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Social Studies Teachers' Perspectives on the Advantages and Challenges of Interactive Whiteboard Application in Oman

Ahmed Hamad Al-Rabaani *
Sultan Qaboos University, OMAN

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Abstract: The study investigates the views of social studies teachers (SSTs) about the advantages and challenges of interactive whiteboard application in social studies lessons. Data was gathered using a questionnaire consisting of 58 items. The sample comprised 483 male and female SSTs from different governorates of Oman who were provided with three training programs about using Interactive Whiteboard (IWB). Data were analyzed by using: Means, T-test and One Way ANOVA. The results indicated that they considered its effect to be significant in supporting students' learning process by enhancing the quality of learning environment, excitement of use and importance of use in social studies lessons. It also showed that they used it widely in their lessons but they experienced moderate challenges, including related to technical support and the availability of IWB in all classes. The results also indicated that teachers' gender and experience influenced their views. The study recommends the provision of more technical support to teachers.

Keywords: *Interactive whiteboard, social studies teachers, Oman, advantages, challenges.*

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Introduction

The education sector has always been eager to adopt technological innovations to improve teaching and learning quality, and recent decades have seen dramatic advancements in classroom technology in developed countries. Innovative devices are widely used in education fields due to their many advantages. One of these devices is the IWB which has replaced the venerable chalk-based blackboard of the traditional classroom. Its advantages and functionality have facilitated massive popularization and deployment worldwide, and the IWB marked is worth an estimated $4.31 billion as of 2018, expected to reach $5.16 billion by 2023 (Cision PR Newswire, 2018).

The rapid adoption and spread of IWB reflects the longstanding and profound interest of the education sector in the deployment of technology to promote the teaching and learning process, particularly with increasing sensitivity to new and diverse kinds of learners (Miller, Glover, & Averis, 2004), driven on the institutional level by the wish to provide students with better classroom learning environments through equipping them with the latest innovative technology (Yahm & Tristan, 2012).

IWB literature has empirically demonstrated numerous advantages of the technology in terms of supporting students' learning process through providing a learning environment with visual and auditory stimuli (Levy, 2002; Smeets & Mooij, 2001), which increases students' motivation and involvement in the learning process during their lessons (DiGregorio & Sobel-Lojeski, 2010; Oleksiw, 2007). It also facilitates explanation of complicated concepts to students in easy and attractive visual way (Beauchamp & Parkinson, 2005; Lewin, Somekh, & Steadman, 2008; Lopez, 2010), and provides students with different learning styles by which they can acquire information and knowledge (DiGregorio & Sobel-Lojeski, 2010; Glover, Miller, Averis, & Door, 2005;). It also makes classrooms more enjoyable for students (Beauchamp & Perkinson, 2005; Hall & Higgins, 2005), which positively influences student achievement (Geren & Ergil, 2017).

Teachers also reported the influence of IWB in terms of making a difference in their teaching methods and the classroom environment. Some educators investigated teachers' attitudes toward using IWB and found that they had positive attitudes because it makes notable change in their teaching compared to traditional methods (Bennet & Lockyer, 2008; Glover & Avris, 2005; Lee & Boyle, 2004; Moss, Jewitt, Levacic, Armstrong, Cardini, & Castle, 2007).

* **Correspondence:**
Ahmed Hamad Al-Rabaani, Director of Oman Studies Center, Sultan Qaboos University, College of Education, Oman.
Email: rabaani@hotmail.com, arabaani@squ.edu.om

However, benefitting from the potential advantages of IWB depends on having qualified teachers who are sufficiently prepared to adopt and apply IWB in classroom contexts. Thus, training programs are essential in the expansion of using IWB. Taalas and Aalto (2007) indicated that teacher training programs for IWB have not kept pace with the proliferation and adoption of the technology, thus zealous education departments or institutions frequently purchase IWB systems without considering the prerequisite training required, resulting in inefficient and costly adoption (Järvelä & Kauppinen, 2012; Vähähyyppä, 2011). Teacher dissatisfaction in such cases may result in obstruction of adoption at the classroom level, with teachers continuing to reiterate traditional chalk-and-talk teaching despite IWB availability in their classrooms (Kankaanranta, Palonen, Kejonen, & Ärje, 2011; Walker, 2002). Ultimately, the potential benefits of IWB are hindered by poor integration into teaching and learning due to the lack of sufficient training (Faki & Khamis, 2014; Slay, Sieborger, & Hodgkinson-Williams, 2008).

Specific obstacles faced by teachers in using IWB include that it takes a long time to prepare materials, particularly for those unfamiliar with the medium (Gray, Hagger-Vaughan Pilkington & Tomkins, 2005; Miller & Glover, 2002; Thomas & Schmid, 2010), which can compound many teachers' latent lack of skill and confidence in using the technology (Hall & Higgins, 2005; Levy, 2002; Smith, Higgins, Wall, & Miller, 2005; Somyürek, Atasoy, & Özdemir, 2009), and for institutions the main barrier is its prohibitive cost, particularly in developing countries (Elaziz, 2008; Slay, Sieborger, & Hodgkinson-Williams, 2008; Thomas & Schmid, 2010).

Some educators are also concerned with understanding of the effect of some variables in the use of IWB in lessons, such as gender, experience and age. Some of them found significant differences between teachers' attitudes and use according to gender, but not age and experience (Akcay, Halit, & Ufuk, 2017; Kritika, 2016), while other studies found differences due to all of these variables (Hüseyin, 2014; Syh-Jong & Meng-Fang, 2012).

While there has been widespread attention given to the use of IWB from technological and educational perspectives, most of this has been concerned with developed countries, and there is very little awareness of IWB adoption in the GCC, particularly Oman. This paper addresses this research gap with particularly emphasis on the experiences and perspectives of social studies teachers (SSTs) in terms of training programs, types of received training programs, skillfulness in using IWB, and attitudes towards to its effect on student learning process, quality of learning environment and effect of teaching social studies. It also probes the extent of teachers' IWB use and challenges they face in this regard. Conducting such research is quite important to come up with a clear understanding of the applicability and effectiveness of IWB in social studies lessons, given the rapid expansion of its application in Omani schools, to avoid potential barriers to effective use, particularly due to a lack of involvement of teachers in the adoption itself (e.g. consultation to ascertain their needs as educators).

Purpose of the Study

The overall purpose of this study is to examine the views of Omani SSTs about the advantages and challenges of using IWB. Specifically, the research objectives were to:

1. Identify type of training programs about IWB provided to Omani SSTs.
2. Determine Oman's SSTs' skillfulness in using interactive whiteboard.
3. Identify SSTs' views about the effect of using IWB on students' learning and the enhancement of the quality of the learning environment, and its benefits in teaching social studies.
4. Determine teachers' beliefs about the extent of use of IWB in social studies lessons.
5. Determine teachers' views about the challenges of using IWB in the curriculum.
6. Determine if differences exist between Omani SSTs' views relative to demographic variables (gender, experience and qualifications).

Methods

Design

This study uses quantitative descriptive research method to investigate the SSTs' perspectives on the advantages and challenges of IWB application in Oman. The use of the descriptive methods is due to it being one of the most preferred and effective methods to understand participants' views and allow to gather data from large samples (Chan, 2009).

Sample

The participants in this study comprise 483 Omani SSTs who teach in different Omani governorates. A non-probability sampling technique was used in selecting the sample because it is quite difficult to use random sampling for the whole society of SSTs in five different governorates in Oman (Table 1).

Table 1: Distribution of the study sample

Characteristics		Number	Total
Gender	Male	219	483
	Female	264	
Governorates	Muscat	96	483
	Al-Batinah	126	
	Al-Dakiliah	131	
	Al-Sharqia	60	
	Al-Daharah	70	

Instrument

A questionnaire was used to determine the Omani SSTs' views about advantages and challenges of using IWB it containing eight sections concerning demographic characteristics: training programs, types of received training programs, skillfulness in using IWB, attitudes towards to its effect on: student learning process, quality of learning environment and effect of teaching social studies. It also probes extent of teachers IWB use and challenges facing using it. The questionnaire was developed by the researcher based on literature related to IWB (Al-Faki & Khamis, 2014; Deaney, Chapman, & Hennessy, 2009; DiGregorio & Sobel-Lojeski, 2010; Isman, Abanmy, Hussein, & Al Saadany, 2012; Majid & Najmeh, 2013; Miller & Glover, 2002).

Data Collection

Data was collected through a self-administrated questionnaire with the cooperation and permission of the school administrations. 500 questionnaires were sent to the SSTs and 489 were returned, of which 6 were eliminated because they were not completed. The final number was 483, a return rate of 96.6%.

Data Analysis

Data were analyzed by using SPSS software tools, with means, standard deviation, t-test and one-way analysis of variance (ANOVA).

Validity and Reliability

The questionnaire was validated by a panel of judges who are expert in instructional and learning technology and social studies teaching from Sultan Qaboos University and the Ministry of Education in order to determine its suitability to measure SSTs' views about IWB, then it was piloted to 41 Omani SSTs. The Cronbach's alpha was .814, which indicates a suitable internal consistency.

Results

Attendance of IWB training programs

The results showed that nearly all of the Omani SSTs had attended training courses related to IWB (Table 2). Such results are a good indicator of the Ministry of Education's concern with providing commensurate training with technological adoption and application.

Table 2: Frequency of attending training programs

	Yes	%	No	%	Total
Attendance of training programs	474	98%	9	2%	483

Types of IWB training programs received

The results showed that the majority of participants received three types of training: general use of IWB (97.1%), pedagogical use (63%) and finding and designing materials (75.9%) (Table 3).

Table 3: Types of training programs

Type of training program	Yes		No		Total
	N	%	N	%	
General use of IWB	469	97.1	14	2.9	483
Pedagogical use	305	63	179	37	483
Find/design materials	367	75.9	116	24.1	483

Social studies teachers' skillfulness in using IWB

Participants are generally highly skilled in IWB use but they need more training in creating, saving and modifying flipcharts. Means and standard deviation (SD) are shown in Table 4.

Table 4: Mean and SD of SST skillfulness in using IWB

Item	Mean	SD
Creating, saving and modifying flipcharts	2.95	1.50
Inserting media (video, photos, sound)	4.04	1.04
Using pen, highlighter, eraser, shape, text, reset page, zoom	4.40	.784
Allow students to interact with the board	4.18	.921
Incorporate external resources into lessons	3.92	1.18
Adapting course content to use as teaching materials	4.01	1.17
Ability to store and reuse materials from lessons	4.27	.897
Overall means	3.97	.554

Effect of using IWB on students' learning

Participants had positive attitudes towards the significant impact of using IWB on the improvement of students' learning, and they strongly believed that it attracts students' attention (mean 4.57), enables learner concentration (mean 5.5), and contributes to students enjoying learning and working harder when IWB is used (Table 5).

Table 5: Mean and SD of SST attitudes toward its effect on students learning

Item	Mean	SD
It stimulates students' thinking	4.29	.869
Students enjoy learning when the teachers use it	4.51	.840
Improves students' interest in subject	4.28	.847
Students work harder when interactive whiteboard is used	4.44	.710
Students learn more when interactive whiteboard is used	4.32	.695
Students find it easier to understand the course content	4.40	.676
It makes learning faster	4.42	.708
It attracts students' attention	4.57	.644
Learners concentrate better	4.55	.739
Learners behave better in lessons	4.22	.836
Overall mean	4.40	.344

IWB enhancement of quality of learning environment

Participants strongly believe that the use of IWB in teaching has a significant influence on the enhancement of the quality of the learning environment, particularly making: drawings and diagrams easier to see (mean 4.75), the learning environment more interesting (mean 4.74), presentation of materials more attractive (mean 4.47), and presentation of materials is clearer (mean 4.68) (Table 6).

Table 6: Mean and SD of SST attitudes toward effect of IWB in enhancement of quality of learning environment

Item	Mean	SD
It makes learning more interesting	4.74	.522
It supports mixed learning styles	4.46	.694
It makes lesson better prepared and organized	4.56	.594
It makes presentation of the material is more attractive	4.74	.504
Enhancing students' motivation	4.60	.571
Encouraging interactive teaching style	4.56	.686
It makes drawings and diagrams easier to see	4.75	.515
It makes the presentation of material clearer	4.68	.567
It helps create an instructional material resource pool for lessons	4.55	.567
Overall	4.63	.335

Teachers' feelings about using IWB in teaching

Participants had positive feelings about the use of IWB in their classrooms. They felt excited when using it (mean 4.7), encouraged their colleagues to use it (mean 4.5), were willing to use in all of their lessons (mean 4.3), and they reported that it facilitated discussion on the content in class (mean 4.3). A relatively small amount of concern was expressed that using IWB makes SSTs nervous (mean 2.2) (Table 7).

Table 7: Mean and SD of SST feeling about using IWB in teaching

Item	Mean	SD
I enjoy using it in teaching	4.7	.554
It saves time	4.3	.792
I am willing to use IWB in all my lessons	4.4	.773
Using interactive IT in my courses make me nervous	2.2	1.27
It facilitates classroom management	4.4	.638
It facilitates discussion on content in class	4.3	.690
I encourage my colleagues to use it	4.5	.614
Using it is difficult	3.0	1.47
Overall	4.0	.344

Extent of using IWB in classroom

The results revealed that the participants were widely using IWB in their classroom in all grades they teach (mean 4.0). However, it is notable that they use it when they have free time to prepare lessons according to it (mean 4.1). They also tend to use it more for specific topics (mean 3.6), but they declare that they use it in most of their lessons (mean 3.4) (Table 8).

Table 8: Mean and SD of SST extent of using IWB

Item	Mean	SD
I use it in every lesson	3.4	1.18
I use in all grades which I teach	4.0	.903
I use it when I have free time to prepare lessons by it	4.1	.942
I use it in specific topics	3.6	1.08
Overall	3.8	.661

Difficulties of using IWB

To a moderate extent, participants faces difficulties in using IWB. The main difficulty is that it is not available in all classrooms (mean 3.7), and they do not have technical support to use it (mean 3.6). The results showed that they have slight difficulties related to the skills of using IWB (mean 2.2) (Table 9).

Table 9: Mean and SD of SST difficulties of using IWB

Item	Mean	SD
I am not skillful in using it	2.2	1.18
It is not available in all classrooms	3.7	1.19
We don't have technical support to use it	3.6	1.25
The lesson time is not enough to use it	2.5	1.09
The curriculum is not designed to fit using whiteboard	2.5	1.05
Students are not prepared to use it	2.8	1.31
Limited materials for subject	2.8	1.10
Limited time to search for resources	3.0	1.27
Problems encountered downloading resources	3.1	1.36
Overall	2.9	.598

Benefits of using IWB in teaching social studies curriculum

Participants have a strong belief in the benefits of using of IWB in social studies and that it is beneficial to teaching the curriculum. They think it is helpful to present historical events (mean 4.6), allows use of geographical simulation programs (mean 4.4), allows clarification of complex concepts in social studies (mean 4.3), and explains interactions between different geographical phenomena (mean 4.2) (Table 10).

Table 10: Means and SD of SST views about benefits of using IWB in teaching social studies

Item	Mean	SD
IWB is beneficial to…		
Present geographical phenomena	4.2	.754
Clarify complex concept in social studies	4.3	.652
Explain interaction between different geographical phenomena	4.2	.729
Connect students with the world during the lesson	4.2	.713
Present current events and connect them with the lesson	4.4	.710
Use geographical simulation programs	4.4	.750
Present historical events (videos, documents, photos, maps etc.)	4.6	.646
Login to social studies internet sites during the lesson.	4.2	1.06
Overall	4.3	.751

Impact of Variables

The following sections explore differences among participants' perspectives on IWB relative to the demographic variables of gender and experience.

Gender

Table 11 shows the results of t-test used to examine differences in participants' views on IWB related to gender. The results reveal that there was a significant difference between male and female participants, with the latter reporting more skillfulness in using IWB and the benefits of using IWB in teaching the social studies curriculum. There were no significant differences in other sections.

Table 11: T-test results of SSTs' gender

Dimension	Gender	Mean	SD	t	df	Sig. (2-tailed)
SSTs' skillfulness in using IWB	Male	3.8	.581	3.974	481	.000*
	Female	4.0	.513	3.928	439.032	
Effect of using IWB in student learning process	Male	4.4	.317	1.068	481	.286
	Female	4.3	.364	1.082	479.886	
IWB enhancement of quality of learning environment	Male	4.6	.321	1.592	481	.112
	Female	4.6	.345	1.603	474.700	
Teachers' feelings about using IWB in teaching	Male	4.0	.338	1.079	481	.281
	Female	4.0	.349	1.082	469.701	
Extent of using IWB in classroom	Male	3.8	.704	.268	481	.789
	Female	3.8	.623	.265	439.495	
Challenges of using IWB	Male	2.9	.653	1.646	481	.100
	Female	3.0	.546	1.619	425.339	
Benefits of using IWB in teaching social studies curriculum	Male	4.2	.446	4.673	481	.000*
	Female	4.4	.364	4.587	419.465	

* Significant at the 0.05 level

Experience

The results indicated that in general there was a significant difference between participants due to their experience except in the sections concerning IWB enhancement of quality of learning and the benefits of using IWB in teaching the social studies curriculum. Scheffe test revealed that teachers with more experience had more positive views and less difficulties in using IWB (Table 12).

Table 12: One-way ANOVA results of SSTs' experience

Dimension		Sum of Squares	df	Mean Square	F	Sig.
SSTs' skillfulness in using IWB	Between groups	9.163	4	2.291	7.886	.000*
	Within groups	138.851	478	.290		
	Total	148.014	482			
Effect of using IWB in student learning process	Between groups	1.373	4	.343	2.942	.020*
	Within groups	55.753	478	.117		
	Total	57.126	482			
IWB enhancement of quality of learning environment	Between groups	.284	4	.071	.627	.643
	Within groups	54.035	478	.113		
	Total	54.318	482			
Teachers' feeling about using IWB in teaching	Between groups	2.029	4	.507	4.396	.002*
	Within groups	55.149	478	.115		
	Total	57.178	482			
Extent of using IWB in classroom	Between groups	4.210	4	1.053	2.436	.046*
	Within groups	206.520	478	.432		
	Total	210.730	482			
Challenges of using IWB	Between groups	6.813	4	1.703	4.914	.00*
	Within groups	165.672	478	.347		
	Total	172.485	482			
Benefits of using IWB in teaching social studies curriculum	Between groups	.802	4	.201	1.499	.201
	Within groups	63.948	478	.134		
	Total	64.751	482			

* Significant at the 0.05 level

Discussion

Continually developing educational systems with the integration of the latest technology is a good indicator of the general effectiveness of educational systems, as properly tested and developed technologies generally offer potential solutions to education problems related to the classroom environment and student achievement, motivation and involvement. Additionally, a sea-change is underway in global education in order to respond to the skills, capabilities and expectations of modern learners, who are increasingly digital natives and for whom the traditional chalk-and-talk classroom is an unfamiliar and often unproductive experience. Students are increasingly connected with technological devices which requires education to change its approach to make learning environments positive and attractive. The Omani education system has taken steps in order to integrate technology in classrooms; one outcome of this is that IWB has been widely integrated over the previous eight years, thus it is an opportune moment to examine this adoption in a developing country in the GCC.

The results indicate that Omani SSTs were provided with comprehensive training programs related to IWB covering three dimensions: general use of IWB, pedagogical use, and how to find and design materials. These results clearly indicated that the decision makers of integrating IWB are aware of importance of training programs related to IWB, affirming the success of Oman in implementing parallel training programs alongside IWB integration (Järvelä & Kauppinen, 2012; Vähähyyppä 2011). Such training programs for Omani SSTs are highly important to avoid problems facing the application of IWB applications in lessons, particularly to address latent antipathy and a lack of confidence among teachers, which can prevent adoption (Faki & Khamis, 2014; Kankaanranta et al., 2011; Slay, Sieborger, & Hodgkinson-Williams, 2008; Walker, 2002).

The study also found that participants are highly skillful in using IWB, which is an index of the effectiveness of the training programs provided for teachers in developing their knowledge and skills related to IWB. It also reflects that these teachers are interested and willing to develop their knowledge and skills about IWB. This contradicts some previous studies indicating a general lack of skills in using IWB (Hall & Higgins, 2005; Kankaanranta et al., 2011; Levy, 2002; Smith et al., 2005; Somyürek, Atasoy, & Özdemir, 2009).

The results showed that participants had highly positive attitudes towards the effectiveness of IWB in enhancing students' learning. These positive attitudes could be attributed to the real experience of SST in their lessons, where they found that using IWB has made a difference in their students' learning. Such results are in accord with previous studies

which clearly indicate the positive effect of IWB in the student learning process (Beauchamp & Perkinson, 2005; Hall & Higgins, 2005; DiGregorio & Sobel-Lojeski, 2010; Levy, 2002; Oleksiw, 2007; Smeets & Mooij, 2001).

The results also found that participants strongly believe that there is a significant effect of IWB in the social studies learning environment. They think that using it has changed methods of teaching, presenting materials, explanation, enhancing motivation, teaching sources and materials and learning attractiveness. These results reflect the real experience of the SSTs in their lessons and the change they noted due to actual use of IWB. Such change makes SST teachers feel happy about IWB and strongly concerned to apply it in their lessons. These results match with previous studies which stated the importance of IWB in enhancing the learning environment and facilitating teaching goals (Beauchamp & Perkinson, 2005; DiGregorio & Sobel-Lojeski, 2010; Geren & Ergil, 2017; Glover et al., 2005; Hall & Higgins, 2005). This was also reflected in positive attitudes about using IWB due to it increasing the enjoyability of lessons, saving times, facilitating classroom management and making them highly motivated to apply in all of their lessons and recommending other teachers to use it. These results corroborate other studies which showed IWB's effect on classroom management and classroom environment (Hamdi, 2015; Walker, 2003; Zevenbergeen & Lerman, 2008).

While participants were enthusiastic about applying IWB in all of their lessons, which reflects their recognition of its effectiveness and its influence on students' enjoyment of the lesson, which is very important for teachers, they recognized the practical difficulties they face as not all classrooms have IWB. Overall they faced moderate challenges in using IWB, which is generally a good indicator that the training programs functioned effectively in mediating the policy-practice gap involved in IWB adoption, but improved training is generally recommended in most cases. The lack of IWB equipment in ever class reflects the practicalities of teaching (e.g. sometimes having to change classroom) and the high cost of IWB itself (Elaziz, 2008; Slay, Sieborger, & Hodgkinson-Williams, 2008; Thomas & Schmid, 2010). Also, the study raised the issues of technical support for using IWB. It is quite important to provide SSTs with technical support for IWB where necessary (particularly in the case of malfunctions etc.), but while all Omani schools have one or two professional IT technicians, they may not be enough to provide consultation or solutions quickly to all teachers to expedite lesson provision using IWB in the event of technical problems.

The results showed that the participants had strong positive attitudes towards using IWB in social studies lessons. These results could be attributed to a particular critical issue faced by SSTs in Oman: that most students have inherently negative attitudes towards the subject itself (Al-Kursi, 2014). Thus, the change which had been made by IWB in their classrooms caused SSTs to feel that its integration would change their students' attitudes towards social studies subject positively.

The results showed that there are differences due to teachers' gender, with women having more skillfulness in using IWB and a more positive view of its benefits. Clearly in the case of Oman, female SSTs are more enthusiastic about the application of IWB, which corroborates other studies conducted in various countries (Akcay, Halit, & Ufuk, 2017; Hüseyin, 2014; Kritika, 2016; Syh-Jong & Meng-Fang, 2012). The results also indicated that experience influences views of IWB advantages, with more experienced teachers being more optimistic about its advantages than their less experienced peers, a somewhat counterintuitive finding also reached by other studies (Hüseyin, 2014; Syh-Jong & Meng-Fang, 2012).

It can be concluded that the Omani SSTs are highly aware of the advantages of IWB and they are highly interested in using it their lessons, because they had good training programs which enabled them to use IWB effectively in their lessons. The application of IWB in social studies lessons made them realize its advantages and amount of change it made in their lessons. Thus, they strongly support using it in all lessons and recommended that their colleagues use it. They also suggested solving some problems facing them in practical use, such as providing more technical support and providing IWB equipment in all classrooms. It was also found that teachers' gender and experience significantly influence on their attitudes toward IWB.

Conclusion and Recommendations

The current study investigated Omani SSTs' views about application of IWB in social studies lessons, its advantages and challenges. The results showed that they had adequate training and positive attitudes towards its effect on students learning, enhancement of the quality of learning environment, and excitement of using. They also preferred to use it in all lessons and strongly supported its utility in social studies lessons in particular. They recommended providing more technical support and ensuring all classrooms have an IWB. Finally, teachers' gender and experience influenced their attitudes towards IWB, with women and more experienced personnel being more skilled and optimistic about its use.

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References

Akcay, A., Halit, A., & Ufuk, G. (2017). Teachers' attitudes towards using interactive whiteboards. *Middle Eastern & African Journal of Educational Research*, *17*, 22-30.

Al-Faki, I., & Khamis, A. (2014). Difficulties facing teachers in using interactive whiteboard in their classes. *American International Journal of Social Science*, *3*(2), 136-158.

Beauchamp, G., & Perkinson, J. (2005). Beyond the 'wow' factor: developing interactivity with the interactive whiteboard. *School Science Review*, *86*(316), 97-103.

Bennett, S., & Lockyer, L. (2008). A study of teachers' integration of interactive whiteboards into four Australian primary school classrooms. *Learning, Media & Technology*, *33*(4), 289-300.

Chan, D. (2009). So why ask me? Are self reported data really that bad? In C. E. Lance and R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social sciences*, 309-335. New York, NY: Routledge.

Cision PR Newswire (2018). Interactive whiteboard market worth 516 billion USD by 2023. Retrieved 23 May 2018 from https://www.prnewswire.com/news-releases/interactive-whiteboard-market-worth-516-billion-usd-by-2023-675816983.html

Deaney, R., Chapman, A., & Hennessy, S. (2009). A case study of one teachers' use of an interactive whiteboard system to support knowledge co-construction in the history classroom. *The Curriculum Journal*, *20*(4), 365-387.

DiGregorio, P., & Sobel-Lojeski, K. (2010). The effects of interactive whiteboard (IWBs) on students' performance and learning: A literature review. *Journal of Educational Technology Systems*, *38*(3), 255-312.

Elaziz, M. F. (2008). Attitudes of students and teachers towards the use of interactive whiteboards in EFL classrooms. MSc thesis, Bilkent University, Ankara.

Geren, T., & Ergil, D. (2017). The effect of teaching supported by interactive whiteboard on students' mathematical achievements in lower secondary education. *Journal of Education and Learning*, *6*(1), 81-94.

Glover, D., Miller, D., Averis, D., & Door, V. (2005). The interactive whiteboard: A literature survey. *Technology, Pedagogy and Education*, *14*(2), 155-170.

Gosain, K. (2016). Factors Influencing the use of Interactive Whiteboard. *International Journal of Advanced Research*, *3*(3), 179-184.

Gray, C., Hagger-Vaughan, L., Pilkington, R., & Tomkins, S. A. (2005). The pros and cons of interactive whiteboards in relation to the key stage 3 strategy and framework. *The Language Learning Journal*, *32*(1), 38-44.

Hall, I., & Higgins, S. (2005). Primary school students' perceptions of interactive whiteboards. *Journal of Computer Assisted Learning*, *21*, 102-117.

Hüseyin, Ö. (2014). Teachers' and students' perception of interactive whiteboards in the English as a foreign language classroom. *The Turkish Online Journal of Educational Technology*, *13*(3), 126-147.

Isman, A., Abanmy, F., Hussein, H., & Al Saadany, M. (2012). Saudi secondary school teaches attitudes towards using interactive whiteboards in classroom. *The Turkish Online Journal of Educational Technology*, *11*(3), 286-296.

Järvelä, R.- L., & Kauppinen, M. (2012). Oppiainepedagogiikkaa yhteistyössä: Tietotekniikan sekä äidinkielen ja kirjallisuuden integrointi opettajankoulutuksessa. Jyväskylä, Finland: Jyväskylän yliopisto, opettajankoulutuslaitos, Retrieved 20 April 2018 from http://urn.fi/URN:ISBN:978-951-39-5066-8

Järvelä, S., Häkkinen, P., & Lehtinen, E. (2006). Motivaatio, emootiot ja oppimisen itsesäätely teknologiaympäristössä. In S. Järvelä, P. Häkkinen, & E. Lehtinen (Eds.), *Oppimisen teoria ja teknologian opetuskäyttö*. Helsinki, Finland: WSOY, 61-64.

Kankaanranta, M., Palonen, T., Kejonen, T., & Ärje, J. (2011). Tieto: Ja viestintätekniikan merkitys ja käyttömahdollisuudet koulujen arjessa. In M. Kankaanranta (Ed.), *Opetusteknologia koulun arjessa*. Jyväskylä, Finland: Jyväskylän Yliopisto, Koulutuksen tutkimuslaitos, 47-73. Retrieved 20 April 2018 from http://urn.fi/URN:ISBN:978-951-39-4198-7

Lee, B., & Boyle, M. (2004). Teachers tell their story: Interactive whiteboards at Richardson Primary School. Retrieved 4 April 2018 from http://www.virtualclassrooms.info/iwb/articles/Teachers%20tell%20their%20story%20Interactive%20Whiteboards%20at%20Richardson%20Primary%20School.PDF

Levy, P. (2002). *Interactive whiteboards in learning and teaching in two Sheffield schools: A developmental study*. Sheffield, UK: Sheffield Excellence in Cities Partnership.

Lewin, C., Somekh, B., & Steadman, S. (2008). Embedding interactive whiteboards in teaching and learning: The process of change in pedagogic practice. *Education and Information Technologies*, *13*(4), 291-303.

Lopez, O. S. (2010). The digital learning classroom: Improving English language learners' academic success in mathematics and reading using interactive whiteboard technology. *Computers & Education*, *54*(4), 901-915.

Majid, Z., & Najmeh, M. (2013). Teachers views of the effect of the interactive whiteboard (IWB) on teaching. *Procedia: Social and Behavioural Science*, *83*, 140-144.

Miller, D., & Glover, D. (2002). The interactive whiteboard as a force for pedagogic change: The experience of five elementary schools in an English education authority. *Information Technology in Childhood Education Annual*, 2002, 5-19. Retrieved 5 April 2018 from http://www.virtualclassrooms.info/iwb/articles/IWBpedagogicchange.pdf

Miller, D., Glover, D., & Averis, D. (2004). Panacea or prop? The role of the interactive whiteboard in improving teaching effectiveness. Paper presented at the Tenth International Congress of Mathematics Education, Copenhagen. Retrieved 12 March 2018 from http://www.virtualclassrooms.info/iwb/articles/IWBteachereffectiveness.pdf

Moss, G., Jewitt, C., Levacic, R., Armstrong, V., Cardini, A., & Castle, F. (2007). *The interactive whiteboards, pedagogy and pupil performance evaluation: An evaluation of the Schools Whiteboard Expansion (SWE) Project (London Challenge)*. Research Report No. 816. London, UK: University of London, Institute of Education, School of Educational Foundations and Policy Studies. Retrieved 12 March 2018 from http://discovery.ucl.ac.uk/10000905/1/Moss2007whiteboardsRR816.pdf

Oleksiw, T. (2007). *Increasing math scores with the Smart Board interactive whiteboard*. Parma, OH: Parma Community School. Retrieved 20 April 2018 from http://downloads01.smarttech.com/media/sitecore/en/pdf/research_library/k-12/the_effect_of_the_smart_board_interactive_whiteboard_on_raising_state_test_scores.pdf

Slay, H., Sieborger, I., & Hodgkinson-Williams, C. (2008). Interactive whiteboards: Real beauty or just 'lipstick'? *Computers & Education*, *51*(3), 1321-1341.

Smeets, E., & Mooij, T. (2001). Pupil-centered learning, ICT, and teacher behaviour: Observations in educational practice. *British Journal of Educational Technology*, *32*(4), 403-417.

Smith, H. J., Higgins, S., Wall, K., & Miller, J. (2005). Interactive whiteboards: Boon or bandwagon? A critical review of the literature. *Journal of Computer Assisted Learning*, *21*(2), 91-101.

Somyürek, S., Atasoy, B., & Özdemir, S. (2009). Board's IQ: What makes a board smart? *Computers & Education*, *53*(2), 368-374.

Syh-Jong, J., & Meng-Fang, T. (2012). Reasons for using or not using interactive whiteboards: Perspectives of Taiwanese elementary mathematic and science teachers. *Australasian Journal of Educational Technology*, *28*(8), 1451-1465.

Taalas, P., & Aalto, E. (2007). Opettajuus nyt: Toiminnallisen opettajankoulutuksen haasteita. In S. Pöyhönen, & Luukka, M.- R. (Eds.), *Kohti tulevaisuuden kielikoulutusta: Kielikoulutuspoliittisen projektin loppuraportti*. Jyväskylä, Finland: Jyväskylän Yliopistopaino, 153-195.

Thomas, M., & Schmid, E. C. (2010). *Interactive whiteboards for education: Theory, research and practice*. New York, NY: IGI Global.

Vähähyyppä, K. (2011). Tieto-ja viestintätekniikka koulussa nyt ja tulevaisuudessa. In M. Kankaanranta (Ed.), *Opetusteknologia koulun arjessa*. Jyväskylä, Finland: Jyväskylän Yliopisto, Koulutuksen tutkimuslaitos. Retrieved 20 April 2018 from https://wiki.oulu.fi/pages/viewpage.action?pageId=29066410

Walker, D. (2002, 13 September). White enlightening. *Times Educational Supplement*. Retrieved 20 April 2018 from http://www.hpedsb.on.ca/ec/services/cst/elementary/math/documents/whiteboards_research.pdf