Learner Perceptions of Interactive Whiteboards in EFL Classrooms

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Abstract

This article reports on research into learner perceptions of interactive whiteboard (IWB) use in English as a foreign language class. Students from several language centers in different parts of the world were asked about their opinion of learning in a class where an IWB is used. Responses were segmented, codified and certain categories identified. The results show a general appreciation of the introduction of new technology but suggest there is little in the way of an improved pedagogy being implemented that might immediately justify the investment. It is suggested that (i) there is unevenness in teacher preparation for IWB use, both in terms of techniques and pedagogy; (ii) IWB peripheral devices should not be seen as "peripheral" to classroom practice; (iii) involving students in a discussion of the potential of the technology can aid the emergence of appropriate pedagogy which will help to offset the differing levels of teacher experience and training.

Introduction

Interactive whiteboards have been the most visible development in teaching in British schools in recent years where they are used in primary and subject area teaching. According to a UK Department for Education and Skills (2007) report, they are important enough to have attracted a funding stream separate from that for other information communication technology (ICT). These touch-sensitive whiteboards which display computer-generated image and text have also made their mark in centers teaching English as a foreign and second language. Since 2003, organizations such as the British Council and International House have been equipping their teaching centres with the technology. They now have hundreds of IWBs, and the accompanying digital projectors and computers, installed at a cost of several thousand pounds each. While there is a general sense that IWBs are exciting innovations, there is little published research into their use in EFL settings. The review of the literature that follows gives us plenty of reasons to be positive about IWBs but we know little about whether or not the learners share our opinions. This article reports on an initial investigation into student perceptions of IWBs to understand better the impact this costly technology is having in the classroom.

IWBs are widely perceived to improve teaching and learning, adding value to the learner's experience in the classroom, and increasing motivation (Kennewell and Morgan, 2003). There is little research to support claims that IWBs improve attainment and what there is may not be completely objective (Smart Technologies, 2004) or is inconclusive (Glover, Miller and Averis, 2004). According to the Department for Education and Skills (2007, p.6) "there are three key themes that dominate thinking about the role of IWBs in changing pedagogy". These are increased pace of delivery, new use of multimedia; and an interactive teaching style. Another UK government agency, (Becta, 2003) adds to these

the creation of a good learning environment in which the IWB allows the teacher to present and discuss students' work using technology to focus on student-originated material, all of which, "helps keep the class on task and raise self-esteem" (p.3).

IWBs are seen as a valuable tool supporting interactive whole-class teaching, the focus of some attention in recent years. One of the reasons this is seen as desirable is that it provides an ICT alternative to rooms with banks of computers which came to be seen as giving individuals access to technology yet reinforcing the idea that using ICT is something apart from rather than integrated into the normal work of the class (Ofsted, 2004). Whole class teaching has also been promoted in state schools as a solution to a perceived slip in standards in mathematics teaching caused by eclectic teaching methods which means learners have to learn to deal with different teaching styles as they move from class to class. Graham, Rowlands, Jennings, and English (1999) suggest that national teacher training should focus on a standardized methodology with teacher-led lessons that require the learners to work in the class's collective Zone of Proximal Development. Such teaching is seen as helping to avoid the falling behind of certain pupils by providing a stronger social structure than is provided in small group work or individual work, which is then checked by the teacher. Language teachers, however, are wary of moves to put them back in front of the board for long periods, seeing the IWB as potentially luring the teacher into a presentation style of teaching leaving the learners in a passive role (Gray, Hagger-Vaughan, Pilkington and Tomkins, 2005).

IWBs create something of a "wow" effect, being brightly lit, colourful, and dynamic. They allow for the easy incorporation of multimedia into lessons and access to the internet by the class as a whole group (Levy 2002). IWBs are said to provide for different input preferences, visual, auditory, and kinesthetic, (Ball, 2003). The educational software available allows abstract ideas to be modeled in visually stimulating ways helping to deepen learner's understanding (Miller, 2003). Beeland (2002) found that the use of the IWB increased learner engagement with the lesson, primarily as a result of the quality of the visual presentation. Glover, Miller, and Averis (2004) report that teachers see IWBs as superior to traditional boards because of the possibility of using multiple screens, annotation of the screen as the lesson proceeds, "drag and drop", "hide and reveal", colour shading and the capability to recall previous stages in the lesson.

Interactivity is the feature most talked about, although there are different ideas as to what this means. Kennewell (as cited in DfES 2007) mentions the automatic provision of feedback in response to any action decided on and to input by the users. Armstrong et al. (2005) focus on interaction as the "give and take between pupils and teacher which goes beyond a superficial learning scenario to a stimulating interplay which leads to new formulations and new understanding" (p.457). Thus whole class teaching with the IWB is seen as making it easier to structure the teacher-student dialogue to push the development of higher-order thinking skills. Multiple screens mean problems can be tackled in different ways, each approach worked through and saved. The thinking process followed is thus available for analysis and leads to the development of valuable metacognition (Yates, 2006).

A simpler view of interactivity is the manipulation by the learners of the IWB. A discussion between members of an ICT user online forum (Becta 2005a) included comments that young learners "gain from the kinesthetic experience of dragging things about the board with large arm movements", and that children constructing their

understanding do so "most effectively when there is an audience". The visually stimulating IWB enhances this performance. The same discussion included the following comment from a staff member at Promethean, a principal supplier of IWBs and educational software. There is a clear association of "interactive" with learner use of the IWB;

"We seem very focused on the teacher in this debate and not on the learner. Interactive whiteboard says it all, these boards are designed to be worked at or on. Not just by the teacher, but by the student as well. If we want passive learners then sure, sit them down and show them PowerPoint screens until they doze off. Get them up, get the VAK going!"

Kennewell and Morgan (2003) appear to suggest something similar while not crediting the designers with the idea, "touching the boards seemed to be particularly important for younger children, although this point had not been recognized by the designers!" (p. 3)

The Department for Education and Skills report (2007) identifies three aspects to interactivity: technological - interacting with the software; physical - going up to the board; and conceptual – using the board to break down and reconstruct ideas and facilitate recognition of the learning process itself. It is critical of "the focus on interactivity as a technical process" as this leads to "some relatively mundane activities being seen as 'good' with interaction with the board appearing to stand for learning." (p.41). The report praises the lessons where whole-class teaching was enhanced and where spaces for interactive work, discussion, and extended dialogue were opened up by the teacher's use of the IWB. It describes these lessons as marked by the use of the technology to create opportunities for dialogue and discussion, embedding digital texts within the lesson while moving away from features such as drag and drop and hide and reveal. Reporting on a case study, the same report then concludes that the possibility of technical and physical interaction with the IWB "is not necessarily good in and of itself. It can not be treated uncritically" and that more attention should be paid to when such pedagogy improves learning" (p. 44).

The issue of developing an IWB pedagogy that improves learning is seen as dependent on four main factors (Glover, Miller, and Averis, 2004). These are technical skill in using the IWB with other technologies such as the internet; the availability of a range of materials in order "to match teaching to context to needs at any one time"; classroom management skills that maximize learners' attention span; and "an awareness of the complex interaction of teaching and learning style" (p.1-2). However, these factors may not be present as, for many teachers, the technology simply lends itself to assimilation into existing ways of working (Glover and Miller, 2001).

The incorporation of IWBs into an English for Academic Purposes class was investigated by Cutrim Schmid (2006). Using a critical theory of technology that insists on contextualizing and understanding its social embeddedness, she researched how the IWB came to be used as part of a hands-on (the technology) approach using whole-class interaction to collaboratively learn about English academic literary practices. The way the board was used was seen to be the result of an interaction between the teacher's pedagogical beliefs and consequent practice, the students' understanding of the potential of the technology, and the inherent characteristics of the technology itself. This interaction was mediated through a process of negotiation with the learners as to how the

technology should be pedagogically exploited. The study is particularly interesting as it recognizes that the students' have direct knowledge of information technology, often superior skills to the teacher, and that this makes technology use an occasion for struggle as both teachers and learners try to influence the methods and meanings given to it. It is out of this conflict that a new pedagogy can emerge. Cutrim Schmidt makes explicit reference to the use of peripherals. These are a slate for remote manipulation of the board and wireless voting buttons which allow the teacher to move away from the board relinquishing control to the learners where this is considered useful for the achievement of lesson objectives. Using the peripherals, the material on the board can be manipulated and/or responded to directly by the learners without the teacher being present out front mediating the interaction.

The benefits of IWB use are summarized below. They:

- add a "wow" factor to the class as learners appreciate modern technology;
- allow for productive whole class teaching by providing a visually engaging presentation tool;
- allow for interactivity by making use of the different ways of manipulating the applications that are running on the screen - for example, layering pictures or text, overwriting, highlighting, hiding, revealing, dragging and dropping text, pictures, etc.;
- allow the learners to manipulate the information on the screen. They can do this from their seat or taking the pen and working at the IWB in front of the class;
- allow for the showcasing of learners' presentations;
- give us an electronic flipchart with as many pages as we want;
- allow us to prepare multiple electronic flipchart pages before the class and to select the order of presentation - we can add text or drawings to the pages according to how the learners respond and revise the lesson by reviewing the flipchart sequence page by page;
- allow for a vast array of text type, colour, symbols, pictures, hyperlinks to sound files, video clips and internet pages to be incorporated;
- support different learning preferences – allowing for visual, auditory and kinaesthetic input - it has been said that the IWB is where VAK meets ICT;
- give us quality computer graphics which allow for the visualisation of concepts otherwise difficult to represent;
- are claimed to improve levels of information retention;
- allow us to print off anything that appears on the board and give copies to the learners.

Methodology

Student perceptions were investigated in two ways. First, 26 learners from 8 different classes in Lebanon and Tunisia were asked at the end of their lesson to answer the question, "What's it like learning English in a class with an IWB?" They gave their answers orally and these were recorded, transcribed, segmented, and codified according to the features appearing in the data. Second, written responses to the question, "What do

you like/dislike about learning with an IWB?" were segmented and codified as with the oral data. This second source of data came from an open question at the end of a questionnaire given out in several British Council teaching centres. Over a hundred answers and a majority of these from South Korea were analysed. A total of 612 segments were codified. A colleague was asked to codify a selection of 100 segments to check the agreement. She agreed with 82 percent of the original codifications. Where disagreement existed, it was over categories that were then merged to reduce the overall number. Examples of the responses are given in the appendix.

Results and discussion

Table 1 sets out the main results.

Table 1:
The Main Results

	% of Total Comments
General appreciation of new technology in class, the high quality visuals, and the use of the internet	30%
Increased pace of the lessons	10%
Improved understanding and learning	9%
Cleanliness of the board compared to traditional boards	9%
Dissatisfaction with technical problems	8%
Appreciation of teacher's use of IWB techniques	5%
Dissatisfaction with teacher's IWB skills	5%
Learners manipulating the board	3%
Possibility of having screens printed off as handouts	2%

For discussion purposes the results have been divided into three categories: learner comments that were anticipated given my experience with IWBs and the experience of others as reported in the literature; learner comments not anticipated; and those areas I expected to be commented on that were not.

Anticipated comments:

Learners are impressed with the technology: the "wow" factor. 30% of comments refer to the attraction of new technology and many of these mention the fact of being connected to the internet.

"so you can go directly to the email to do a search"

"one day, the teacher show us some picture from the internet"

As with other studies such as Curran Schmid (2006), Glover et al. (2004), and Imus et al. (2004), students are generally positive about the introduction of new technology. However, projecting web-based resources can be done without an IWB, so one would hope to find some further justification for the expense of an IWB.

Faster paced lessons. About 10% of the comments refer to the increased pace of lessons. This is an important perception, and again, as anticipated. The learners may be seeing more board-work and getting more done in the sense of being exposed to more. Some students commented that it takes no time to clean the board because the teacher can open a new page or use the "instant erase" tool. It may also be that the teacher takes the learners through the lesson faster because at any moment it is possible to flip back to previous pages and review as necessary.

Improved understanding. About 10% of the comments refer to better learning. This is another important perception and suggests that teachers may be holding their students' attention more. If the students are engaged for longer periods, probably as a result of the visual attraction and the technical interactivity, their understanding of the input may well happen faster or be deeper. It still needs to be investigated whether or not levels of attainment have improved as a result of IWB use. Glover, Miller, and Averis (2004) also wondered if learners' perceptions of progress would be matched by empirical research. It has been noted that learners value teachers who use ICT more highly than those who do not (Imus, Ployhart, Ritzer & Sleigh, 2004) so this could also affect learner perceptions of progress.

Not anticipated:

Cleaner classrooms. Almost 10% of the comments refer to the lack of chalk dust. The learners appear to be comparing their EFL classrooms with other institutions where chalkboards are the norm, not with the ordinary whiteboards previously used in the teaching centres where the research was carried out. It could also be argued that this category of perception belongs to the "wow" factor of new technology.

Technical problems. Almost 8% of the comments, and all from one centre in South East Asia, so this is not a general perception. Still, it is worth stating the obvious - that maintenance needs to be built into the ICT budget. Technical problems with tried and tested equipment are relatively easy to solve, but we should heed the warning. Learners may not remember the good things that happen as well as remember the bad. It may also be that learners in Lebanon, for example, are more tolerant of technical problems because of the regular power cuts in many parts of the country.

Not commented on as much as anticipated:

New classroom techniques. Only 5% of comments, from a total of three learners, indicate that there may be a new approach to teaching development. One learner stated,

"I like it that you can come back to the information"

This is a reference to the teacher revisiting flipchart pages. It was anticipated that this would be more commented on as it is a defining feature of the flipchart model

software. It was also a highly valued feature in the study by Glover, Miller and Averis (2004). The virtual silence on this aspect suggests that few teachers are reviewing lessons, revisiting those moments in the lesson when cognitive challenge and subsequent analysis might have resulted in successful learning. Another learner was more explicit,

"and there are some techniques that are used by the teacher that are good. Yeah, so the way he use them in class, the way he hides something and reveals others, and the way he plays with them… or with the techniques of this tool. It's good. It makes you think in efficient way."

Here the learner refers quite specifically to the fact that something different is going on in the class. The fact that only three learners made such comments suggests there is quite a difference in the skill level and/or approach of the teachers who have taught the learners consulted during research. The final comment about thinking in an efficient way is important as it appears the teacher is not just skilled in the technical tools but is using them to stimulate the learning process. This is, however, one learner referring to one teacher. Another 5% of comments refer negatively to the teachers' lack of skill with the IWB.

The issue of being skilled in the technical manipulation of the IWB is linked to the ability of the teacher to reach the "enhanced interactive" level aimed for by Becta (2005b). The level is characterised by teachers who "are aware of the techniques available, are fluent in their use and structure lessons so that there is considerable opportunity for pupils to respond to IAW (interactive whiteboard) stimuli." (p.4). The technical skills are important but are learned to support teacher-student interaction, rather than replace it.

Learner use of technology. About 4% of the comments, and half of those negatively, made mention of student use of the IWB. Either the technology was perceived to be too complicated for the learner or they were not allowed to try. This was also the finding in a study of primary school students' perceptions of IWBs (Hall & Higgins, 2005). As the Department for Education and Skills (2007) mentions, some teachers effectively waste time because they are getting learners up to the board "to have a go". Some teachers see student presentations as enhanced by being able to use the IWB. It seems reasonable to assume that a consequence of the wow factor will be that learners want to use the board. In the classes investigated, the teacher has perhaps realised the danger of using the class time unproductively, even though individual students may be enjoying themselves. As Gray, et al (2005) point out, pair work is a vital practice tool in language teaching which can supplement whole-class IWB work, not be replaced by it. The use of collaborative pair and group work assumes the resulting interaction will require negotiation of meaning, a key element in second language acquisition. Thus in large parts of many EFL lessons, the teacher takes a facilitator role, moving away from centre stage and monitoring. If the IWBs are simply taken on as modern versions of the traditional board than it is not surprising that student access to the technology is limited.

The data showed quite clearly that no peripherals were used. None of the students mentioned using the wireless slate or voting buttons which would also be a sign of an enhanced, student-centered, pedagogy emerging. Not having these peripherals means limiting the ways of interacting with the board and perhaps increasing students' frustration. In addition to the slate and voting buttons, ELT practitioners could learn from the public

school system where the power of all kinds of peripherals has been recognised and discussed.

"Skilled teachers are already taking advantage of the facility with the IWBs to input and readily integrate stimulus material from all manner of local and networked digital sources to create highly engaging and productive teaching situations. They're using the input from VCRs, the Internet, the Intranet, cable television, CD-ROMS, CD, DVDs, computer software, scanners, digital cameras, and even the cell phone. (IWB.net 2007)

Printing board work. Less than 2% of comments referred to this. Five learners mentioned printing the board work, two of them wishing it were done. Given the opportunities for building understanding and recalling the learning process through a series of screens, it was anticipated that greater use would be made of the opportunity to print the flipchart pages as take-home handouts. The reason could be restricted access to a printer, or simply that the teachers consider the students' handwritten notes a sufficient record of the class. Also if the flipchart pages used in a lesson are generated ad hoc, the teacher may not consider them worth printing. This is also related to the idea that IWBs will not automatically lead to a new pedagogy emerging, for the following reason. The efficient use of IWB involves a redistribution of teacher work. Preparation of electronic flipcharts takes place before the lesson and leads to improved board work as teachers consider the usefulness of the way they are going to present ideas. Each lesson involves the modification of the original flipchart as the teacher and students interact with the material. The original becomes part of the teacher's resources and the annotated flipchart becomes a record of the lesson. In principle, teacher preparation time should even out over the year as flipcharts can be reused for revision or with other classes. In reality, however, in many ELT settings teachers frequently change classes, levels, and course books to meet the needs of the centre. Teachers may not feel it worth their circumstance while preparing flipcharts in advance for all, or even some of their classes.

Conclusions

It is clear that teachers and pupils are impressed by the use of technology in the classroom and we know that learners appreciate the use of technology and may even rate teachers higher because of this. However, it would appear that the promise of interactive whiteboards is as yet unfulfilled, except perhaps in the case of a few teachers. Teachers go through a series of stages as they learn to exploit new technology. For this to happen it requires that teachers continue to work in centres with IWBs and that there is an incentive to move beyond current ways of working. It has been pointed out that IWBs are least effective and have a limited impact on teaching and learning when teachers simply incorporate them into traditional ways of working (Armstrong et al. 2005. p. 456). (Glover and Miller, 2001) argue that IWBs have limited value if teachers "fail to appreciate that interactivity requires a new approach to pedagogy" and there may be a tendency for IWBs to be used more as an "interest enhancer than as a new approach to learning" (p.269). EFL teachers' resistance to giving up some of their student-centered activity time to more teacher-centered activities could usefully be discussed in the context of different ways of providing for learning centred activities (Hutchison and Waters, 1987; Xiao, 2006).

Given the global context in which EFL teaching takes place and the presence of IWBs in many countries, research is needed which seeks out best practice to identify whatever emerging pedagogies already exist. At the same time, we can experiment with dialogue and negotiation with the learners as exemplified in Cutrim Schmid's (2006) research. This means investing in the peripherals designed to give students remote control of the board. It also means encouraging the use of scanners, digital cameras, and other peripheral means of integrating student input and output. Finally, it is recommended that we give the learners the vocabulary to articulate learning and teaching objectives and methodology. Even though this suggestion for learner training is not new, one observation that can be made of this research into learner perceptions of working with IWBs is that there is little use of metalanguage to describe learning with technology. Finally, a new approach means recognising that learners' experience of technology is a resource that can contribute to the creation of interactive lessons in which learners exercise their initiative to achieve previously specified objectives.

References

Armstrong, V., Barnes, S., Sutherland, R., Curran, S., Mills, S., and Thompson, I. (2005). Collaborative research methodology for investigating teaching and learning: the use of interactive whiteboard technology. *Educational review*, 57, 455-467.

Ball, B. (2003). Teaching and learning mathematics with an interactive whiteboard. Micromath, 19 http://www.atm.org.uk/mt/micromath/mm191ball.pdf

Becta (2003). What the research says about interactive whiteboards. www.becta.org.uk/page_documents/research/wtrs_whiteboards.pdf

Becta (2005a). Interactive whiteboards (ICT Research Network) research-bounces_at lists.becta.org.uk

Becta (2005b). How can the use of an interactive whiteboard enhance the nature of teaching and learning in secondary mathematics and modern foreign languages? http://www.becta.org.uk/pagedocuments/research/bursaries05/interactive_whiteb oard

Beeland, W. D. (2002). Student engagement, visual learning and technology: Can interactive whiteboards help? *Action research exchange*, 1(1). http://chiron.valdosta.edu/are/Artmanscrpt/vol1no1/beeland_am.pdf

Cutrim Schmid, E. (2006). Investigating the use of interactive whiteboard technology in the English language classroom through the lens of a critical theory of technology. *Computer assisted language learning*, 19, 47-62.

DfES. (2007). The interactive whiteboards, pedagogy and pupil performance evaluation: an evalauation of the schools whiteboards expansion project: London challenge. http://www.dfes.gov.uk/research/data/uploadfiles/RR816.pdf

Feenberg, A. (1999). *Questioning technology*. London: Routledge

Glover, D., and Miller, D. (2001). 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, 257-277.

Glover, D., Miller, D., and Averis, D. (2004). Panacea or prop: the role of the interactive whiteboard in improving teaching effectiveness. The Tenth International Congress

of Mathematics Education, Copenhagen. http://www.icme-organisers.dk/tsg15/
Glover_et_al.pdf

Graham, T., Rowlands, S., Jenings, S., and English, J. (1999). Towards whole-class interactive teaching. *Teaching mathematics and its applications*, 18, 50-60.

Gray, G., Hagger-Vaughan, Pilkington, R. and Tomkins, S-A. (2005). The pros and cons of interactive whiteboards in relation to the key stage 3 strategy and framework. *Language learning journal*, 32, 38-44.

Hall, I. and Higgins, S. (2005). Primary school students' perceptions of interactive whiteboards. *Journal of computer assisted learning*, 21, 102-117.

Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning centred approach*. Cambridge: Cambridge University Press.

Imus, A., Ployhart, R., Ritzer, D., and Sleigh, M. (2004). Technology: a boom or bust? An understanding of students' perceptions of technology use in the classroom. *Inventio*, 6. http://www.doit.gmu.edu/inventio/issue_Spr_04.html

Kennewell, S., and Morgan, A. (2003). Student teachers' experiences and attitudes towards using interactive whiteboards in the teaching and learning of young children. *Proceedings of young children and learning technologies conference*. Sydney: International Federation for Information Processing.

Levy, P. (2002). Interactive Whiteboards in learning and teaching in two Sheffield schools: a developmental study. Department of Information Studies, University of Sheffield, 2002. http://dis.shef.ac.uk/eirg/projects/wboards.htm

Miller, D. (2003). Developing Interactive whiteboard activity. *MicroMath*, 19, 33-35.

Ofsted, (2004). ICT in schools: the impact of government initiatives five years on. Ofsted.

Smart Technologies (2004). Interactive whiteboards and learning: a review of classroom case studies and research literature. http://education.smarttech.com

Yates, C. (2006). A robust method for developing children's thinking. http://www.nfer-nelson.co.uk/articles/developingchildrensthinking.asp

Xiao, L. (2006). What can we Learn from a Learning Needs Analysis of Chinese English Majors in a University Context? *Asian EFL journal*, 8, article 4. http://www.asian-efl-journal.com/Dec_06_xl.php

IWB.net. (2007). Digital Hubs. http://www.iwb.net.au/advice/digital-hubs/1-intro.htm