

INTERNATIONAL EDUCATIONAL TECHNOLOGY CONFERENCE IETC2012

Teachers' Perceptions Regarding the Benefits of Using the Interactive Whiteboard (IWB): The Case of a Saudi Intermediate School

Essam Bakadam^{a*}, Mohammed J. Sharbib Asiri^{a,b}

^a Ministry of Higher Education, Riyadh, Saudi Arabia

^b University Putra Malaysia, Faculty of Educational Studies, Malaysia

Abstract

The aim of this study is to examine the views of teachers of intermediate school on the use of the Interactive White Board (IWB) as an instructional tool in the classrooms. A questionnaire was distributed to fifty teachers, and three teachers were interviewed at Prince Sultan Intermediate School in order to determine their views on the use of the IWB. Findings revealed that most teachers believe that IWB constitutes an effective and convenient way to deliver the learning content and that it increases the level of classroom interaction which in turn increases the learning experience. However, the result of study also revealed that the majority of teachers use the IWB as an overhead projector and for internet research but do not make use of the many other advantageous features of the IWB. Based on the fact that the teachers' reluctance to utilize all of the available IWB features stems from their limited knowledge of all that IWB technology has to offer, it is recommended that teachers using the IWB in class undergo more training so that they can become fully aware of how to optimize its use. It is also suggested that the number of students in the classroom is reduced to allow for more interactive learning.

© 2012 Published by Elsevier Ltd. Selection and/or peer-review under responsibility of The Association Science Education and Technology

Keywords: Teachers' Perceptions; Instructional Tool; Interactive Whiteboard (IWB); Intermediate Schools

1. Introduction

The Interactive Whiteboard has become an increasingly familiar instructional tool in modern day classrooms where new information and communications technologies are exploited in numerous ways to enhance teaching and learning. The Interactive Whiteboard constitutes a digital and interactive tool and is defined by BECTA (2003) as a touch-sensitive board that can be connected to a computer and a projector displaying images from the computer screen onto the board. The computer can be directed by touching the board directly or via a particular pen.

* Corresponding author. Tel.: +60126264796; fax: +0-000-000-0000.
E-mail address: essam-12@hotmail.com.

The Interactive Whiteboard or IWB possesses a number of built-in applications and capabilities designed to improve the quality of teaching and learning in the classroom. For example, it allows the teacher to run video clips and animations to enhance the learners' understanding of concepts, incorporate web-based resources, demonstrate a piece of software, display the learners' projects during class presentation, edit textual sources, monitor penmanship exercises, and save notes written on the board for future use.

Since its creation by SMART Technologies Inc. in 1991, it has become a valuable yet cost intensive instructional tool that many learning institutions dream of having. The multiple features of the IWB allow for engaging and thus meaningful learning of curriculum contents. For instance, in Science it can be used to explain abstract scientific phenomena such as solar system, eclipse and static electricity, and in Mathematics the area of shapes (Latham, 2002). With the help of the Interactive White Board learners are able to imagine, describe, and model solutions to a problem. English Language instruction can be enhanced by presenting English vocabulary and linguistic fundamentals. In this respect Gerard and Widener (1999) suggested that the instructor can use the IWB to project a website and overwrite it to emphasize specific details.

The IWB also possesses multiple presentation tools such as spotlight, snapshot, reveal, and sharing that allow a class to engage more successfully in all forms of collaborative work which can be captured and shared. It also has the capability to record learning sessions which teachers can later share with other learners and colleagues for reviewing and discussion purposes. Its built-in special software enables teachers to write, draw and annotate on its surface directly onto the board. Electronic files of lesson contents can be saved and used later for repeated sessions, and the files can be mailed as attachments to absent students. The software designed for the IWB has a built-in library of images on different subjects which teachers can use in their lessons. In summary, the IWB increases the level of interactivity taking place in the class by enabling students to draw and write on its surface or drag objects and icons.

Many studies done over the past decade document the social and academic benefits of using IWBs in the classroom. In a recent study, Blue and Tirota (2011) (do not find) reported that the whiteboard creates an interactive class and motivates learners to remain engaged in the lesson. It also helps increase the learners' motivational level, particularly those with learning disabilities. By allowing learners to learn in different ways from their peers, the IWB also helps learners more responsive to different learning style to learn more effectively (Bell, 2002). This as a result will increase their motivation. Visual learners can view their work projected and receive an immediate feedback on it. Auditory learners can use different software to interact with the board. Tactile learners can use diverse coloured pens to write on the board and highlight significant ideas and concepts.

The Prince Sultan Intermediate School in Jeddah is one of the more advantaged schools in Saudi Arabia which could afford equipping its classrooms with IWBs. The school introduced IWB-assisted teaching in 2007 to enhance the quality of teaching and learning experiences. It has replaced the traditional blackboards and is used by the teachers to explain contents, record their instruction and post learning materials the learners can review at a later time. The Prince Sultan Intermediate School was chosen for this study because it possesses a record of high academic achievement and educational standards whose students leave as well rounded and accomplished individuals. It's also one of the few schools in Jeddah which utilize the smart board. It's School of Technology proud itself of up-to-date labs utilizing the most current software applications and equipment suited for industrial instruction. The school's facilities are designed to provide students with the opportunity to experience state-of-the-art technology with the purpose of preparing them for technical and management careers, including more than 25 interactive smart boards installed in most of the classrooms. However, the successful implementation of technologies as instructional tools strongly depends on the perceptions of educators towards these innovations

(Coulter, 2004; Teo, 2008; Zhao, Pugh, Sheldon & Byers, 2002). This paper examines the perceptions of teachers at Prince Sultan Intermediate School in Saudi Arabia on the use of the Interactive White Board (IWB) as an instructional tool in their classrooms.

2. The Study

To achieve the objective of this study, it is employed a mixed methodological design which applied both quantitative and qualitative methods to collect data.

2.1 Part I: Survey

The quantitative part of the study was based on a questionnaire that explored the perceptions the teachers of the Prince Sultan Intermediate School entertained in respect to the benefits of using the IWB in their classrooms. A ten-item questionnaire was developed to identify the teachers' perceptions about the benefits of using the IWB in instruction. These ten items were developed based on a comprehensive review of the existing literature. A five-point Likert scale that indicated degrees of agreement (from strongly disagree to strongly agree) was used.

2.1.1 Respondents

The study was conducted at the Prince Sultan Intermediate School with a population of 50 teachers. The whole population was taken for this study. Since the school is a boys' school, only male teachers are employed and thus all respondents were male (100%; $n = 50$). Most respondents (40%) were between 30 to 39 years of age. On average, the sample was relatively young as 70% of the teachers were below 50 years of age.

2.1.2 Analysis of Survey Data

The data obtained from the questionnaire were coded into SPSS Version 11.0 for analysis. Descriptive statistics in the form of frequencies and percentages were used to describe the respondents' perceptions of the benefits of using the IWB in the classroom.

2.2. Part II: The Interviews

The qualitative part of the study was based on interviews with three selected teachers. These interviews were conducted to examine in detail how the teachers used the IWB in the classroom and in order to explore ways by which to improve the teachers' utilization level of the tool.

2.2.1 The Interview guide

A set of interview questions were prepared to guide the interview process and to probe deeper into the participants' views. Each interview lasted for about 30 minutes. Before the interviews were conducted, participants were asked to give their consent to participate in the study, either by in written form or verbally. All the interviews were conducted in Arabic and later translated into English. The interviewees' responses were recorded.

2.2.2 Interview Protocol

A 6-item semi-structured interview guide was used to structure the interview. The interview guide was divided into two broad categories: demographic information of the respondents (five items) and the teachers' observations on the IWB as an instructional tool (six items). In addition to responses to the structured questions, the participants were encouraged to give additional comments or share additional experiences. Table 2.1 presents the open-ended questions used in the semi structured interview protocol.

Table 2.1 Interview Protocol

No	Questions
1.	What do you think of the IWB as an instructional tool for your course(s)?
2.	In your opinion, how effective is the IWB in delivering your course contents?
3.	In your opinion, do students achieve the desired learning outcomes when you use the IWB?
4.	What are the advantages of using the IWB in teaching your course(s)?
5.	Would you support continuing the current practice of using the IWB in teaching and learning?
6.	What are your suggestions to improve the current use of IWB?

2.2.3 Interview Participants

The interviewees consisted of three teachers from the school looking back at between six to twenty five years of teaching experience. The three participants were chosen because of their experience in using the IWB and because they were known to be very enthusiastic about using modern technology in their teaching.

2.2.4 Analysis of Interview Data

A written version of the full scripts was produced by way of "transcribing" the qualitative data. Thematic content analysis was used to categorize the generated data. The study used Glaser and Strauss's (1967) method of constant comparison for coding qualitative data. The analysis identified and categorized all points that the participants responded to using several iterations to complete the process. After reading the transcripts to obtain an overall idea of the interviewees' responses, each line was assessed in order to generate levels that reflected the research's initial coding. This enabled the researcher to develop a general category scheme of the participants' responses.

After developing the general category schemes, the researcher identified individual themes by sorting the initial schemes into concrete categories which reflected similar responses regarding the participants' perception on the usage of IWB in instruction and arranged them according to separate categories.

3. Results

3.1 Prince Sultan Intermediate School Teachers' Perception of the Benefits of the IWB

Based on the overall evaluation of the teachers' responses contained in the survey, the majority were very positive about the IWB as an instructional tool. The teachers' responses to all the items on the IWB's benefits are presented in Figure 4.1.

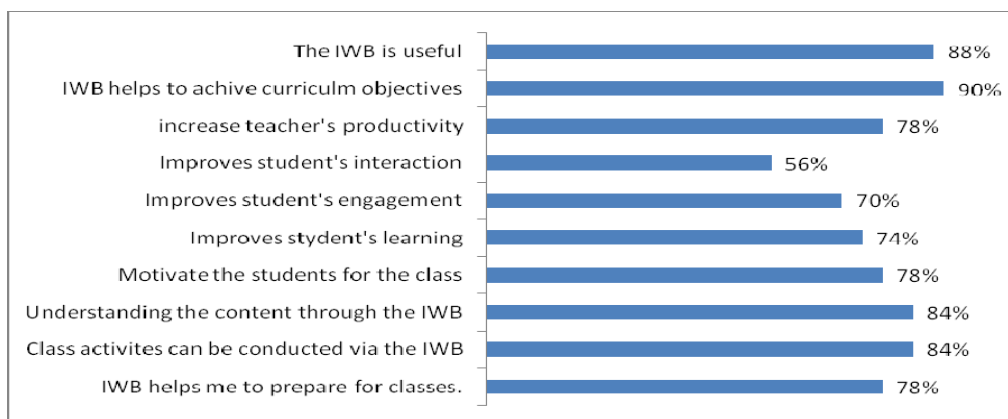


Figure 4.1: The teachers' perceptions toward the IWB's benefits

The percentages of the recorded positive responses are listed in Table 4.2. The item receiving the highest percentage of agreement was "The IWB helps me to deliver curriculum contents," where 90% of the teachers agreed with the statement. Approximately 88% of the teachers agreed that they found the IWB was a useful tool. 84% of them agreed that class activities could be conducted well via the IWB and 78% agreed that the IWB helped them to prepare for classes, and 78% agreed that the IWB helped motivate the students. However, only 56% of the teachers agreed with the statement that the use of IWB helped improve student behaviour during class.

Overall, the majority of the respondents viewed the IWB as a good instructional tool. Hence, most of them were in support of teaching and learning with the IWB. More detailed information on the teachers' perceptions of the IWB as a mode of course delivery is presented in Table 4.2.

Table 4.2 Teachers' Perceptions of the Use of IWB in Teaching and Learning

Statements on the advantages of the IWB		Responses in %				
		SD	D	N	A	SA
1.	The IWB helps me prepare for classes.	-	2.0	20.0	52.0	26.0
2.	In-Class activities can be conducted well via the IWB.	-	2.0	14.0	60.0	24.0
3.	The Students can understand the content well through the IWB.	-	2.0	14.0	54.0	30.0
4.	The IWB helps motivate the students in class.	-	6.0	16.0	42.0	36.0
5.	Using the IWB improves the students' learning progress during class.	-	2.0	24.0	44.0	30.0
6.	Using the IWB improves the students' engagement during class.	2.0	2.0	26.0	46.0	24.0
7.	Using the IWB improves the students' behaviour during class.	4.0	14.0	26.0	28.0	28.0
8.	Using the IWB increases the productivity of the class.	-	2.0	20.0	46.0	32.0
9.	The IWB helps me deliver curriculum objectives.	-	0.0	10.0	50.0	40.0
10.	I found the IWB to be useful.	0.0	4.0	8.0	44.0	44.0

SD=Strongly Disagree; DA= Disagree; NS= Not Sure; A=Agree; SA=Strongly Agree

3.2 Specific Usage of the IWB at the Prince Sultan Intermediate School

All three interviewed participants used the IWB in the classroom. However, it was noted that despite the numerous applications of the IWB, the three teachers limited their use of the IWB to only three main purposes. They used the IWB to serve as an overhead projector to present the learning content in the form of power point presentations, in simple learning activities such as filling in the blanks, and to retrieve information from the internet

3.3 Effectiveness and Advantages of the IWB as an Instructional Tool

The three interviewed teachers agreed that the IWB helped them reduce the time needed in the preparation of their lessons and eventually helped in cost containment. They also supported the overall usage of IWB for learning and teaching purposes and indicated that this innovative tool ensured a more effective mode of teaching compared to the conventional blackboard.

The respondents agreed that the introduction of the IWB had not completely changed their teaching but admitted that it had considerably improved it. Furthermore, the teachers noted that overall class participation had definitely increased and that class time was being spent more productively. The above facts supported Smith's (2000) findings that the effectiveness of the IWB in the learning process depends on the educator's creativity to ensure that learners are motivated and engaged.

4. Discussion and Conclusion

It can be asserted that the IWB constitutes an effective instructional tool that has the power to engage and motivate students in the learning process. Because engagement in the lesson is an essential component for student achievement, the IWB can help improve the academic performance of learners and their behaviour in class. It can be used to elicit more productive responses to classroom instruction and to stimulate active participation in class. The IWB also encourages the involvement of those students who

are normally reticent and reluctant to actively participate in the group's learning process (Painter, D. & Whiting, B).

Overall, the results showed that the teachers of the Prince Sultan Intermediate School entertained a positive attitude towards using the IWB indicating that it was enjoyable as an instructional tool and technological adjunct to classroom lessons.

It is suggested at this point that a complete study should be conducted to look into the technical difficulties encountered by both learners and teachers. In addition, future studies may focus on comparing the cost-effectiveness of IWB and the traditional method of delivery via the whiteboard by evaluating the students' learning gains. Additional studies may also examine the adoption rate and the variables affecting a successful implementation of IWB such as students' capability and readiness to learn, and the teachers' ability to make optimal use of the IWB.

References

- Becta (2003). What the research says about Interactive Whiteboards. Retrieved March 23, 2010, from http://smartboard-hat.wikispaces.com/file/view/wtrs_whiteboards.pdf
- Bell, M. (2002). Why use an Interactive Whiteboard? A baker's dozen reasons! *Teachers. Net Gazette*, 3(1) January 2002. Retrieved March 11, 2010 from: <http://teachers.net/gazette/Jan02/mabell.html>
- Coulter, B. M. (2004). Utilization of instructional technology: Towards a conceptual model for teacher education (Doctor of Education, North Carolina State University). from ProQuest Dissertations & Theses. (AAT 3120224)
- Elfreda Blue, Rose Tirotta. TechTrends*. Washington: May 2011. Vol. 55, Iss. 3; p. 31 (8 pages)
- Gerard, F., & Widener, J. (1999). A SMARTer Way to Teach Foreign Language: The IWB Interactive Whiteboard as a Language Learning Tool. Retrieved July 5, 2011, from <http://edcompass.smarttech.com/en/learning/research/SBforeignlanguageclass.pdf>.
- Glaser, B. & Straus, A. (1967). *The discovery of grounded theory*. Chicago: Aldine.
- Latham, P. (2002). Teaching and learning primary mathematics: The impact of Interactive Whiteboards. Retrieved March 20, 2011, from www.beam.co.uk/pdfs/RES03.pdf.
- Painter, D. & Whiting, B. (2005). The use of an interactive whiteboard in promoting interactive teaching and learning. Retrieved April 6, 2010, from www.vste.org
- Smith, A. (2000). Interactive Whiteboard Evaluation. Boston Spa Comprehensive School: Miranda Net. Retrieved April 2, 2011 from <http://www.mirandanet.ac.uk/pubs/IWB.htm>
- Teo, T. (2008). Pre-service teachers' attitudes towards computer use: A Singapore survey. *Australasian Journal of Educational Technology*, 24(4), 414-424.
- Zhao, Y., Pugh, K., Sheldon, S., & Byers, J. (2002). Conditions for classroom technology innovations. *Teachers College Record* 104 (3), 482-515.