

Pedagogy with Interactive Whiteboards: Perspectives of Business Education Teachers

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Abstract

This study examined the perceptions of Botswana secondary school business education teachers on the use of interactive whiteboards (IWBs) in the classroom. It focused on teachers' confidence and competence levels on use of IWBs, the attitudes towards the use of IWB as a tool of instruction, and their perceptions on the impact of IWBs on students' learning. The findings from the study suggest that a majority of teachers were confident and competent in the use of computers, and thus could confidently integrate them into their classroom teaching. Furthermore, teachers indicated that they were fairly competent in the use of IWBs because they received sufficient on-the-job training which was mostly from suppliers of IWBs, and to a lesser extent from professional development workshops and self-training. Despite their professed competency, most teachers were neither confident nor comfortable integrating IWBs in their teaching practices. As pedagogical tools, most teachers perceived IWBs as having a positive impact on student learning. They purported that IWBs increased learner interest, engagement and motivation. They also believed that they contribute to making lessons become more interactive and action-oriented through heightened student participation in discussions and other classroom activities. As educators are continuously seeking innovative ways to make learning interesting, interactive and actively engaging for learners, this study shows that IWBs wield the potential to achieve this. It also highlights the need to invest in training teachers on the effective use of IWBs to boost their competency levels, confidence and attitudes towards their use in classroom instruction.

Keywords: interactive whiteboard (IWB), information communication technology (ICT), business education, business subjects, pedagogy

INTRODUCTION

The integration of technology in the teaching and learning of business subjects has been propagated mainly through the use of computers. Of late, the interactive whiteboard (IWB) is one of the technologies that are transforming classroom activities and teachers' roles. Al-Faki and Khamis (2014) define an interactive whiteboard as "a large touch-sensitive display unit, connected to digital projector and computer" (p. 137). The interactive whiteboard has the capacity to manipulate data, project images and videos, include sound and allow for the data to be stored and retrieved and be manipulated once again. With the introduction of software such as word processing, spreadsheets and desktop publishing, the learning and teaching environments in business education have been transformed and their integration into teachers' pedagogical practices have witnessed tremendous success. Despite the potential of IWBs in revolutionising pedagogy positively, it is worth noting that IWBs are costly to acquire and install in classrooms since the technology is mostly imported from developed countries. Despite the huge capital

outlay, many secondary schools in Botswana have equipped their classrooms with interactive whiteboards in line with the government's policy on ICT in education as enshrined in the Revised National Policy on Education of 1994.

The advent of interactive whiteboard technology, coupled with the research and development of touch screen smart phones, tablets, iPads, iPods and play stations, has made technology to be just a "finger" away. Classroom technology has evolved and now demands the same level of sophistication as provided by businesses and world of work today. Teachers are being "forced" to adopt and exploit these latest technologies in their classes, especially in a world where the students may be more technologically-savvy than the teachers themselves. Ignoring or not utilizing IWBs in classes is tantamount to the teacher and the classroom learning environment being labelled as irrelevant and outdated by both the learners and other stakeholders such as potential employers. As business world technology is being constantly upgraded to

include new features, conveniences and experiences, classroom technology has to adjust and move at the same speed or even ahead of industry, if ever the school graduates are to be of value to the world of business. Teachers are now being encouraged to move away from the use of the static blackboard and whiteboard which are synonymous with traditional non-interactive teaching methods towards the interactive teaching methods that accommodate and engage the learners and position students as the pivotal players in the learning process (Smith, Higgins, Wall & Miller, 2005).

The integration of IWBs in the teaching and learning of business subjects, though beneficial to both the learners and the teachers, have faced challenges and difficulties and its adoption has encountered numerous obstacles that have hindered students and teachers from fully utilizing the technology (Manny-Ikan, Dagan, Berger-Tikochinski&Zorman, 2011). Past empirical studies on the incorporation of interactive whiteboards in classrooms have been conducted and several arguments for and against integration into teachers' pedagogical strategies have been highlighted.

The benefits of integrating IWBs in the teaching-learning process have been reported. There is some agreement among scholars that IWBs have a positive effect on student motivation (Glover, Miller, Averis& Door, 2007; Hall & Higgins, 2005; Schmid, 2008) and this may be attributed to the novelty of IWBs as pedagogical tools. Furthermore, Hennessy et al (2007) content that the use of IWBs improves student participation and interactivity and this is possible when teachers allow learners to interact with the IWBs themselves. However, Schuck and Kearney (2007) caution that the benefits of using IWBs will be diminished if teachers dominate the IWB lessons by simply using the boards for interactive whole class discussions, and not invite the students to interact with the IWBs. By corollary, it can be argued that if IWBs can increase student motivation, class participation and interactivity, then they can help maintain student attention and engagement during lessons (Wall, Higgins & Smith, 2005; Winzenried, Dalgano&Tinkler, 2010).

The use of IWBs also provides teachers with the opportunity to differentiate instruction by providing various learning which suit the learning styles of students. Glover et al. (2007) support this by arguing that IWBs offer the opportunity to better match learning to different student learning styles such as kinesthetic, visual, audio and active. This is possible because IWBs provide teachers with multiple ways to represent information using interactive text, images, sound and video. Thus IWBs appeal to multiple senses and

learning styles and can therefore be used to engage a broad range of learners within the same lesson. The value of IWBs in catering for the interests and learning styles of diverse student populations has been shown to have positive effects on student achievement or attainment (Somekh et al, 2007). In light of this, one can argue that using IWBs for differentiating instruction has the potential to enhance learning, increase student motivation and lead to improved test scores.

Despite the potential benefits of using IWBs in the teaching-learning process, some drawbacks and challenges that limit their use have been reported. Budgetary constraints are one of the reasons why schools may fail to install IWBs in classrooms. Interactive whiteboards are expensive and installing them requires huge financial outlays compared to conventional whiteboards and not many schools can afford to raise the funds required to have classrooms equipped with IWBs (Slay, Sieborger&Hodgkinson-Williams,2008). Another challenge is that not all teachers are ICT-competent thus they could lack prerequisite ICT-competence to apply technological skills in various teaching and learning environments, as well as lack of ICT skills to use of IWBs (Glover& Miller, 2002; Slay et al., 2008). Thus teachers' limitations in ICT knowledge make them anxious and reluctant to use ICT in teaching (Balanskat, Blamire&Kefala, 2006) and many teachers who do not consider themselves to be well skilled in using ICT feel anxious about using it in front of students who perhaps know more than they do (Becta, 2004). According to Schmid (2008), another difficulty that teachers face in using IWBs lies in combining the use of this innovative technology tool with their existing teaching approaches which are mostly didactic in nature. As Miller et al. (2005) noted, many teachers continue to use IWBs more as large computer screens and mere displays and ignore the interactive elements of the boards that have such great potential to involve students. Lastly, the amount of time needed by the teachers to prepare lessons for use in conjunction with IWBs is one of the primary difficulties faced by teachers (Higgins, Beauchamp & Miller, 2007).This is because unlike textbooks, teachers must research, evaluate, interpret, install and manoeuvre software programs that aid in the use of whiteboards.

Statement of the Problem

Technological innovations in teaching and the need to embrace interactive learning environments in classrooms have led schools to invest lots of funds in acquiring state-of-art interactive whiteboards with the hope that their integration in teaching and learning will

enhance learner engagement. The adoption, success and effectiveness of such innovations depend on the classroom teachers' attitudes towards ICTs and competency levels in the usage of ICTs in teaching. This paper sought to ascertain the degree of integration of IWBs by the teachers themselves and to examine their perceptions of the effectiveness of pedagogy with IWBs including the challenges they encounter in their endeavour to incorporate IWBs in teaching business education.

Research Questions

The purpose of this study was to find out the perceptions of business subjects teachers in Botswana secondary schools of the use IWBs for teaching learning purposes in the classroom. To do this, the study was guided by the following research questions:

1. How much do business subjects' teachers' rate their competency levels in the use of computers in the classroom?
2. What are the attitudes of business subjects' teachers towards the use of interactive whiteboards in the teaching-learning process?
3. What are business education teachers' perceptions of the impact of interactive whiteboards on student learning?

METHODOLOGY

Research Design and Sample

The study adopted a descriptive survey design in which quantitative data were collected from the teachers who participated in the study. The sample for the questionnaire survey consisted of 27 business education teachers who were selected from 20 public and private/independent secondary schools in Botswana using the guidelines of purposeful sampling. They were selected because (1) they taught business subject(s), (2) they agreed to participate in the study and (3) their schools had interactive whiteboards installed in classrooms.

Instrument

A questionnaire adapted from Kaur (2014) was used to collect data from the respondents. The questionnaire elicited information about teachers' competencies with and accessibility to computers, their attitudes towards the use of IWBs as an educational tool in the classroom, their training in the use of IWBs and their perceptions of the impact of IWB use on student learning.

Data Analysis

The survey data collected were entered and analysed using SPSS version 20.0. To facilitate interpretation, some selected data were transformed into graphs using Microsoft Excel 2010.

Limitations of the Study

Positive as the findings in this study may be, there are limitations that make it mandatory for them to be taken with caution. First, the sample of respondents was small and conveniently selected. This means the findings may not be generalizable to the larger population of business education teachers and may only be applicable to schools used in the study. Secondly, the study is based on teachers' self-reports. Teachers may not want to project a negative image about themselves, especially about their competency in the use of ICTs and IWBs or lack of it. Consequently, this may be a limiting factor on the accuracy and honesty of the responses. Although the study captures teachers' perceptions of the impact of IWBs student learning, the fact that it is qualitative means it falls short at actually showing an association between the use of IWBs and student achievement. An experimental design with a control group and treatment or any other rigorous method may give better findings. This is important because teachers' perspectives on this matter seem to differ with some literature that found no significant association between the two.

RESULTS AND DISCUSSION

Profile of Respondents

The demographic profile of the respondents who took part in the study is summarized in Table 1 below:

Table 1: Demographic profile of respondents

		N	%
Gender	Male	21	78
	Female	6	22
Teaching experience	Less than 10 years	10	37
	10+ years	17	63
Subject-area taught using IWBs	Accounting	12	44
	Commerce	4	15
	Economics	3	11
	Business Studies	4	15
	Other	4	15
Level taught using IWBs	Form 1	2	7
	Form 2	5	19
	Form 3	5	19
	Form 4	4	15
	Form 5	9	33
	Form 6	2	7

From the table it is apparent that all respondents were experienced teachers who used IWBs in teaching the major business education subjects offered in the secondary school curriculum across all form levels (Form 1 to Form 6).

Teacher Access to Computers

Items were set requiring the respondents to indicate the ease with which they access computers and the internet at home and at school. As expected in this digital era, all the respondents indicated that they owned computers in one form or another and all had access to computers both at school and at home. Schools are also moving

with the times as shown by the 27 (100%) of respondents who indicated that they had access to the internet at school. However a few 6 (22%) of the respondents cited that they do not have access to the internet at home.

Computer Competency Levels of Business Education Teachers

Teachers who are incompetent in computer knowledge can face some challenges when it comes to using IWBs. It is for this reason that some items were set in this study to gauge the levels of respondents’ competency and confidence in working with computers. On competency, 17 (63%) of the business subjects teachers rated themselves as competent/highly competent in the use of computers while 10 (37%) indicated that they had “some competence” with computers. On confidence in working with computers 15 (55%) of the respondents said they were confident/highly confident with computers while 12 (45%) had “some confidence” in the use of computers. The inference that can be drawn here is that business teachers were competent enough to use computers in their lessons, vis-à-vis, could effectively incorporate IWBs in their pedagogical practices.

The frequency with which the teachers use computer technology in the classroom was sought. Teachers’ responses in this regard are summarised in Figure 1 below:

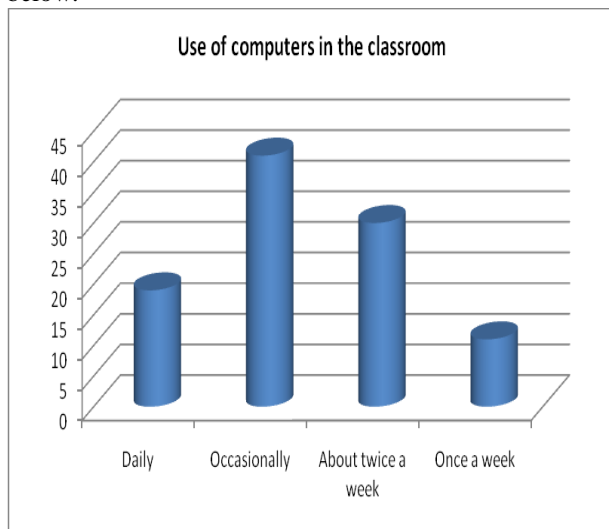


Figure 1: Teachers’ use of computers in the classroom
From the bar graph above it seems evident that the frequency of computer usage in teaching business subjects varies among from daily (18%), once a week (11%), twice a week (30%) to occasional (41%) use and this may be attributed to teachers’ confidence and competencies in using ICTs.

IWB usage and Competency Levels of Business Education Teachers

Business education teachers’ competency levels in the use of IWBs were sought. Teachers were asked what type of training they received to learn how to use IWBs. Responses indicate that most of the teachers did receive training in the use of IWBs as shown by 11 (41%) who said they received basic training, 11 (41%) who said they received training on IWB applications and tools and 1 (3%) who received training on IWB integration into the curriculum. 4 (15%) teachers indicated that they did not receive any training. These 4 who did not receive training indicated that they learnt IWB applications on their own while 17 (63%) received training from companies that supply IWB equipment and 6 (22%) received training during professional development workshops. The forms of training teachers received are summarised in Figure 2 below:

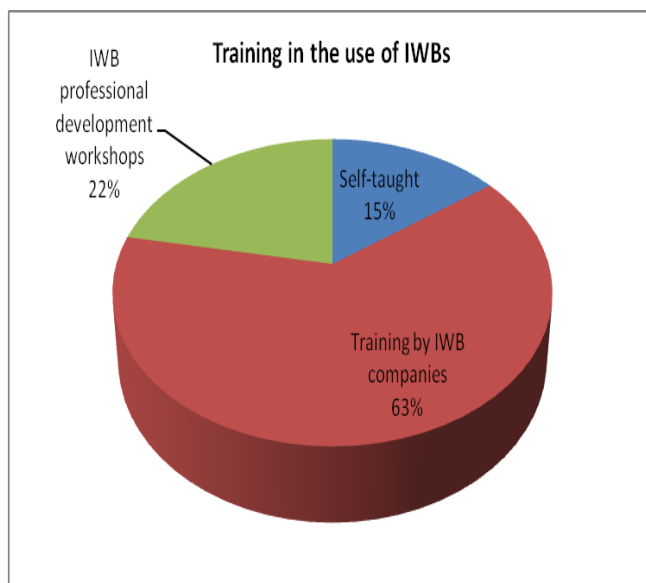


Figure 2: Training of teachers in the use of IWBs

It is apparent from Figure 2 that most of the teachers receive IWB training from accredited IWB suppliers and they in turn train their colleagues through professional development workshops.

All things being equal, training in a particular skill should translate to competency and confidence in its application. The respondents indicated that overall they are competent and confident in their classroom applications of IWBs. On competency, 12 (44%) of the business education teachers rated themselves as having some competency in the use of IWBs while 15(56%) indicated that they are competent. On confidence about working with IWBs 12 (44%) of the respondents said they were fairly confident with using IWBs while 12

(56%) were of the opinion that they are competent. The evidence gathered here suggests that overall, business subjects teachers who participated in this study had received sufficient training in the use of IWBs and that they could integrate this technology in their classrooms with some degree of competency and confidence.

An item on how often business subjects teachers incorporated IWBs in their pedagogical practices provided information that is summarised in Figure 3 below:

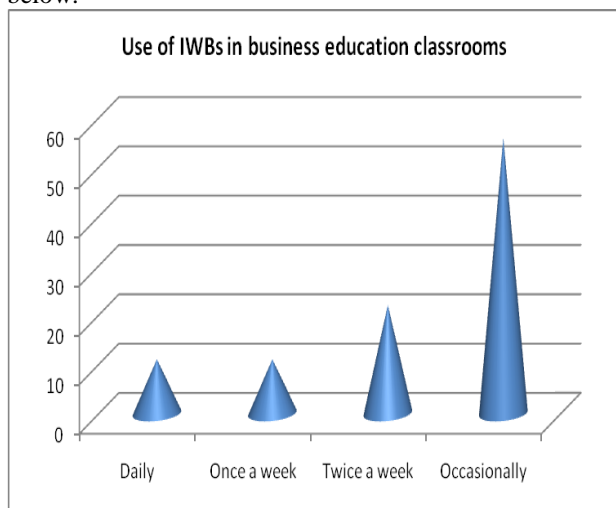


Figure 3: The use of IWBs in business education classrooms

The evidence represented in Table 3 suggests that although **IWB technology** is **fairly** new, its use by business teachers appears to be fairly widespread and it is assumed that students do **reap the rewards** of integrating the technology in classroom practices.

Teachers’ Attitudes towards the Use of IWB as an Educational Tool in the Classroom

To find out their attitudes towards the use of IWBs as educational tools in the classroom, respondents were asked to indicate their levels of agreement or disagreement on a 5-point scale which ranged from strongly disagree (SD), disagree (D), undecided (U), agree (A) and strongly agree (SA). A summary of their responses is shown in Table 2 below:

Table 2: Teachers’ perceptions towards the use of IWB as an educational tool

Description	Rating*				
	SD	D	U	A	SA
1. Using IWB-based resources reduces the time I spend on writing during lessons	0 (0)	0 (0)	2 (7)	15 (56)	10(37)
2. When using an IWB in my lessons, I spend more time in the preparation of the lesson	1 (4)	6 (22)	5 (19)	13 (48)	2 (7)
3. I think using an IWB makes it easier to display the available learning resources to the whole class	0 (0)	1 (4)	0 (0)	12 (44)	14 (52)
4. It is beneficial to be able to save and print the materials generated during the lessons	0 (0)	2 (7)	4 (15)	12 (44)	9 (33)
5. I give more effective explanations in my lessons when using an IWB	0 (0)	1 (4)	4 (15)	12 (44)	10 (37)
6. IWB helps me to easily summarise the lesson	0 (0)	0 (0)	0 (0)	17 (63)	10 (37)
7. Using an IWB, I can more easily control/manage the whole class	1 (4)	0 (0)	2 (7)	16 (59)	8 (30)
8. I feel uncomfortable in front of my students when using an IWB	10 (37)	2 (7)	4 (15)	11 (41)	0 (0)
9. Reviewing the whole lesson towards the end is very easy if the lesson is taught using an IWB	0 (0)	1 (4)	1 (4)	17 (63)	8 (30)
10. I like using IWB technology in my lessons	0 (0)	0 (0)	4 (15)	14 (52)	9 (33)
11. Using an IWB makes me a more efficient teacher	0 (0)	0 (0)	1 (4)	11 (41)	15 (56)
12. I think IWB makes learning this subject more enjoyable	0 (0)	0 (0)	0 (0)	10 (37)	17 (63)
13. I believe that training is required to teach with IWB technology	0 (0)	0 (0)	1 (4)	11 (41)	15 (56)
14. I think IWB increases the interaction and participation of the students in the classes	0 (0)	0 (0)	1 (4)	19 (70)	7 (26)
15. I think my students are more motivated when I use an IWB in lessons	0 (0)	0 (0)	1 (4)	16 (59)	7 (26)

* The absolute number is presented first and then it is expressed as a percentage of respondents in brackets

Data in Table 2 show that the majority of teachers 25 (93%) agreed that IWB-based resources reduce the time

spent on writing during lessons in contrast with 2 teachers (7%) who were neutral. The results emphasise that the use of IWBs avails more time to other activities apart from writing for both the teacher and the students. None of the teachers disputed that time is saved on writing through the use of IWB-based resources.

On time spent on lesson preparation, 13 teachers (48%) agreed that the use of IWBs will result in more time being spent on lesson preparation. Additional time is needed to create and develop the resources and content for each lesson, especially for first time users. 2 teachers (7%) strongly agreed, while on the other hand, 6 (22%) of the teachers disagreed and 5 (19%) teachers were neutral. The majority of teachers, however, believe that the use of IWBs will require extra time over and above the usual time teachers reserve for lesson preparation.

The ability to save and print materials generated during the lesson has been highlighted as a distinct advantage for using IWBs in classrooms as was shown by 12(44%) of the teachers agreeing, 9 (33%) strongly agreeing and only 2 (7%) who disagreed. Four teachers (15%) maintained a neutral position. The ability to provide immediate feedback and the opportunity to re-use the information at a later stage avails an additional benefit for using IWB technology in the classroom.

The use of IWBs in the classroom enables teachers to give more effective explanations during lessons, thus enhancing understanding. 44% of the teachers agreed, 37% strongly agreed and 4% disagreed. These results confirm the findings of Jang and Tsai (2012) whose research focusing on examining the teachers' technological pedagogical content knowledge (TPACK) with respect to current use of IWBs using 818 mathematics and science teachers from 49 randomly selected elementary school in Taiwan revealed that 78.2% of teachers preferred using IWBs to explain complex and abstract concepts against 20.4% who were neutral and 1.4% who disagreed.

In maintaining high levels of discipline, classroom control and management, 16 (59%) of teachers agreed that the use of IWBs can be effective as it is captivating and attracts attention of the learners. Due to the interactive nature of IWBs, students tend to focus on the prevailing class activities and engage themselves fully. 8 (30%) of the respondents strongly agreed with this notion. However, 1(4%) strongly disagreed and 2 (7%) were neutral. The results are in agreement with Jang and Tsai findings where 82.2% agreed that IWBs

increase interaction and participation among students, 15.2% neutral and 2.6% disagreed.

IWBs use in the classroom represents an integration of information communication technology (ICT) into the teaching and learning classroom environment. The ability of teachers to fully utilise this technology is dependent on level of expertise. In this study, 11 (41%) of the teachers indicated that they feel uncomfortable using IWBs in front of students, 10(37%) strongly agreed while 2 (7%) disagreed and 10 (15%) were neutral. Thus, most teachers are neither confident nor comfortable integrating IWBs in their teaching practices. These findings are closely related to those of Al-Faki and Khamis (2014) whose study focused on identifying challenges faced by teachers in Jeddah district, Saudi Arabia. Using a sample of 45 randomly selected English language teachers, they found out that although teachers knew some smart board possible functions, 25 (55.5%) of teachers agreed that they struggle to manage the smart board, 9 (20%) were neutral and 11 (24.5%) disagreed.

Teacher Perceptions of the Impact of IWBs on Student Learning

Studies have shown that the benefits of using IWBs on student learning are immense and include raising the level of students' engagement in the classroom, motivating students, promoting enthusiasm for learning, visual teaching support, video presentation and more effective learning. In this study, business teachers' perceptions of the impact of IWBs on student learning in light of the benefits outlined above were sought by requiring them to indicate their opinions by responding on a 5-point Likert scale. **The results are summarised in Table 3 below:**

Table 3 above shows that 15 teachers (56%) and 12 teachers (44%) who took part in the study agreed and strongly agreed, respectively, that students are more satisfied with their learning when IWB are used in instruction in lieu of simple whiteboards. Among the respondents none of the teachers indicated lack of student satisfaction with IWBs when compared to regular whiteboards. This finding is not surprising because IWBs have many uses and benefits that make learning more interesting, easier and enjoyable to learners, increasing learner motivation and attitudes towards IWBs as a result (Turel& Johnson, 2012; Sushma, 2014; Akkoyunlu&Erkan, 2013; Balta& Duran, 2015). Thus this finding is in agreement with the studies cited earlier on students' positive views about the use of IWBs in the classrooms, making satisfaction with IWBs plausible.

Table 3: Teacher perceptions of the impact of IWBs on student learning

Description	Rating*				
	SD	D	U	A	SA
1. I think that most of my students feel more satisfied with their learning when I teach using IWB instead of a simple whiteboard	0 (0)	0 (0)	0 (0)	15 (56)	12 (44)
2. I think using IWB in my classroom helps most of my students to pass the subject by doing as little work as possible	5 (19)	1 (4)	7 (26)	6 (22)	8 (30)
3. I find my students engaging more in discussions when I teach using IWB	1 (4)	3 (11)	1 (4)	16 (59)	6 (22)
4. I feel that my students keep their learning to minimum when I use IWB	1 (4)	14 (52)	0 (0)	10 (37)	2 (7)
5. I find my students working hard on topics which are taught using IWB	1 (4)	5 (19)	6 (22)	13 (48)	2 (7)
6. My use of various modes of representation to represent a topic on IWB helps my students to memorise the topic even if they don't understand it	0 (0)	10 (37)	3 (11)	9 (33)	5 (19)
7. I find that IWB helps my students to remember the facts and details about a topic	0 (0)	0 (0)	2 (7)	17 (63)	8 (30)
8. When I use IWB to teach a topic, my students ask more questions to get more clarification about the topic	1 (4)	3 (11)	1 (4)	16 (59)	6 (22)
9. I find that my students get confused when I teach a topic using multi-modal representations on IWB	1 (4)	17 (63)	3 (11)	4 (15)	2 (7)
10. I feel that the students tend to learn only that information which is represented on IWB	1 (4)	12 (44)	5 (19)	5 (19)	4 (15)

* The absolute number is presented first and then it is expressed as a percentage of respondents in brackets

As pertaining to most students passing subjects with as little work as possible when IWBs are used, 52% of teachers responded in the affirmative as demonstrated by 6 (22%) who agreed and 8 (30%) who strongly agreed. A significant number of teachers held a neutral position on this item as demonstrated by 7 (26%) undecided and the remaining number of teachers (22%) disagreed. Despite the mixed findings on the impact of IWBs on student achievement in earlier studies (Digregorio&Sobel-Lojeski, 2010), the current study's finding is leaning toward the body of research that has found positive effect (albeit small) of IWBs on student achievement, (see Higgins et al, 2007). It is plausible, however, to also argue that the high level of undecidedness in the rating of teachers on this question is testimony that IWBs are not a magic pill that replaces effort on the part of the learner. In a related study, Sushma (2014) studied teachers' perceptions and students' perceptions of the use of IWBs teaching and learning, and the gaps between teachers' and students' perceptions. She found that 86% of students reported that IWBs made their studies easier and contributed to their development of knowledge. The conclusion that may be made from these statistics therefore is that IWBs make understanding of concepts much easier, not that they discourage effort. According to 93% of teachers in this study, IWBs help their students to recall facts and details about a topic. This finding corroborates earlier research that IWBs facilitate learning and aid students to remember subject matter taught in class (Turel, 2010, cited in Turel& Johnson, 2012). The study was a review of literature on the use of IWBs in the classroom and how they could be used

to effectively enhance student learning. This argument seems to be further supported by the finding that the majority of teachers believe students work hard on topics where IWBs are used [as shown by 13 (48%) agree and 2 (7%) strongly agree]. Furthermore, 56% of teachers do not believe that their students keep learning to a minimum when IWBs are used during classroom instruction.

The study further found that 22 (81%) of teachers agreed that students engage more in discussions when IWBs are used. The findings in the table seem to indicate that learning becomes more active and interactive between the teacher and the students when IWBs are employed. In addition, 22 (81 %) of teachers who were of the opinion that their students tend to ask more questions for clarification when IWBs are used in teaching. The finding on student engaging in more discussions when IWBs are used is contrary to findings of Turel and Johnson (2012). In their study, the duo found that teachers are neutral on the effectiveness of IWBs at eliciting and engaging in classroom discussions. They however, point out that lively discussions are subject to the teachers approach. If IWBs are used in a teacher-centred approach, discussions are likely to be minimal as opposed to lively when teachers use constructivist, learner-centred pedagogical approaches. Mercer, Hennessy and Warwick (2010) further assert and demonstrate that teachers can use IWBs to encourage dialogue in the classroom.

Interestingly, 52% of business teachers believe IWBs when various modes of representing information are used to present a topic on IWBs, students are aided to memorize a topic even if they do not understand. The table further shows that 18 (67%) of teachers in the study do not believe that multimodal representations on IWBs create confusion when they teach a topic. The last finding in this section is that 13 (48%) of teachers who used IWBs do not believe students tend to learn only that information that is represented on IWB. This finding is reasonable since learning is possible from various instructional resources, of which IWB is one.

Teachers' opinions on whether the use of IWBs has a positive impact on achievement were split as shown by their responses in Figure 4 below. This is understandable since available studies have shown that using IWBs has no significant effect on achievement but improves the attitudes towards lessons.

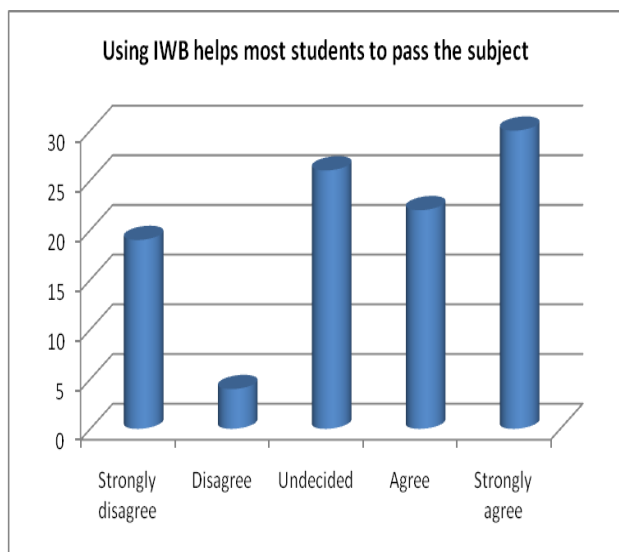


Figure 4: Using IWB helps most students to pass the subject

The finding represented by table 4 above shows that most 8 (30%) teachers strongly agree and 6 (22%) agree that IWBs help students to pass subjects they teach. 7 (26%) of teachers were 'undecided' on the question whereas 5(19%) answered 'strongly disagree' and 1(4%) answered 'disagree'. Based on these data, it is plausible to deduce that there is a strong consensus among teachers involved in the study that IWBs contribute towards students passing subjects.

SUMMARY AND CONCLUSION

This study examined the perceptions of secondary school business education teachers' perceptions of the use of IWBs in the classroom. It focused on access of

computers, teachers' levels of competencies in using computers, their perceptions about IWBs as an instructional tool and lastly their perceptions on the impact of IWBs on student learning. The study found that all teachers who participated in the study had computers and internet installed at their respective schools. Only a small percentage did not have access to the internet in their homes. A majority of teachers were found to be confident about their competency of the use of computers, and thus could integrate computers into their classroom teaching. Furthermore, teachers received sufficient on the job training which was mostly from suppliers of IWBs, and to a lower extent from professional development workshops and self-training. However, although teachers report competency, their use of IWBs is mostly occasional. The occasional usage could be explained by the fact that many teachers believe IWBs require more time to prepare resources for lesson plans.

Business education teachers involved in the study showed positive attitudes towards the use of IWBs in classroom instruction. This positive attitude could be attributable to many capabilities of IWBs such as: better display of learning resources compared to traditional boards; ability to save and print materials generated during the lesson; enabling teachers to give clear explanations which enhance learner understanding; and ability to keep learners focused and engaged, reducing discipline issues consequently. Interestingly, a substantial percentage (41%) of teachers said they are not comfortable using IWBs in front of learners. This is somewhat contradictory to the report that they are competent enough to use IWBs. Training still remains much needed by most teachers for efficiency and effectiveness with IWBs.

In agreement with most of the cited literature, many teachers perceive IWBs as having a positive impact on student learning. They purport that IWBs increase learner interest, engagement and motivation. They also contribute to making lessons become more interactive and action oriented through heightened student participation in discussions and other classroom activities. In the end there is increased student achievement.

Implication for Practice and Research

Going forward, we recommend the carrying out of a similar study with a much more representative sample size. Other studies may be developed using more rigorous methodologies to see if the findings can be replicated.

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