

Adult Learners' Perceptions of the Use of Interactive Whiteboards in University Classrooms

Abstract

The purpose of this study was to investigate adult learners' perceptions of the use of Interactive Whiteboards (IWBs) in a university classroom in Taiwan. The participants were undergraduate students in a Master's program. Research data were obtained through students' interviews, site observations, and students' reflective journals on the course website. Interviews were conducted with six adult learners who were also working professionals. The research data indicate that adult learners valued the benefits of using IWBs in instruction and workplace learning and pointed out that instructors' readiness and competence determine the effectiveness of IWB integration in classrooms. Another important finding revealed in this study suggested that instructors need to develop creative IWB lesson plans that fully utilize the advantages of IWBs in order to ensure that IWBs are effectively and continually used in adult education/training settings.

Keywords: *adult learning, interactive whiteboards, workplace learning, adult education*

1. Introduction

The prevalent use of Interactive Whiteboards (IWBs) in elementary and secondary school classrooms has received remarkable attention from academic researchers and practitioners worldwide. Many studies have been undertaken to explore the benefits and best practices of using IWBs in classrooms. Recent investigations (Hur & Suh, 2012; Kerawalla, Petrou, & Scanlon, 2013; Mathews-

Aydinli & Elaziz, 2010; Yanez & Coyle, 2011; Xu & Moloney, 2011) provide supporting evidence that students' attitudes toward the use of IWBs are positive because IWBs' interactive features are capable of increasing students' learning interests and facilitating active learning experiences in many subject domains and various educational contexts. Based on the IWB studies and practical needs, abundant resources and lesson plans for teaching with IWBs are provided by IWB suppliers and teachers. It is expected that the use of IWBs will continue to play a significant role and have a substantial impact on instruction and learning in schools and corporate training settings. In fact, IWBs were originally designed for use in office meetings with the aims of printing the displayed materials on the board, saving the information for later retrieval, and sharing the written content of the discussions (Greiffenhagen, 2002; Mathews-Aydinli & Elaziz, 2010; Hall & Higgins, 2005); thus, adults who have access to IWBs may possess viewpoints different from elementary and secondary school students toward the use of IWBs in learning environments.

The benefits for adult students of using information and communication technology (ICT) tools, such as IWB, include being able to develop their generic skills that are transferable to the workplace. In higher education institutions, how to embrace ICT for effective teaching and learning is always an important concern. Blue and Tirota (2011) state that IWB training sessions have been regularly offered in college and university teacher preparation programs because teacher education faculties have come to recognize the critical ability of using IWBs for pre-service teachers in order to pedagogically apply IWBs in teaching to enhance the learning performance of primary and secondary school pupils. Besides teacher preparation programs, IWBs have also been popularly installed in university classrooms because of the affordable price of IWB hardware and, most importantly, because of the following attractive features: interactivity, versatility and the ability to integrate them with the Internet and other digital devices. While many researchers (Gregory, 2010; Hall & Higgins, 2005; Hennessy, Deaney, Ruthven, & Winterbottom, 2007; Mathews-Aydinli & Elaziz, 2010; Schmid, 2008; Slay, Siebörger, & Hodgkinson-Williams, 2008; Turel & Johnson, 2012) have documented many benefits, drawbacks, and effective practices associated with the use of IWBs based upon teachers' and students' attitudes and perceptions in primary and secondary education, it is advisable to investigate how IWB technology may impact on adult students' learning experiences due to the increasing adoption of IWB technology in higher education institutions.

This study reports on the implementation and use of IWB with graduate students in the university classroom in central Taiwan. These students were

nontraditional students who worked full time while completing their Master's degrees. There has been little research into examining adult learners' perceptions of the use of IWBs in university classrooms beyond students in teacher preparation programs. The purpose of this study is to identify benefits, challenges, and applications of integrating IWB technology into university classrooms through adult students' perceptions. Research data were obtained through interviews, observations, and a discussion forum on the course website. It is hoped that the findings of the research will provide insights for university administrators and faculty who seek to better understand techniques and pedagogical considerations about incorporating IWBs into classroom learning activities for teaching nontraditional students.

2. Research Methodology

2.1. Site and participants

This study focused on a university classroom in a public university in central Taiwan. Student participants were the graduate students in the Adult and Continuing Education department. The title of the course is "Seminar on Adult Education", and it is a 2 semester credit course. This class had a total of 19 students, and their working experiences ranged from less than 1 year to 20 years at the time of the study. Among the students, 9 were male, and 10 were female. IWB instruction was arranged in two classroom meetings, and two experienced IWB instructors were invited to give lectures focusing on the applications of IWB usage and share their IWB lesson plans that had previously been used in teaching adult students.

2.2. Research questions

This study investigated adult learners' perceptions of the use of IWBs in university classrooms. Three research questions were proposed.

1. What are adult learners' perceptions of the advantages and disadvantages of IWB technology in the classroom?
2. What are adult learners' perceptions of the use of IWBs in the workplace learning environment?
3. What are the practical implications for adult educators/trainers to apply IWBs in designing learning activities for adult learners?

2.1. Data Collection and Analysis

The main source of information was obtained in the following way: 1) semi-structured interviews held with 6 adult students (3 males and 3 females); 2) reflective journals posted by all students on the course website; and 3) observations of the interactions of IWB lectures. Table 1 illustrates the demographics of the interviewees.

Table 1. Demographics of adult learners interviewed

Interviewee	Gender	Field of work
A	Male	Educational administration
B	Male	Health care
C	Male	Human resource development
D	Female	Primary education
E	Female	Marketing
F	Female	Secondary education

The interviews were carried out by the researcher after the IWB lectures. The interviews were tape-recorded and fully transcribed in order to identify themes and categories related to the proposed research questions. The interview items related to the interviewees' previous experiences of IWB use, perceptions of IWB lectures, and future hopes and aspirations regarding IWB use in the classroom and workplace. In addition to the interview data, the researcher attempted to obtain in-depth thoughts and analyze possible discrepancies of the adult students' views written down on their online journals. The interview transcripts and the students' journal entries were read and re-read by the researcher and two experienced IWB instructors. All qualitative data were thematically and inductively coded, compared, and organized into different categories. Categories were constructed based on the criteria suggested by Merriam (2009). Once the categories were assigned, the data were interpreted accordingly. Triangulation was achieved with the use of field notes and site observations for the purpose of assuring the validity and reliability of the interpretation of the research findings. Also, three independent inter-raters were invited to examine the results

3. Research Results

According to the purpose of the study, the results were divided into the following three categories.

3.1. The interactive features of IWBs can increase adult learners' attention and motivation, but teachers and students' IWB proficiency may impede the use of IWBs in the classroom

All the adult students interviewed stated that the IWB made classes more interactive and could also increase learner motivation as they saw instructors integrating multimedia contents and build-in software into IWB instructions. One student felt that adults need stimuli while engaging in the learning process and the interactivity of IWBs could be a good motivator to draw adult learners' attention. She argued:

"I believe that adult learners also need some stimulation to attract their attention during the class meetings. IWBs have many game-like tools that can make classes enjoyable. I was especially surprised when the instructor used the enlarging tool to show some details of an old Chinese painting and touched the graphic icon on the board to play music at the same time. I got a better understanding of the aesthetic aspects of Chinese paintings."

Her view was echoed by another interviewee:

"IWBs can add useful and fun elements to adult students' classes because IWBs provide several interactive tools and can be easily integrated with other multimedia and Internet applications. Instructors can clearly explain some abstract concepts through vivid demonstrations."

However, five out of six interviewees expressed their concern with regard to the IWB skills of the instructors and learners. According to their responses, adult students expected the instructors to operate the IWB fluently and to allow students to have opportunities to physically use the IWB to make their presentations. The following statements are representative of many similar responses to this concern:

"Some technical problems happened during the IWB classroom activities. The instructors are able to solve the problems quickly. I think instructors not only need to understand the techniques of operating the IWB software, but also need to be familiar with troubleshooting the hardware issues of the IWB and its peripherals."

"Teachers need to constantly use the IWB in teaching and need to design learning tasks that require students to use the IWB to share their thoughts."

“In order to increase adult students’ learning motivation in IWB classes, instructors must be confident in using the IWB and let every student have a chance to operate the IWB frequently.”

3.2. An IWB is an excellent facilitating tool for office meetings and discussions, and it can enrich informal learning experiences for adult learners

IWBs were originally designed for office use, so some of the adult students in this study had experience with using IWBs in their workplaces. Five interviewees described the IWB use in their office, and most of them said that IWBs provide many styles of writing tools and recoding functions that can help individuals to explain their thoughts and applications can be saved for future discussion and reference. In addition, the learners’ reflective journals indicated that distance learning was an excellent setting for IWB use, particularly for training taking place at the same time but at different locations. The following transcripts are representative of their comments:

“In our regular office meetings, we often use IWB digital pens to write down our ideas and apply different colors to highlight the importance of these ideas. All discussed information would then be saved and distributed to all colleagues after the meetings.”

“Since my company has 2 branches, IWBs are used for distance training and discussions. IWBs are connected through distance communication software. When a trainer presents training materials on one IWB, all trainees can view the information on IWBs at other locations concurrently.”

“From my experience of using IWBs in office meetings, I believe that IWBs have great potential to help working adults to engage in productive and enjoyable dialogues. Learning may occur through these interactions.”

3.3. In order to ensure IWBs are effectively and continually used in adult education/training settings, instructors need to develop creative IWB lesson plans that fully utilize the advantages of IWB technology

Most adult students acknowledged that IWBs can be used effectively for adult education/training environments. However, adult learners who are novice users may be drawn to the interactive features of IWBs at the beginning, but may not be persistently motivated if the instructors use IWBs just for writing or making notes on their PowerPoint slides. In other words, instructors need to think about how to efficiently apply IWB's versatility to build IWB lesson plans. In this study, the second IWB lecture was given by an instructor who had developed many award-winning IWB lesson plans. In his lecture, all students were amazed that the instructor used IWB build-in and the Internet resources to clearly explain some abstract concepts about many subjects and showed the rationales for developing his IWB lesson plans. A student noted the following:

“Effective IWB lectures require thoughtful planning. I think the instructor spent so much energy and invested so much time to develop his IWB lesson plans, such as collecting digital materials, making quiz games, and arranging lesson activities, and considered carefully how to apply various IWB's interactive tools in order to present the very best teaching materials.”

Another student showed her agreement writing the following:

“Most adults are interested in new learning technology, and I think that IWB is an excellent tool that can motivate adults' learning interest. Instructors need to design creative IWB lesson plans to help adult learners to engage in meaningful learning processes.”

Similar views were mentioned in the students' reflective journals. This suggests that instructors must get good training and have opportunities to collaborate with colleagues to develop IWB activities applicable in practice.

4. Discussion

This study set out to investigate adult learners' perceptions of the use of IWBs in university classrooms. Different from previous studies of students' perceptions of IWBs, the main contribution of this research is to help educators/trainers to

identify benefits, challenges, and applications of integrating IWB technology into adult educational practice. According to the research findings, adult learners' exhibited positive perceptions of the educational benefits of IWB use in classrooms and recognized that IWBs can be easily integrated with web resources and presentation software to make lectures more enjoyable. As Hennessy and London (2013:15) argue, "the IWB allows technology to be used flexibly and it brings technology firmly into the classroom". Effective IWB use has the potential to increase adult students' learning motivation and to enable them to pay attention to the teaching contents and to also actively engage in the classroom dialogues. While designing IWB instruction, instructors need to consider the characteristics of adult learners and have awareness that adult students may apply this interactive tool and have gained IWB operating skills in their workplaces to support learning. Based on adult learning theory, Illeris (2003) states that adult learners need to see meaning and importance to enhance their inclination towards learning the material. Thus, the critical issue of integrating IWBs into adult classes is to design activities that can invoke their reflective thinking and help them to understand the valuable aspects of IWBs in assisting their learning and job performance both at school and in the workplace.

Another concern revealed in this study is the ICT literacy, IWB competency in particular, of instructors and students. In order to make IWB activities deployed effectively across university IWB classrooms, school administrators need to provide training courses and resources for instructors to become confident in navigating IWB technology. DeSantis (2012) advises education leaders to establish IWB professional development programs to ensure instructors possess a combination of technology skills and personal efficacy. In addition, instructors need to design hands-on IWB use opportunities for adult students in classrooms frequently because ongoing practice may yield greater confidence for university faculty and students (Blue & Tirota, 2011).

The presented study found that IWB is an excellent tool for working adults to use in office meetings. Using IWBs enables them to exchange their ideas clearly and make attractive presentation materials. This suggests that the use of IWBs is associated with an enjoyment feeling and a richer learning experience, and that this feeling and experience leads to higher satisfaction with IWB technology. Therefore, organizations' human resource development personnel can design training plans that stress fun experiences and the usefulness of IWBs in helping organizations to share information and to learn more effectively. It should be taken into account that IWB technology can capture adult learners' attention, and therefore, IWBs should be considered as a tool to help ignite learning motivation.

The most important findings from the research data suggest that creating IWB lesson plans is the crucial factor to ensure the effective use of IWBs and enhance adult students' learning outcomes. Hennessy and London (2013) note that successful adoption of IWBs requires instructors to understand technical and pedagogical aspects of IWB applications and teacher professional development programs should be arranged to meet the needs. In other words, school leaders not only need to offer training workshops, but also need to provide incentives and supportive resources for faculty members to create IWB lesson plans. A useful strategy, as suggested by a respondent, would be to encourage instructors to create innovative IWB lesson plans that provide financial aid to sponsor instructors who want to develop IWB lesson plans personally or in a group. DeSantis (2012: 55) comments that "fully capitalizing on the power of IWBs requires teachers to be efficacious regarding their abilities to use IWB, to have collaborative and on-demand support in the form of peer technology mentors, and to have positive supervision that incentivizes student-centered learning". Thus, organization conditions play an important role in reaching the goal of successful integration of IWBs in higher education institutions. Hennessy and London (2013), based on their observations, also suggest that formal and informal opportunities for practice and exchanging IWB teaching experience should be arranged for instructors. This allows instructors to learn from other colleagues' IWB teaching experience and further to embed best IWB practices in their own classroom settings.

5. Conclusions

IWB use within the adult education field and in corporate training is still not well understood in academia and practice. This study provides insights into the perceptions of adult learners toward IWB use in university classrooms, and pedagogical recommendations can be drawn from this research. Nowadays, IWBs have been popularly installed in higher education institutions and workplaces, and the results of this investigation provide some practical suggestions with regard to the effective use of IWB technology. In view of the findings, practitioners' designs for IWB instruction should give careful consideration to the characteristics of adult learners and make this interactive tool meaningful to their learning process and work.

The paper ends with two main conclusions: 1) IWB can be an effective instructional and training tool in adult education and organizational training, and instructors' readiness and competence determine the effectiveness of IWB integration in

classrooms and 2) school leaders should provide support, incentives, and training opportunities to enhance instructors' IWB teaching skills and continuing use of IWB technology. In order to develop a better understanding of the teaching and learning process of adult learners in higher education and in the workplace where IWB is used, more research is needed to explore the successful implementations of IWBs into teaching and training. In this regard, the presented study is an interesting starting point.

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