
ASSESSMENT OF THE TEACHERS ATTITUDE IN USE OF SMART BOARD TECHNOLOGY SYSTEM

P.B.REDDY, MANSOOR KHAN

Abstract: Interactive whiteboards (IWB) or smart boards are regarded as one of the most revolutionary instructional technologies for various educational levels. They are gradually being seen as an essential requirement for teaching in schools and colleges. Several studies highlight the impact of this new technology to engage the students in class room effectively. This study examines the perception, usage and behaviors associated with promising IWB features in practical settings. This study also sought to determine if more frequent use of interactive whiteboards by teachers led to improved student response and engagement. The main goal of this paper is to evaluate both teachers and students perceptions and their use of IWBs. A questionnaire was developed based on an extensive literature review as well as related instructional theories and models. The questionnaire consisted of questions about demographics, usage, and teachers' perceptions related to IWBs. For this study, 44 teacher-participants, who have actively used IWBs for instruction, were selected from various educational levels (from grade 6 to 12). The results show that teachers believe that IWBs can be used for different subject domains. Results also indicated that more frequent use of the IWBs by teachers did lead to improved student response and engagement.

Keywords: Smart Boards, new technology, Students performance, teachers.

Introduction: Smart Boards are revolutionizing today's classroom. Using these exciting interactive whiteboards (IWB), you can create multimedia lessons that engage learners and address their diverse needs. Interactive whiteboards (IWB) or Smart boards are powerful learning tools as they enable teachers to instruct using the latest technology, with access to the internet, videos, and educational software [1].

Earlier studies in various contexts such as different countries, across educational levels, and subject domains, demonstrate teachers' positive perceptions about IWBs. However, in some studies, teachers reported several IWB issues that may dramatically decrease the effectiveness of IWBs in their courses [2]. As a crucial issue, many studies address teachers' insufficient IWB knowledge and experiences. One solution is to provide in-service training focusing on effective IWB strategies. Several studies stress that teachers often get limited IWB training from suppliers that only covers basic IWB skills[3], [4]. Likewise, teachers may improve their IWB skills by themselves or by collaborating with colleagues [5].

The majority of studies investigated teachers perceptions by means of questionnaires focusing on particular variables such as attitudes like motivation, satisfaction, interaction, acceptances, and technical issues of IWB use [2],[6]. In addition to perceptions, current practices need to be measured and analyzed to understand teachers' technology use. Addressing the issues regarding the evaluation of IWB use, we conducted this study by means of an original instrument on a particular group of IWB-experienced teachers who were teaching at different

educational levels and various disciplines in Nagda and Ratlam (Western Madhya Pradesh, India).

With this context, this study focuses on the multiple component investigation of IWBs based on teachers' perceptions on their current IWB use including frequencies of usage, preferred IWB features, status quo of IWB skills and training as well as perceptual benefits of IWB in classroom teaching and learning.

Method: For this study, a quantitative descriptive research method was employed to investigate the perceptions of teachers regarding the current state of IWB use in schools. Descriptive research methods are one of the most preferred and effective methods to show and interpret the understanding of participants' beliefs about a certain issue or phenomenon [7]. Data was collected from teachers via a questionnaire developed specifically for this study.

First section of questionnaire contains questions related personal demographic data. All participants were college educated and 59.8% of them were male. The majority of participants were less than 36 years old (90.8%) and the majority of all the teachers (88.5%) had been teaching for less than ten years. Teachers' responses were examined in terms of their fields of teaching by categorizing them into six areas: Computer Science, Foreign Language (English), Mathematics, Science, Social Sciences, and Language and Literature. Demographic questions are gender, age, internet connection, place, and how long have participant connected to internet and using smart boards. Second section of questionnaire contains 15 sub scale and 64 questions. First four subscales named as familiarity, online data collection, connection to hyperlinks etc. were adopted. And last

four sub scales were names as attitude, intensions, personal innovativeness, perceived consequences and adopted form [8]. Questionnaire administered face to face, and researcher visited all classes and explained aim of the study and questionnaire. Finally 56 questionnaire were given to teachers and 50 questionnaire returned from the participants. After checking questionnaire 6 questionnaire were eliminated and finally research carried with 44 questionnaires. Both the primary and secondary data collection methods were considered. The primary data was collected through a questionnaire designed exclusively for the study. Secondary data was taken from Research papers, Journals, Magazines and Websites. Data was analyzed by 't' test.

The initial draft of the questionnaire was distributed for feedback from 10 teachers who were active IWB users across various subject areas, two instructional designers, two language teachers, and two educational science teachers. Revisions were made based on expert opinions. This step was vital to achieve a comprehensible and relevant questionnaire in terms of face and content validity [9].

Results and Discussion: Results obtained from the questionnaire were shown three parts in the table 1,2 and 3.

Part.1 Teachers' IWB use and training: In the first section of the IWB questionnaire, teachers were asked several questions about their use of IWBs in their courses (Tab.1)

		Frequency	Percent (%)
How long have you used an IWB (number of year)?	Less than 1 year	36	21.9
	1-3 year	8	48.5
	More than 3 year	11	6.3
How many hours do you use IWBs in a week?	< 3 hour	5	9
	4-5	5	1
	6-7	18	42
	> 7 hours	21	48
Frequency of IWB use	Sometimes	6	15
	Frequently	17	39
	Always	21	48
How competent you are as an IWB user?	1 (incompetent)	4	9
	2	8	16
	3	15	29
	4	13	20
	5 (professional)	4	9

Part.2. Instructional Effects of IWBs: Teachers responded to the questions related to the instructional effects of the IWB use on teaching and learning (Table 2).

Statements	N	Mean	SD	% of teachers disagreeing/ agreeing with each statement	
				Disagree	Agree
In terms of teaching	172	4.27	.943	5.8	82.6
Q1. IWB helps me to manage instructional time effectively					

Q2.	I think the lessons become more effective with	168	3.90	1.010	10.1	69.6
IWB						
Q3.	IWB facilitates the classroom management for me	158	3.77	.944	9.5	68.4
Q4.	IWB helps my lessons be more interactive	157	3.82	.859	7.6	70.1
Q5.	IWB facilitates discussions on the content in class	158	3.30	.954	17.7	41.8
Q6.	There is no time for my students to get around to	162	2.99	1.098	37.0	34.6
Q7.	IWB provides advantages to me to make course	162	4.41	.701	1.9	91.4
content more visual						
Q8.	The way I give instruction has been changed since I began to use an IWB	172	3.45	1.011	16.9	49.4
Q9.	IWB helps me to use the computer and projector more effectively than before	163	4.12	.837	10	82.8
In terms of learning		174	4.16	.904	2.9	77.0
Q10.	I believe using an IWB helps my students' learning					
Q11.	Using an IWB makes it easier for my students to remember what they learned in class	161	3.73	.908	11.2	64.0
Q12.	My students learn faster when I teach with an IWB	159	3.78	1.017	11.3	65.4
Q13.	IWB helps my students to learn in groups	157	3.57	.975	14.0	58.0
Q14	Using an IWB helps students to learn concepts easier	156	3.79	.878	8.3	69.9

* This negative statement was reverse-coded

Part.3. Motivational effects of IWBs

Table 3. Motivational effects of IWB use: Teachers' general attitudes and opinions related to IWB use were examined for motivational effects of IWBs in terms of either teachers or students (Table 3).

					% of teachers disagreeing/ agreeing with each statement	
Statements		N	Mean	SD	Disagree	Agree
In terms of teacher		172	3.97	.936	7.0	70.3
Q15.	I enjoy teaching with an IWB					
Q16.	Because of using an IWB, I feel myself more prepared for instruction	162	3.73	1.002	11.7	67.9
Q17.	I notice my IWB skills are improving day by day	44	3.90	.861	7.4	75.9
Q18.	Learning how to use an IWB is essential to me	44	4.06	.856	5.6	81.3
Q19.	IWB makes my courses more enjoyable	40	3.83	.875	7.5	67.1
In terms of students		32	3.98	.877	4.3	75.2
Q20.	Using IWB increases my students' interest in class					
Q21.	My students look forward to my using an IWB in class	37	3.08	1.074	29.9	31.8
Q22.	My students focus on my lessons more when I use an IWB	38	3.74	.925	8.7	64.0
Q23.	IWB increases my students' motivation towards the course	41	3.84	.843	6.3	70.0

Table 4. Usability of IWBs % of teachers disagreeing/ agreeing with each statement

Q24.	IWB can be used in all kinds of courses	44	3.90	1.080	12.2	64.5
Q25.	My course content is not suitable with using an IWB*	42	3.79	1.067	14.7	67.1
Q26.	IWB can be used with various instructional methods and techniques	37	3.95	.830	3.8	74.5

* This negative statement was reverse-coded

All participants stated that they had a portable IWB in their classrooms. A small number of teachers (5.2%) reported using IWBs less than one hour per week while the majority of teachers (80.5%) reported using IWBs more than seven hours per week. When asked to select one of three levels for their IWB use (sometimes, frequently, or always), teachers mostly selected either 'frequently' (42.5%) or 'always' (36.8%) while 'sometimes' had the lowest rate (20.7%). Using an IWB skills level framework (Beauchamp, 2004),

teachers graded themselves as IWB users from incompetent (1) to professional (5). The majority of teachers described themselves as either average (39.1%) or just above average (45.4%) levels while a few teachers acknowledged themselves as either professional (4.6%) or incompetent user (4.6%). Teachers' perceptions and attitudes about the IWB use were studied looking at three main themes: instructional effects, motivational effects, and usability. The first theme is related with the effects of

IWBs on teaching and learning processes and also addresses the advantages of IWBs. Teachers can design and use visually attractive materials compatible with an IWB; moreover, they can enhance their presentations, before or during instruction, with visual effects including highlighting, coloring, drawing, zooming, or can import visual objects from other sources (e.g., web-pages, Paint) via using screenshot or copy-paste feature [10]. Such presentations help teachers to draw student attention to course content and also facilitate student retention of what they learned and facilitate student understanding of concepts [8]. Those benefits are essential elements for students' learning; which may explain why teachers overwhelmingly agreed (77%) that they believed that using IWBs helps their students' learning.

The agreement level for 'IWB facilitates discussions on the content in class' reveals teachers' neutrality about IWB effect for class discussions. BECTA [11] suggest that an essential IWB strategy would include using IWBs for initiating discussions about the course content. Teachers can use an IWB to share content for a class or a small group discussion. An IWB can be used for students to share their ideas in a discussion setting. Teachers are expected to improve their skills in terms of effectively using IWB strategies and, to promote their instructional activities based on the promises of IWBs [12].

Levy [8] and Tozcu [13] suggested that using an IWB reduces the time spent recreating instructional materials and content since teachers have an electronic copy from the IWB were as they do not have an electronic copy with traditional boards. In addition, teachers can easily interact and communicate with students using an IWB and keep students engaged during a lesson. This is regarded as a major benefit of IWBs in terms of classroom management [11]. However, teachers who only present course content with an IWB in the same manner as a data projector may not give students an opportunity to sufficiently use it during instruction. Such kinds of teacher-centered practices may lead to a decrease in students' attention and motivation. Aligned with constructivist perspectives, teachers can encourage students to actively participate in the learning process by working on the IWB individually or in groups [4].

On the other hand, most teachers agreed that using an IWB is motivating, engaging, and enjoyable for both teachers and students. This finding is parallel with other studies [14] [13] [4]. Another key finding is that most teachers (75.9%) strongly agree that they are aware of the continuous improvement of their IWB skills. This finding indicates that one of the key sources for teachers IWB skill development is coming

from their own experience. Furthermore, teachers agreed on the importance of learning to use an IWB by reporting how valuable the IWB is for their instruction.

For the usability theme, teachers were asked to indicate whether IWBs can be used in different contexts and ways. It is evident that teachers' perceptions regarding to usability of IWBs in any kind of course and course content are positive. Three quarters of the teachers agreed that IWBs can be used with various instructional methods and techniques. These findings suggest that IWBs are not tied to a specific context. Teachers who participated in this study have positive attitudes about the usefulness and usability of IWBs. These attitudes are essential indicators in terms of the acceptance and the prediction of effective use of this technology.

Similarly, the frequency and the duration of technology use are other essential indicators for the acceptance of technology. Several significant differences were found in this study regarding the frequency and duration of teachers' IWB use. Expectedly in this study, teachers who frequently used an IWB were more likely to have a higher level of IWB competency and more positive perceptions towards an IWB use as suggested by Moss et al. [15]. As Glover et al. [16] stated, 'teachers need time to develop their technological fluency, apply educational principles to the available materials or to the development of materials, and then to incorporate the IWB seamlessly into their teaching. These findings also confirms the importance of teachers' individual efforts to achieve higher-level IWB skills and knowledge as emphasized in the findings regarding the source of IWB skills and knowledge.

Concerning teachers' effective use of any technology, several issues are associated with each other such as acquiring appropriate skills and knowledge, perceived efficiency, and usage frequency of the technology. Even after a comprehensive IWB training session, teachers who do not sufficiently use an IWB and do not practice what they have learned may have lost their initial IWB skills and knowledge as well as their confidence over time [17]. Hence we suggest that teachers need continuous training sessions to improve and also maintain such skills. It is clear that teachers in this study need training particularly on using effective instructional strategies for IWB-assisted courses in order to transform their pedagogy into more student-centered, social and interactive learning. To achieve this, teachers should be supported to continuously use IWBs in their classrooms by working with their peers in order to improve their IWB skills and knowledge. Furthermore, effective IWB implementations shared

by groups of teachers may increase the awareness of teachers in terms of effective IWB strategies as well as their positive attitudes towards using the IWB in their courses. Teachers can find just-in-time solutions to their IWB problems. These kinds of practice help teachers to quickly overcome the winner barrier. [12].

Limitations: This study, which represents a snapshot of IWB use, has several limitations that may provide guidance for future research. The questionnaire developed specifically for this study considering the existing literature and associated theories and models. This instrument may be exposed to confirmatory factor analysis to examine the fitness of themes with various fit-indexes [18]. Finally, similar research may be conducted by considering additional IWB factors such as issues of IWB-assisted courses and effects of receiving IWB trainings on the IWB use.

Conclusion: This study provides a solid example of IWB integration and IWB effects on the teaching and learning process, in a rapidly developing country. It should be noted that this work neither reflects the status quo of IWB use in general, nor investigates the challenges and technical issues of IWBs. Rather, it attempts to uncover the more realistic effects of using IWBs for teaching and learning by recruiting active IWB users from various fields.

The findings from this study demonstrate the key characteristics and strategic requirements of effective

IWB use based on the perceptions of teachers who were active IWB users. For better understanding and interpretation of teachers' perceptions, it is important to represent their background, as shown in this study, regarding IWB use including the frequency of IWB use, IWB competency, sources of IWB skills, and demographics. Our findings indicate that teachers were not able to design a social constructivist environment where students could be involved in active and collaborative learning process using IWBs. Interestingly, most teachers believed that IWBs provided time efficiency for their instruction. In addition, most teachers confirmed that their IWB skills were improved as they used the IWBs and stated that they learned IWBs mainly from their colleagues. Therefore, it seems critical to support teacher IWB collaborations.

It is expected that the findings of this study may help teachers and researchers who are interested in effective IWB use and also administrators who are responsible for integration of ICT or organizing IWB training sessions. IWBs have the potential to engage students' in various activities thereby supporting their learning and development. However if we are to expect students to improve their learning in the classroom, teachers need to develop their technology skills and positive attitudes though continued collaborative training and practice.

References:

1. Marzano, R, Evaluation study of the effects of Promethian Activ classroom on student achievement. Retrived, May, 2010.
http://www.prometheanworld.com/upload/pdf/Final_Report_on_ActivClassroom_%282%29.pdf.
2. Somyürek, S., Atasoy, B., and Özdemir, S, Board's IQ: What makes a board smart? Computers & Education, 53(2), 368- 374.2009.
3. Glover, D., and Miller, D, Running with technology: the pedagogic impact of the large-scale introduction of interactive whiteboards in one secondary school, Journal of Information Technology for Teacher Education, 10(3), 257-276.2001.
4. Smith, H. J., Higgins, S., Wall, K., and Miller, J, Interactive white boards: Boon or bandwagon? A critical review of the literature. Journal of Computer Assisted Learning, 21(2), 91-101.2005.
5. Shenton, A., and Pagett, L, From 'bored' to screen: The use of the interactive whiteboard for literacy in six primary classrooms. *Literacy*, 41(3), 129-136.2007.
6. Gall, M., Gall, J., and Borg, W. Educational research: An introduction. Boston, MA: Pearson Education, Inc.2003.
7. Painter, D. D., Whiting, E., and Wolters, B. The use of an interactive whiteboard in promoting interactive teaching and learning. VSTE Journal, 19(2), 31-40.2005.
8. Levy, P, Interactive whiteboards in learning and teaching in two Sheffield schools: A developmental study. 2002. Retrieved September 6,2009.<http://www.shef.ac.uk/eirg/projects/wboards>.
9. Black, J. A., and Champion, D. J, Methods and issues in social research. New York: John Wiley & Sons, Inc.1976.
10. Türel, Y. K, Developing teachers' utilization of interactive whiteboards. In D. Gibson & B. Dodge (Eds.), Proceedings of aSociety for Information Technology & Teacher Education International Conference 2010, Chesapeake, VA: AACE. (pp.3049- 3054).2010.
11. Becta, Teaching interactively with electronic whiteboards in the primary phase. Retrieved, October, 18, 2009.
<http://publications.becta.org.uk/download.cfm?resID=25918>.2006.

12. Beauchamp, G. and Prakinson, J, Beyond the 'wow' factor: Developing interactivity with the interactive whiteboard.2005.
13. Tozcu, A, The use of interactive whiteboards in teaching non roman scripts. Computer Assisted Language Learning, 21(2), 143-166.2008.
14. Bell, M. A, Teacher feature: Why use an interactive whiteboard? A baker's dozen reasons! Teachers.net Gazette, 3(1). Retrieved November 22, 2009, from <http://teachers.net/gazette/JANo2/mabell.html>. 2002.
15. Moss, G., Carrey, J., Levaic, R., Armstrong, V., Cardini, A., and Castle, F, The interactive whiteboards pedagogy and pupil performance evaluation: An evaluation of the schools whiteboard expansion (SWE) project: London Challenge. Institute of Education, University of London. Research report no: 816.2007.
16. Glover, D., Miller, D., Averis, D., and Door, V, The evolution of an effective pedagogy for teachers using the interactive whiteboard and modern languages: An empirical analysis from the secondary sectors. Learning, Media and Technology, 32(1), 5- 20.2007.
17. Slay, H., Siebörger, I., and Hodgkinson-Williams, Interactive whiteboards: Real beauty or just "lipstick"? Computers & Education, 51, 1321-1341.2008.
18. Anderson, J. C., and Gerbing, D. W, Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin, 103(3), 411-423.1988.

PG Department of Zoology, Govt. PG. College, Ratlam, M.P
Department of commerce, Government College,
Nagda, Ujjain. M.P
