

Ann Alexander

EDCI 6301

Spring 2006

ann.alexander10@utb.edu

Interactive Whiteboards: an Answer to Technology Integration?

The development of interactive whiteboards has made the integration of technology available to entire classrooms through just one computer. The ease with which a nationwide problem, the legislative directive requiring states to “develop technology plans describing how they will use technology to support systemic reform and to help their students achieve high standards” (U.S. Department of Education) can be solved so easily has sparked critics to question whether interactive whiteboards are in fact an effective way to integrate technology, or just a giant gimmick, representing a fad that will pass.

The legislative directive, published as “Goals 2000” specifies the need for a “challenging set of expectations for students and for coherent, high-quality educational opportunities to meet those expectations” (U.S. Department of Education). The directive goes further by delineating exactly what type of opportunities should be provided and defines the most useful as those that would prepare students to use technology in the real world. The most applicable uses of technology would be as tools and communication channels. Students receiving experience in “selecting appropriate technology tools and in applying technologies such as word processors, spreadsheets, hypermedia, and network search tools to their work supports the performance of complex, authentic tasks and

provides experiences that prepare students for the world outside of school” (U.S. Department of Education). Interactive whiteboards are currently used in this “world outside of school” in business as a presentation and training tool and even by the national cable news channels (CNN, Headline News, CNBC, MSNBC, etc.) for presenting breaking stories to the public. This technology is part of the “real world” environment for which we should be preparing students. The whiteboards further can be used to model other technology applications that students will use independently in the workforce. When the question arises as to whether interactive whiteboards are an appropriate technology to be introduced into K-12 classrooms, one can only start a long list delineating the many ways they are suitable and wonder why schools have not used them sooner.

Interactive whiteboards (IW's) have been used since the early 1990's when their capabilities began to be recognized due to their ability to save written documents to a computer's hard drive and provide immediate printed versions of the board's display. They were first used successfully in the business arena as a presentation tool and then product reviews touted the boards as an interactive learning tool as early as 1993. IW's were then used in distance communication, but the cost still was too high and therefore prohibitive to classrooms. Manufacturers' special offers to educators and price reductions caused educators to take interest in the boards during the late 1990's. Since the costs have further decreased, increasing numbers of universities and public schools have added IW's to their classrooms (Bell).

Specifically, an IW is simply an electronic display that interfaces with a computer. The computer images are displayed on a screen either with the aid of a data

projector, or through a rear projection system. The images displayed on the board can be used interactively by adding notes, highlighting points of interest, manipulating images, etc. The resulting annotations, drawings, etc. can be printed out from the computer or saved for future reference. Additionally, touching the screen as if the user's finger was a mouse can control all the computer's programs.

When people first see how easy it is to interface with IWs, they begin to make assumptions. Observers presume that something this eye catching and simple cannot possibly be effective. A presentation device of this sort must involve an immense amount of lesson preparation and really not be so trouble-free to use in the long run. The cost of an IW, data projector, and computer simply cannot justify putting one in every classroom. All of these statements may seem valid on the surface, but they can quickly be dispelled with a discussion of the advantages to the learners seated in a classroom with an IW and through direct dissection of the specific issues.

One of the reasons IWs are so successful is directly related to them being eye catching. The satisfaction displayed by users and learners of IWs is well documented. Studies have supported that teachers and students are very enthusiastic during lessons presented with IWs (Basilicato, Bell, Glover, Smith). Teachers using the boards become more creative in their approach to lessons, which students react to favorably (Basilicato, Bell, Glover). Students experiencing learning through IWs show, through their discussion and responses to open ended questions, a more involved, attentive and motivated attitude (Bell, Davison).

Educators tend to view the ease of use with suspicion and assume that demonstrators are making it look easy to operate. Since a data projector is displaying

basically on a big monitor, the only change in use from sitting behind the computer to standing in front of it is where the mouse cues originate. With a traditional computer, the mouse is a ball or laser driven device that is operated by hand. With an IW, the mouse can be discarded and your hand becomes the mouse. You can double click, right click, highlight and drag, open new windows, all with just the touch of a finger on the board. It is also possible to hook up a wireless mouse and keyboard in order to allow students to stand at the board and to intervene or progress the lesson to the next point without “taking over” the presenter’s position. The electronic pens are different from brand to brand, but function effectively in the same manner. When a pen is touched to the board, a pad recognizes which pen was chosen and writes in that color on top of whatever format is currently being projected. Markings can be saved and printed in much the same manner as a word processing document (Basilicato, Bell, Glover, Smith). IWs are just that easy to use. If an instructor has basic computer knowledge, they can be proficient with the operation of a board within minutes (Bell, Smith).

When the cost of IWs is addressed, the only way to approach it is to look at the cost effectiveness of providing entire classes with access to technology. While the following comparison is gleaned from an IW manufacturer, it does show a breakdown of pricing that can be verified (Smart Technologies). A wireless laptop cart providing technology access to approximately 35 students would amortize out to approximately \$61.00 per student over three years. A classroom set of handheld devices spread over a three-year usage period would cost approximately \$17.00 per student. An IW, including the board, a data projector, replacement bulbs for a three-year period, and a laptop, with the cost spread again over a three-year period, would run about \$8.00 per student. While

not giving the same access to students as individual laptops, the cost difference does open up some doors, since most public schools are not even in a position to consider an answer as expensive as classroom sets of laptops. Keeping the U.S. Department of Education Goals 2000 directive in mind, IWs are an effective way to exhibit authentic use of technology to many students at once. Students gain confidence in computer use through direction demonstrated on IWs and through taking an active part in teaching when using the board (Smith).

Further, IWs can offer the benefit of being appropriate assistive technology for students with learning disabilities. They offer a large presentation format and are particularly useful for those students with reduced vision or hearing impairments. Not only can the student see the information as it is discussed, but the annotated discussion can be saved and printed for later reference (Basilicato).

One last important feature of IWs is that they have very few components that can break. Short of a student running up to it and slicing it with scissors, they cannot be harmed. The pens that come with the boards are blunt and additional writing implements are not necessary (Smith).

While there are a few critics who offer particulars against the use of IWs in the classroom, the majority sees them as beneficial. One critic sees them as promoting poor teaching methodology since the teacher will take the role of presenter and the students will be passive learners. In addition, this same critic sees them as being too expensive to be justified as a tool for note taking (Wodarz). A few criticisms are brought to light from research, but these concerns are typical of all new technology. Teachers are reluctant to use new technology due to a lack of time to learn the technology or develop lessons. In

addition, many schools just cannot make the technology available for teachers to use on a regular basis that would allow them to become comfortable through repeated use. When this happens, educators would like access to additional training that would then result in their confidence of their own technology abilities rising (Basilicato, Glover).

Through a review of the research available on IW use in the elementary and secondary classroom, it is apparent that the greater part sees overwhelming benefits for learners as a way to integrate technology into classrooms. Personally, since I have been using an IW in my classroom daily for three years, I can attest to the ease of use of the technology, the accessibility it affords students with learning disabilities, the immediate student enthusiasm and resulting attention to lessons, etc. All of the advantages are obvious with each use of the technology. Further, it has been easy to adapt lessons and extend them. I was proficient in the use of the technology within a week and my lessons were all converted to interactive status within a year. Overall, students, parents, and other staff are satisfied with the technology and three more units have been added to our campus.

The valid criticisms offered concerning teacher proficiency with technology through the reviewed research are a subject of continual examination. School districts are trying to address teachers' lack of proficiency with technology in general by offering campus led training sessions, coaching situations, and paired technology training. Simply attending a demonstration session on the use of IWs can dispel the disapproval offered by critics.

Another obvious barrier to technology integration has been the lack of available funds to be put towards purchase of hardware and software. Since every penny needs to

be used in the most effective way possible, IWs make an argument for being the most cost efficient way to integrate a whole classroom at a time. There are situations where laptops and handheld devices may be appropriate and therefore a necessary use of funds, but in certain course offerings they will not be of use and therefore, the most concise solution to the U.S. Department of Education's directive must be found. IWs can offer "high-quality educational opportunities" that will allow students to experience the uses of technology, be it through software applications or through a specific type of hardware. IWs fit what the Goals 2000 plan calls for when asking for students to be given useful opportunities for the use of technology in the world outside of elementary and secondary education. The tools and communication channels that IWs expose to learners can be applied throughout business and higher education immediately, making students more prepared for their lives where they will use technology for the "same kinds of purposes and in the same ways that adults would use technology outside the school walls" (U.S. Department of Education).

References

- Basilicato, Alfred N. "Interactive Whiteboards: Assistive Technology for Every Classroom." March/April 2005. Today's School. <<http://www.peterli.com/archive/ts/892.shtm>>.
- Bell, Mary Ann. "Why Use an Interactive Whiteboard." January 2002. Teachers.net. <<http://teachers.net/gazette/JAN02/mabell.html>>.
- Davison, Ian. Pope, S. (Ed.) Proceedings of the British Society for Research into Learning Mathematics 23(1) February 2003. <<http://www.bsrlm.org.uk/IPs/ip23-1/BSRLM-IP-23-1-3.pdf>>.

Glover, Derek and David Miller. "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*, Vol. 10, No. 3, 2001. <<http://taylorandfrancis.metapress.com/media/ecxx5uytml3upvnhxnby/contributions/t/k/6/8/tk68725n51408303.pdf>>.

Smart Technologies. "Cost per Student." 2006. Smart Technologies, Inc. 10 Apr. 2006 <<http://education.smarttech.com/ste/en-US/Why+Choose/K-12+solutions/Advantages/Cost+per+Student.htm>>.

Smith, Anna. "Community Focus on Research and Dissemination. Interactive Whiteboard Evaluation." 2000. MarandaNet Fellows, Boston Spa Comprehensive School. <<http://www.mirandanet.ac.uk/pubs/SMARTBoard.htm>>.

U.S. Department of Education. "Technology and Education Reform." A Research Project Sponsored by the Office of Educational Research and Improvement. 9 Apr. 2006 <<http://www.ed.gov/pubs/EdReformStudies/EdTech/index.html>>.

Wodarz, Nan. "Electronic Whiteboards for Schools: An Effective Instructional Tool or Just Another Trend?" *School Business Affairs*. October 2005, Volume 71, Number 9. <<http://asbointl.org/asbo/files/ccPageContent/DOCFILENAME/000000015950/SBA-Oct-2005-Final.pdf>>.