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Application of Interactive White Board in Classrooms: Revolution in Teachers Training Programme

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Abstract

In 2008, an educational organization that works in 60 countries across: the world, established a pilot project whereby smart classrooms were installed for use in six middle and senior high schools in Israel. In this project, each school received 10 Interactive White Boards (IWBs) (25% of the total numbers of classrooms in the school), 32 laptops, internet connection, communication software and teacher training. Formative evaluation accompanied the pilot project for two years in order to examine the effects of integrating technology into instruction on teachers, students, and the school community. The findings indicated the following: a) student motivation and engagement in the learning process increased when studying with the IWB; b) teachers reported on their professional development and enhanced technology skills. The findings also showed that the integration of technology into instruction posed some difficulties and challenges, such as a sense of over-burdening among teachers.

The main conclusions were the following: a) there is a need to focus on the pedagogical training of the teachers, with an emphasis on the ways that technology can assist interactive teaching; b) in order to help relieve the over-burdening of teachers, a database of instructional tools should be established providing suggestions for lesson plans and instructional materials; c) accessibility to the technology should be extended to more teachers and students by adding smart classrooms to every school in the project.

Context: The use of Interactive White Board (IWB) technology in teaching-learning process is a common phenomenon. IWB is the part of SMART CLASS project. This project has been implemented across the Indian continuous enhance science and technology education integrate advanced technologies in educational Project "SMART" was developed in organize enhance teaching and learning process using information and communication technology (ICT). Smart classrooms were built in various schools in India. The smart classroom consists of an electronic whiteboard that enables interaction, writing, and surfing the Internet using didactic software that accompanies the board. Various organizations are funding the smart classrooms and provide in-service teacher training in cooperation with the Ministry of Human Resources and Development. It should be noted that this project wasn't centralized. No curriculum materials or learning objects were developed and delivered to the schools. The entire curriculum materials were developed locally by the teachers or groups of teachers, as part of the funding organizations view that stresses that it is important to regard teachers as professionals who know their subject areas and enable them to develop materials independently. Thus, materials were developed in various subjects such as: mathematics, English as second language, geography, history, sciences, bible, civic studies, etc.

The integration of the IWBs in instruction and learning is the primary technological tool that the teachers began using. There are different models of implementing IWB in schools in Indian schools and teacher education institutions. These include using IWB in homerooms, in laboratories, or in both. Moreover, it is essential to know how these models are related to the number of hours that students learn in classrooms using IWB and to teacher skills in using IWB.

When teachers become the students in a professional development scenario, considerations must be made for these adult learners. Knowles indicated that as learners mature, several transitions occur they become more self-directed learners, their life experiences may also benefit from professional develop become valuable resources, and their readiness to learn is more dependent upon their social roles or tasks, they focus on solving immediate problems, and their motivation is internalized (a cited in Yoshimoto, Inenaga, & Yamada, 2007).

Technology training for teachers is typically provided on a large scale to accommodate all teachers, resulting in little emphasis on content or grade level. This often results in teacher returning to the classroom too confused to get started with the new technology (Plair, 2008). These short training sessions that rely on teachers working in isolation tend to yield few positive

results (Slepkov, 2008). In order for teachers to successfully implement technology, ongoing support is critical.

Though interactive whiteboards are well into their second decade of use in educational settings, it has only been recently that more comprehensive, large-scale studies have been produced to evaluate the impact of IWBs on teaching and learning. Most of this empirical research was conducted in the United Kingdom to analyze the impact of a £10 million investment in the Primary Schools Whiteboard Expansion program (Haldane, 2007).

Marzano and Haystead (2009) conducted the first large-scale study on IWBS in the United States. This quasi-experimental evaluation study sought to determine the effect of Promethean's Active Classroom system on student achievement. The findings indicate that large percentile gain in student achievement were found whenever teacher was experienced, had used the IWB system for an extended period of time, use system significantly in the classroom but not more than 80% of the time, and has high confidence in regards to the use of the system (Marzano & Haystead, 2009)

Use of Interactive White Boards (IWB): In addition to students, teachers themselves may also benefit from professional development or training conducted using IWBs. The use IWBs integrates the functions of a regular board with additional means that enable interactive constructivist learning and teaching (Betcher & Lee, 2009; Way, Lifley, Ruster, Johnco, Mauric, & Ochs, 2009). The IWB is a technology made up of a computer connected to both a projector and a touch-sensitive board that presents the pictures projected from the computer, allows for changes, and receives input electronically or by touch. The software for the IWBs allows a range of activities, including those that can be used without the use of the IWB (e.g., projecting presentations and short films, writing, and erasing the board) as well as activities unique to this technology. For example:

1. Drag and drop: an item on the board that can move in various directions.
2. Hide and reveal: an item located on top of others can be removed.
3. Highlighting: a clear color that can be placed on top of writing.
4. Animation: Items can be spun, change size, and move in a pre-determined direction.
5. Storage and recall: Unlimited storage and quick recall of material.

Interactive White Board and Learner Perspectives: Numerous studies have shown that use of IWBs improves learning processes, specifically where the integration between the

teacher's instruction style and the IWB's potential enables meaningful instruction (Betcher & Lee, 2009). Students reported that the use of the IWB enhances motivation to learn, raises the level of concentration, improves behavior, and enhances learning because it is "fun" and innovative (BECTA, 2008; Cogill, 2002; Hall & Higgins, 2005; Levy, 2002; Morgan, 2008; Thompson & Flecknoe, 2003). Various studies have shown that students who learned with the IWB were more attentive and engaged in learning, participated more actively in the class-room, and interacted much more with their teachers, their peers, and even with the IWB (Higgin Beauchamp, & Miller, 2007; Miller, Glover, Avris, 2004; H. Smith, Higgins, Wall, & Mille 2005). Additional studies provided evidence that the IWBs serve as significant motivational tool for students, and facilitate students' desire remain on-task (Cooper, 2003; Levy, 2002) Students' criticisms regarding the use of the IWBs were that there are sometimes technical problems, that it is difficult to see the board from a distance, and that the teachers are non skilled enough in their use of the IWB (Higgins, 2005).

An expected long-term outcome of smart classrooms in general and IWBs in particular, their use to develop thinking and learning skills that is appropriate for the 21st century. A Melamed and Salant (2010) note in the literature review on the topic of integrating technology into educational systems around world. "The school, part of whose task is prepare the younger generation for the future needs to recognize the world of these young children today and to know what will be require of them as they grow up. Among its responsibilities, the school has to develop in it students the skills that will be required of then in order to succeed to cope with the challenge that await them as they grow up" (p. 6). Instructors, researchers, professionals, teachers and students all raise the question: What are the skills that will be needed by the graduates of the educational system in the 21st century.

Findings: Most responses with regards to interactive dealt with the use of the learner response system. Open-ended responses to the post-training survey indicated that the handheld devices would be a "huge hit", allowing students to offer input and actively participate, meanwhile maintaining possible anonymity in a "game-like" atmosphere. The ability to get instant feedback on whether or not they were on track was also a popular feature of the learner response system. The ability for participants to write on the board was also mentioned as a way to interact. Finally, one participant mentioned the trainer's ability to troubleshoot problems with the learning devices as another mode of classroom interaction.

The average pretest score was 11%; the average posttest score was 88%. This represented a 77% improvement in student learning attributed to the training using the IWB. This data suggests that IWBs can be used effectively for training purposes to convey information and teach new concepts to adult learners, especially with regards to professional, development for teachers.

In the post-training survey when participants were asked to describe the features of the IWB that supported their learning and understanding, most responses centered around the ability to more easily follow instruction by having the large display match what was on their computer screens. Having the teacher up at the board instead of at the computer enabled participants to see and hear instruction simultaneously and facilitated interaction with the instructor. Additional responses mentioned specific tools like the Active Pen, annotation tools, and the learner response system's ability to display peer responses.

Overall, the participants were inspired by how "simple and engaging the whiteboard really is". The ability to see and follow the teacher using the large display, collect instant feedback and address misunderstandings and foster student interaction were all key points repeatedly mentioned by the learners. All participants reported a high level of satisfaction with the training (at least 4 on a 5 point scale). Sixty- nine percent of teachers felt that the IWB was critical to the success of the training. When asked how, useful an interactive whiteboard would be to their teaching, 84% responded with either 4 or 5 on a scale from "not useful at all" (4) "very useful" (5). This represents an improvement over initial pre-survey results. Teachers indicate positive attitudes at the prospect of having use an IWB in their classrooms, with 4 indicating they would use it at least weekly 46% anticipating daily use. The teacher reported that the most common barriers to use would likely be insufficient training, the lad of time required to plan and create materials and the fact that other teaching technologies would be equally effective and easier to use. Despite these barriers, one teacher indicated "I'm not afraid to use it now. There are a whole host of possibilities running through my head. When asked how they would use an IWB it's were offered one for their classroom, teacher's responses included daily announcements, math reading, vocabulary, spelling, interactive lesson on editing, presentation of daily materials, use of web-based tutorials, practice penmanship, introduction of new projects, correction of homework, teaching of technology, presentation tool, extra-credit opportunities, student presentations, and as

a "forum to fantastic collaboration". The one administrator of participant indicated she would hold faculty meetings using the IWB.

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