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Teachers' Views of the Effects of the Interactive White Board (IWB) on Teaching

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Abstract

This study addressed some issues relating to interactive whiteboards (IWB) to verify in what ways using IWB affects whole-class teaching. The study was on the base of teachers' attitudes. The data were gathered from interviews and questionnaires. The study showed that the impact of IWB on teaching has been more than expected. According this study, IWB can enhance the pedagogical skills, increase the students' attention and save teaching time. It also may help to reduce the role of the teachers in classrooms and to improve some student skills, such as team working and discussion. IWB also has increased the rate of using other ICT tools in the classroom. However, still there are some issues with using IWB which might hinder enhanced teaching, such as training the teachers for using all the abilities of IWB in teaching, reducing the expenses for buying of IWBs and providing more practical IWB software.

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1. Introduction

Interactive Whiteboard (IWB) is a new ICT tools introduced to the educational settings. It includes a set of a special whiteboard screen connected to a computer and a data projector (www.techlearn.ac.uk, 2008). The teacher can explain the information by touching the screen or using a special digital pen. Nonetheless, the plasma technology is expensive and many education systems may not be able to afford it (Rudd, 2008). By reducing the expenses, it seems likely soon to take over from blackboards and normal whiteboards. However, many of the strengths and weaknesses of this major ICT tool still remain to be understood and the impact of it on teaching needs to be known through more investigations. The main problem in the field of using IWB in primary schools is that there are many debates about the ways that IWB can have very positive effects on teaching in primary schools. More research is needed to highlight the teachers' attitudes towards the IWB and its contribution toward providing a more effective ICT environment in schools and specifically in the classrooms. Although there are many reports in the media suggesting the IWB is an exceptional ICT device widely usable in class teaching and learning, most academic

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studies tend to show a very mixed picture. It has been reported that IWB significantly enhances both teaching and learning in a number of ways, such as facilitating better display, providing more visual representation, presenting difficult concepts by providing modelling, motivating children more effectively, increasing the pupils' span of attention and focus (Kennewell & Beauchamp, 2007). Many studies have focused on measuring the impact of computer attitudes (Shapka & Ferrari, 2003). Tondeur *et al*. (2008) highlighted that teachers' educational belief about ICT is associated with specific uses of computers in classroom. Approaches towards computers can be defined as specific feelings that indicate whether a teacher likes or dislike using computers. van Braak *et al*. (2004) reported that teachers who have more positive computer attitude, are more likely to use computer-based devices in their classrooms. Gerard (1999) using IWB in secondary school foreign language classes, recognized three major method in which the whiteboard helps teachers in the foreign language teaching process: it assists the presentation of new linguistic and cultural elements; it helps interaction with the class; and it supports the teachers' organizational skills. In a different work, Glover *et al*. (2001) by gathering evidence from a whole-staff questionnaire, outlined the views of teachers. They revealed the role of IWB was to help competence and extend teaching. They showed how the effective use of IWB relates to teachers' attitudes towards the technology and claimed that when an IWB is utilized for teaching in classes, problems in teaching are more likely to happen, if teachers cannot manage the interactivity required by this new approach to pedagogy. This suggests that training and personal development are key elements in successfully integrating IWB into the curriculum. Greiffenhagen (2000a, 2000b) investigated the capacity of IWBs in the teaching of mathematics. Using data from field observations, video recordings and interviews with a teacher, his paper compared the teacher's use of a traditional board with the supposed ability of an IWB. He showed that an IWB not only is usable as a presentational tool but also as an interactive and communicative ICT tool. Levy (2002) used information from observations in class, teachers' interviews, and student questionnaires and focus groups to examine some of the issues arising at an early stage of IWB installation. His study demonstrated how IWBs modify the methods of teaching in variety of subject areas.

Smith (1999) studied the methods by which IWB technology might be integrated into different curriculum subjects and areas. The study explored high levels of interest into the whiteboards, with most of both staff and pupils reporting improvements in enthusiasm and learning achievements. Smith (2001) assessed the introduction and utilization of whiteboard technology in six primary schools and identified that the whiteboards have been used in classrooms efficiently in a number of subject area, in particular in the teaching of literacy and numeracy. He hinted that some difficulties might occur because of the location and position of IWB in classrooms. To maximize the advantages of using IWB and to move it from a marginal and peripheral activity to a main part of the classroom environment, in a way that can enhance teaching, the attitude of teachers towards IWB is central. Therefore, the attitude of teachers toward IWB and the contribution they may make establishing a full ICT environment in their classroom using IWB is a critical point. The research question in this study is "In what ways does using IWB affect whole-class teaching in primary school?"

2. Data gathering method

The study was conducted during September 2008. This study was conducted in one of the council primary schools in Aberdeen, UK which included 198 pupils in seven classrooms, including P1 to P7. The data for this study were collected by either interviews or questionnaire. Participants had the opportunity to select a convenient time to participate in the study. The data was gathered from one interview with head teacher and four interviews and five questionnaires with teachers.

3. Results and findings

All the headteacher and class teachers believed that there were significant differences between IWB and other ICT tools. All the teachers agreed that the installation of IWB definitely has affected the range and the frequency of use of other resources including the Internet, digital camera and some presentation programs such as PowerPoint. All the participants believed that using IWB was suitable for all levels of primary especially for primary seven children who have projects. The findings showed that all the classes used IWB in different ways in the classroom,

and four teachers believed that the most popular use of IWB in the classroom was Microsoft Office particularly for literacy. According to the P3 teacher's view there is different software for using IWB in class. For example, she explained that basically they used different software, such as Easy teach, Pelican big book, Dance mat and some hardware facilities which can be linked to IWB, like RMI to increase the usefulness of teaching by IWB. All the teachers used very different Internet resources which were not similar to each other. They thought that using IWB in their classrooms affects their teaching by drawing the pupils' attention, motivating them and saving the teaching time especially by digital saving of the teaching writing. The teachers believed that IWB has changed their method of teaching and practice. Some of the teachers stated that they have used different Internet resources for IWB. A comparison between the resources showed that each teacher used a different web site on the basis of their interests. Most of the teachers believed that they used all three types of boards in the class but for different purposes. However, generally all the teachers preferred to use IWB rather than other boards due to having more advantages. One of the participants pointed out that there are some pupils with special needs who IWB does affect badly, as they have some problems with the light reflected from IWB to their eyes. In these special situations, teachers have to use the blackboard or normal whiteboard. All the teachers believed that IWB has affected and changed the method of their teaching and practice clearly. The majority of the teachers stated that using IWB has also increased their interest in using other ICT tools such as DVD and video player in the class. One of the teachers explained: *"...Teaching by using IWB is more visual and interactive and increases interest for teaching"*.

Generally teachers thought that IWB is usable in all area of curriculum. However, depending on the level of classrooms, some of the areas are more important than others. For example, in primary six, although all area of curriculum can be taught with IWB, Mathematics and Environmental study are more suitable to IWB to enhance learning. Literacy was another area of curriculum which some teachers taught by IWB frequently. The only area of curriculum which it was not used routinely was physical education. All participants were using IWB for teaching by presentation skills; however three participants were not quite familiar with all the IWB features and the specific software coming with IWB. Further, three interviewee participants believed that they sometimes encounter technical problems which they occasionally cannot manage it. All the teachers stated that the size of IWB did not affect their teaching but mostly believed that the position of IWB was important.

4. Discussion & Conclusion

The teachers who were participants in this study were exploiting IWB in different ways and had different views and attitudes regarding the usages, and the teaching affects, of this modern ICT tool IWB. The participants also showed to some extent similar views towards pedagogical aspect of using IWB, particularly as regards directing and managing the class or sharing a part of the class management with the children themselves. In general, the participants did not feel the use of the IWB had really changed their classroom practice but believed that it has improved the way that they deliver their teaching material. The findings showed that using an IWB does demand some ICT skills which might affect pedagogy.

According the findings, IWB positively increases pedagogical skills. There is a great number of existing investigations into the pedagogical skills required for good practice in using ICT. The results of this research offer some evidence that these skills dramatically changed in a class practising with the IWB. Therefore, it appears that the process of changing skills and adaptation with new pedagogy methods for using this new technology is easy. This is in agreement with the study conducted by Kent (2004). In contrast, in another study, Cogill (2002) showed that the teachers generally did not feel that use of the IWB had really changed their classroom practising. This is in contrast with the findings in the current study. As there is no exact border between different teaching practices, this discrepancy might be insignificant. From other aspect, as Glover (2001) argued the problems with the limited impact of IWB in teaching are more likely to happen if teachers cannot understand that interactivity requires a new approach to pedagogy.

The participants in this study believed that the IWB has helped them to save teaching time as they can save any page provided on IWB and retrieve it again. Indeed, when a teacher uses a conventional whiteboard or a blackboard s/he has to face several limitations. The major barrier is the space limitation for writing notes or information. On

many occasions, teachers wipe the board clean to allow additional space and sometimes they have to wait until the children have noted down information. Further, teachers usually encounter time limit pressures in each one hour lesson. According to the teachers' view, the technology of the IWB overcomes this limit through its memory capacity and the teacher is given relief and less stress.

The control of conventional boards is beyond the ability of teachers as they cannot save and retrieve the information belonging to their lessons. Indeed, all the erased material needs to be repeated if a teacher wants to use them again. The participants in this study were happy with a special feature in IWB which can help them to link their current lesson to past and the future lessons. This feature not only assists the teachers to save the class time, but also helps the children to remember the previous lessons quickly. The most interesting feature of IWB is its memory ability for connecting the pages through a computer.

In concordance with a previous study conducted by Cogill (2002), the current study showed that there are some connections between being a good user of ICT and using IWB frequently in the classroom. The teachers who are proficient in ICT skills have more confidence and are happy to use IWB as a modern ICT device as they are more familiar with technical aspects of these devices. An important point is that IWB has a strong capacity that can facilitate the use of other ICT tools in the class. For example, OFSTED (2002) showed that it is more convenient for primary teachers to use ICT in class when a projector or screen is available. It was noticed that there is a tendency and interest both with teacher and pupils to work actively with IWB. However, the findings revealed that the participants do not have the required knowledge for using all the different features designed in IWB software. Indeed, although IWB is used frequently in all classes, in most cases it is limited to normal presentation and most of the teachers know very little about some valuable features of IWB. There has been insufficient CPD, so teachers are not aware of how to use manipulations and virtual manipulation in their IWB teaching of writing. This suggests that there is a need for CPD in this field for all the teachers generally.

According to the teachers' attitude, different software and accessibility to the Internet has provided huge capacity and ability for IWBs. It is essential that, just like teaching in a more conventional way, the teacher plans, researches, and organizes information for the lesson before entering the classroom for lesson delivery. Therefore, browsing information for teaching in the class using IWB while delivering lesson seems an inappropriate way which will result in confuseing both students and teachers and losing class time (Hunt, 2005). One of the problems with IWB presented by the participants is finding some resources for IWB in the Internet. It might sometimes take a longer time to find good resources by browsing the Internet. Obviously, one of the major resources of IWB for pedagogy is using online information in the classroom. However, teachers had great difficulties selecting essential information from the Internet and integrating them into their lesson plan within a limited time for the lesson. Teachers cannot spend times allocated for lesson delivery for the purpose of browsing the internet to hunt for favorite information. Teaching is a full-time job in the class and there is no time for searching for (Internet) information in the classroom. One of the side effects of using IWB is the access to huge amount of resources and it is critically important for a teacher to use the best resources for delivery in a very short time.

It may be argued that according to the teachers' view, the introduction of IWB to the curriculum is a positive experience. Indeed, attractive pedagogical approaches with high level of interactivity in the classroom could be stimulated by using IWB. The current study has addressed how IWBs can be exploited for teaching and how they may affect teaching in primary schools. On the basis of the finding of this research we can draw this conclusion that IWB has the ability to make a significant impact on classroom practice teaching in primary schools from many aspects. It is expected that these effects will be increased with more expansion of IWB in schools and more comprehensive use of it in the near future. This could happen by reducing the price, holding training courses and designing easier ways for manipulating data on IWB.

This study provided a wider understanding of how using an IWB in the primary classroom may affect teaching and how this new technology may affect the pedagogical skills. Nevertheless, many issues remain to be investigated. While the study has provided some answers to the main research question, several areas of using IWB remain open. It is proposed to conduct a future investigation about the role of IWB in learning on the basis of observation. This can be complementary to the current study.

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