A questionnaire has been administered in this study to the teachers who teach in different secondary schools in Khartoum states. This questionnaire has been divided into two categories. The first one is the Smart Board technologies benefits in the classroom and the second one is the barriers and challenges that prevent Smart Board to be used effectively in the classroom. It consists of 10 questions, five in category one and five in category two. The target population of this study was Sudanese secondary school teachers in Khartoum State during the year 2017-2018.

The researcher think that the sample of the study from Khartoum State is suitable for the study because there are great number of secondary teachers in this state and many of them have Smart Board in their classrooms and this numbers of teachers are convenient to the purpose of this study. To carry out this study the researcher chose some random samples of teachers. All of the samples are teachers in secondary level in Khartoum state. One hundered copies of questionnaire were distributed to the sample of the study and seventy-eight of them were recollected. The researcher excluded some of the copies because the respondents did not fill all the statements and some of them marked on more than one option. About eight copies were excluded from the study. Seventy copies of the questionnaire were valid so they were included in this study.

Reliability and Validity of the Instrument

approved by a number of experts. The validity of the instruments was gained by giving the instruments to EFL reviewers, experienced university professors who expressed their views and gave suggestions. Their suggestions were taken into consideration and the instruments were modified accordingly. Finally, they indicated that the test guidelines were clear and appropriate to be a valid measured. The qualitative (nominal) variables of Likert scale (i.e Strongly Agree, Agree, Not sure, Disagree or Strongly Disagree) helped largely for systematic analysis of the data. A responsible range of time was given to the respondents to fill the forms offered to them. Then the researcher started to collect the questionnaire distributed among the teachers. Fortunately all the questionnaire were returned, so the final number was (70) respondents.

The researcher has used alpha equation to calculate the reliability coefficient of the scale in the questionnaire. In this study the validity calculated by using the following equation:

RELIABILITY COEFFECIENT	VALIDITY COEFFIENT
0.730	0.854

$$\text{Validity} = \sqrt{\text{Reliability}}$$

Data Analysis and Discussion

In this section data analysis and discussion will be done. To do that, firstly the researcher considers the instruments which applied to collect data, population and sample are described, the reliability and validity of the study are also shown.

Table (4.1) Gender of Subjects

Gender	Frequency	Percent
Female	30	42.9%
Male	40	57.1%
Total	70	100.0%

Table (4.1) illustrates the gender of the subjects. The total number of subjects were 70 secondary teachers; 40 of them are male which represents 57.1% and 30 of subjects were female secondary teachers which represent (42.9%).

Questionnaire of this study will be analyzed as in the tables below by focusing on answering the two questions of this study: The first question is about the benefits of using Smart Boards/IWB technology in daily classroom activities, and the second question is what barriers and challenges are preventing teachers to integrate Smart Board/IWB technology to its fullest potential?. So data collected in this study through the questionnaire has been analyzed and its results can be demonstrated through the following tables.

Category 1: The benefits of using Smart Board/IWB technology in daily classroom activities

Table (4.2): Smart Board technologies enhance teaching and learning

Smart Board Technologies enhance teaching and learning	**Frequencies**	**Percent**
Strongly Agree	25	35.7%
Agree	23	32.9%
Neutral	7	10.0%
Disagree	4	20.0%
Strongly Disagree	1	1.4%
Total	70	100.0%

From table (4.2) above, we can see that (35.7%) of the subjects were strongly agree that Smart Board technologies enhance teaching and learning, (32.9%) were agree, (20.1%) of them were disagree, (1.4%) strongly disagree and (10.0%) of them were undecided. According to table (4.2) most of the subjects agree with this statement which revealed that most of the teachers have positive attitudes towards the use of Smart Board/IWB technology in learning and teaching .

Students will learn more through Smart Board technologies	Frequency	Percent
Strongly Agree	25	35.7%
Agree	21	30.0%
Neutral	11	15.7%
Disagree	12	17.1%
Strongly Disagree	1	1.4%
Total	70	100%

Table (4.3) Students will learn more through Smart Boad technologies.

According to table (4.3), the subjects who strongly agree that students will learn more through Smart Board technologies represent (35.7%), those who agree represent (30.0%), the subjects who disagree represent (17.1%), The ones who strongly disagree represent (1.4%), whereas those who were undecided represent (15.7%). If we have a look of table (4.3) above, we can see that the majority of the represents agree with this statement, about (65.7%) of the sample which emphasis that students will learn more through this technologies. Teaching whole-class interactively, the Smart Boards promotes the quality of the lesson (Ashfield, 2008). Smart Board/IWB technology allows for more engagement by students.

Table (4.4) I like to see Smart Board technologies in all Sudanese classrooms:
Table (4.4) shows that about (45.7%) of the represents were strongly agree that they like to see Smart Board technologies in all Sudanese classroom, (40.0%), of them were agree with

I like to see Smart Board in all Sudanese classrooms	Frequency	Percent
Strongly Agree	32	45.7%
Agree	28	40.0%
Neutral	7	10.0%
Disagree	3	4.3%
Strongly Disagree	0	0.0%
Total	70	

it
, (4.3%) of the subjects disagree and about (10.0%) of the subjects were undecided. Having a look at table (4.4) we can see that the majority of the subjects were agree with this statement, about (85.7%) of the sample which revealed the importance of using this technologies in the classroom. Smart Boards are a meaningful addition to the lesson and give the learners a deeper understanding of the meaning within the lesson. The use of the Smart Board technology in the classroom creates a place where learners are able to explore deep meaning of the objectives of the lesson, (M. Ryan, 20013).

Table (4.5) Smart Board technologies promote students motivation for learning:

Smart Board technologies promote students motivation for learning.	**Frequency**	**Percent**
Strongly Agree	27	38.6%
Agree	22	31.4%
Neutral	10	14.3%
Disagree	10	14.3%
Strongly Disagree	1	1.4%
Total	70	100%

Table (4.5) shows that about (38.6%) of the represents were strongly agree that Smart Board technologies promote students motivation for learning, (31.4%) of them were agree with it, (14.3%) of the subjects disagree and about (14.3%) of the subjects were undecided and (1.4%) of the subjects were strongly disagree. Having a look at table (4.5) we can see that the majority of the subjects agree with this statement, about (70%) of the sample.

Table (4.6) Smart Board technologies facilitate meaningful interaction between students-students and teachers-students:

Smart Board technologies facilitate meaningful interaction between students-students and teacher-students.	**Frequency**	**Percent**
Strongly Agree	32	45.7%
Agree	28	40.0%
Neutral	7	10.0%
Disagree	3	4.3%
Strongly Disagree	0	0.0%
Total	70	100%

Table (4.6) shows that about (45.7%) of represents were strongly agree that that Smart Board technologies facilitate meaningful interaction between students themselves and their teacher.(40.0%) of them were agree it, (10.0) of the subjects were undecided while (4.3) of the subjects were disagree. Having a look to table (4.6) we can see that the majority of the subjects were agree that this technologies facilitate and promote students' interaction in the classroom while it is lacked in the traditional classroom.

Category Two: The challenges and barriers that prevent teachers to use Smart Board/IWB technologies effectively in the classroom.

Table (4.7) I think the lack of professional training prevent teachers from using Smart Board effectively:

I think the lack of professional training prevent teachers from using Smart Board effectively.	Frequency	Percent
Strongly Agree	40	57.2%
Agree	20	28.6%
Neutral	5	7.1%
Disagree	5	7.1%
Strongly Disagree	0	0.0%
Total	70	100%

Table (4.7) shows that about (57.2%), of the represents were strongly agree that the lack of professional training prevent teachers from using Smart Board technologies effectively, (28.6%) of them were agree with it. (7.1%) of the subjects disagree and about (7.1%)of the subjects were undecided. Having a look at table (4.7) we can see that the majority of the subjects agree with this statement. Providing meaningful professional development will improve the lessons taught in the classroom. Teacher professional development provides the needed information for teachers to connect strategies and learning opportunities for student learning in the classroom, (Berger, 2014).

Table (4.8) Teachers need to be equipped with hardware and software technologies:

Teachers need to be equipped with hardware and software technologies.	Frequency	Percent
Strongly Agree	39	55.8%
Agree	21	30.0%
Neutral	5	7.1%
Disagree	4	5.7%
Strongly Disagree	1	1.4%
Total	70	100%

As displayed in table (4.8), (55.8%) of respondents were strongly agree and (30.0%) were agreed that teachers need to be equipped with software and hardware. Only (7.1%) were neutral and (7.1%) were disagreed. This reflects the importance of software and hardware knowledge. This result indicates that when this technologies enter the classroom, teachers must master hardware and software technologies. Teachers need time for experimentation with the technology tools (M Rayan, 2011).

Table (4.9): Teachers need to be familiar with Smart Board technologies:

Teachers need to be familiar with Smart board technologies.	**Frequency**	**Percent**
Strongly Agree	37	52.8%
Agree	23	32.9%
Neutral	5	7.1%
Strongly Disagree	3	4.3%
Disagree	2	2.9%
Total	70	100%

It is clear from table (4.9) above that (52.8%), of the respondents were strongly agree and (32.9%) were agree that teachers need to be familiar with Smart Board technologies. Only (4.3%) of the respondents were disagree and (2.9%) were strongly disagree while (7.1%) were neutral.

Integrating Smart Board technologies into the classroom can be a difficult task for teacher, so they need to be familiar and proficient in using this technologies. A professional development opportunities should focus on the needs of the teachers, (Singh,2013). Successful professional development occurs when teachers are satisfied with the learned material and then used as part of the teacher toolbox in the classroom, (Winzenried &Lee, 2012).

Table (4.10) Smart Board is available for teaching in my school:

Smart Board technology is available for teaching in school.	**Frequency**	**Percent**
Strongly Agree	2	2.9%
Agree	15	21.4%
Neutral	7	10.0%
Strongly Disagree	17	24.3%
Disagree	29	41.4%
Total	70	100%

Table (4.10) indicates that Smart board technology is not available for teaching at most secondary schools. About (2.9%) of the sample strongly agree that Smart Board technology is available at schools (21.4%) of them agree with the statement, (24.3%) of the sample disagree with it, about (41.4%) of them strongly disagree and those were undecided represent (10.0%) of the sample. According to figure (4.10) above, the majority of the sample were strongly disagree that Smart Board technology is available for teaching in their schools. According to this result, it is necessary to convince Ministry of Education and teachers for the importance of the availability of the Smart Board/IWB technology and also for the importance of professional training for the uses of this technologies.

Table (4.11) Smart Board costs hinder its uses in education:

The costs of Smart Board technology hinder its uses in education.	Frequency	Percent
Strongly Agree	25	35.7%
Agree	23	32.9%
Neutral	7	10.0%
Strongly Disagree	14	20.0%
Disagree	1	1.4%
Total	70	100%

Table (4.11) shows that the majority of the samples were agreed that the costs of the Smart Board hinder its uses in education, (35.7%), of the samples were strongly agree and (32.9%) of them were agree with the statement, (20.0%) of the sample were disagree with it. About (1.4%) of them were strongly agree and those who were undecided represent (10.0%).

Discussion

This study investigated the importance of using Smart Board Technology in teaching and learning at Sudanese classrooms. The findings of the study revealed that most of the teachers have positive attitudes towards the use of Smart Board/IWB technology in learning and teaching. Although there seems some problems with using Smart Board/IWB technology in classroom such as lack of technologies knowledge, lack of Smart Board/IWB technology training and its high costs, positive attitudes have promised Sudan recently. The findings show that most of the teachers are not sufficiently trained to use Smart Board/IWB technology effectively in teaching situations. Therefore it is necessary to convince Ministry of Education and teachers for the importance not only of the availability of Smart Board/IWB technology but also the professional training for the uses of this technologies. This suggests the need for effective guidance, support and training in integrating Smart Board/IWB technology into teaching through more hands-on and direct practical experience. It can be understood that there is a need for ongoing training and assistance in helping teachers to better employ Smart Board/IWB technology in teaching situations. The findings of this study revealed that Smart Board/IWB technologies are not available in most of the schools. The results revealed that most of the teachers are not prepared to use Smart Board/IWB technologies in teaching and learning situations.

5. Conclusion and Recommendations

The results of this study revealed that teachers have positive attitudes towards the use of Smart Board/IWB technology in learning and teaching situations. The results clarified that the majority of respondents agreed that Smart Board/IWB technology is an important teaching tool in EFL classroom.

The findings showed that teachers are not sufficiently trained to use Smart Board/IWB technology in teaching. Most teachers agreed that regular in-service training in using Smart Board/IWB technology is desirable. A great number of the respondents disagreed that the Ministry of Education provides Smart Board/IWB technology to schools. The findings showed that teachers are not well prepared to use Smart Board/IWB technology in teaching and having basic knowledge in using Smart Board/IWB technology is not enough. The results also showed that the Ministry of Education dose not equip most of secondary schools with enough Smart Board/IWB technologies.

Based on the findings of this study, the following recommendations are suggested:

1. Technology should be an integrated part of the whole learning and teaching environment.
2. Support and regular in-service computer skills training for teachers should be offered.
3. Support and regular in-service Smart Board technologies training should be offered.
4. In order to facilitate meaningful use of Smart Board/IWB technology in schools, some changes should be done, such as culture of school learning, pedagogical practices and educational policy (policy makers should seek and foster these changes).

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