USE OF INTERACTIVE WHITEBOARDS AS PART OF A BLENDED LEARNING ENVIRONMENT: NOT AS WHITE AS IT SEEMS

M. van Niekerk
Department of Education Studies
North-West University
Potchefstroom, South Africa
e-mail: molly.vanniekerk@nwu.ac.za

ABSTRACT

Interactive whiteboards (IWBs) have become an essential technological medium of instruction, especially in distance education (DE), enabling interaction between lecturers and students over vast distances. Efficient utilisation of IWBs has the potential to enhance teaching and learning in a blended environment. This article focuses on the perceptions of members of the school management team (SMT) pertaining to their first experiences with IWBs as part of a blended learning environment. Although the students were adult learners, and leaders in education, it cannot be presumed that these students undergoing professional development via IWB are ready and open towards lecturers using such a medium of instruction. Open-ended questionnaires were completed by 50 students enrolled for the Advanced Certificate in Education: School Management and Leadership (ACE SL). Participants' mixed experiences led to factors being identified that need to be addressed before and during the IWB session, for the optimal interactive and cooperative teaching and learning experience. This article makes recommendations to improve IWB sessions and indicates the importance of a sound and reliable technological environment for the effective use of IWBs as part of a blended learning environment.

Keywords: Interactive whiteboard (IWB), blended learning (BL), distance education (DE), school management team (SMT), continuing professional teacher development (CPTD), Information and Communication Technologies (ICT)

UNISA university of south africa

Progressio
Volume 37 | Number 1 | 2015
pp. 83–98

Print ISSN 0256-8853

1. INTRODUCTION

Recently IWBs have been increasingly utilised in education. Subsequently, there is considerable interest in the effect of IWBs on teaching and learning (Mercer, Hennessy and Warwick 2010; Turel and Johnson 2012; Swan, Kratcoski, Schenker and Van-'t Hooft 2010). The availability and use of emerging educational technology, influences how students envisage their learning (Rafferty, Munday and Buchan 2013, 36). Adapting any course or programme to a blended learning environment necessitates further research to ensure that quality teaching and learning is maintained (Cameron 2013, 51). Teaching effectiveness is determined not only by the overall curriculum design, but also by the delivery of the programme (Francois 2013, 322). It is in the light of these comments that this study was conducted, as Francois states (Francois 2013, 323), 'quality does matter in blended learning and teaching'. This study focuses on SMT members' first experiences with lecturers using IWBs as a medium of instruction. Although these students were enrolled in distance education, they had previously received all their lectures through the contact mode of delivery. In the IWB sessions, the lectures were transmitted synchronously from the North-West University Potchefstroom Campus to the Pretoria and Rustenburg centres. Using IWBs, the presenter interacted and created a cooperative learning environment with the three groups. Quality teaching through the utilisation of IWBs depends largely on the presenter, who has to orchestrate all the features presented in that specific classroom environment to reach the planned learning objectives (Kennewell, Tanner, Jones and Beauchamp 2008, 65−66). To unleash full IWB potential, presenters have to consider the characteristics of the group of students in the class as well as the contextual factors that will have an impact on presentations.

Any preconceived opinions about using technology will also impact on the effectiveness of IWBs. Some students reveal technophilia (a strong enthusiasm) and others technophobia (a fear or dislike) regarding technology (Esterhuizen 2012, xxv). This confirms the research done by Griswold (2013, 133−135), that when confronted with new technology, some students will experience it as difficult. The profile of students attending the IWB class has to be considered when presenting the lesson, as the characteristics of the group of students will impact on the success of the presentation (Hayes 2010, 1). The focus of this study was on 50 SMT-members enrolled in the ACE SL programme for professional development, which was presented using IWBs. The 50 SMT-members formed part of the CPTD management system in the 2013 implementation plan approved by the South African Council for Educators in November 2012 (SACE 2013/14, 24). Being part of the implementation process, principals and deputy principals (first cohort) and heads of department (second cohort) were enrolled as bursary students by the North-West Department of Education. The aim of the study was to establish students' perceptions regarding their first experiences with the use of IWBs, and to make recommendations for improving the use of IWBs as part of a blended environment.

2. BACKGROUND TO THE STUDY

Leadership development and its importance has been a much debated and researched topic worldwide (Chapman 2005). Improvement of the training and development of educational leaders is high priority for most educational institutions and education departments, as large sums are allocated and invested annually for continuing professional development (CPD) (Bubb and Early 2007, 1−2). The competence and professional development of aspiring and practising school leaders is considered a national imperative, which poses enormous challenges to the South African education system (Ngcobo 2012). The Advanced Certificate in Education: School Management and Leadership (ACE SL) is a national programme and was planned as a professional and entry-level qualification for aspiring school leaders in South Africa. The duration of the ACE SL programme is two years for part-time students (North-West University 2015).

As the ACE SL is a professional, practice-based and developmental programme for school leadership in South Africa, the intake of 50 students attended regular classes, which were presented through a traditional face-to-face mode of instruction in Potchefstroom, Pretoria and Rustenburg. Francois (2013, xvii) points out that contact teaching and learning has shown some limitations with regard to students who have schedule constraints, since these students are part-time students, who also have to cope with the demands of a teaching career. Another significant factor that influenced the decision to start utilising IWBs was the fact that the Unit for Open Distance Learning (UODL) had already at least two interactive whiteboards (IWBs) available at each of their 50 study centres across the country. It was, therefore, logical and more cost effective that some of the traditional contact sessions be replaced by lectures presented via IWBs. One of the benefits of using IWBs is that all the sessions are recorded, and if students cannot attend certain sessions and want to review content or prepare for the exam, they can (at their own convenience) access the recorded IWB sessions by simply following a certain link via the internet.

3. LITERATURE REVIEW

The phrase ‘Information and Communication Technologies’ (ICT) is seen as an umbrella term, which includes any communication device or application. When used for educational purposes to support and improve teaching and learning, ICT is a subfield of Educational Technology (Kumar 2008, 556). IWB is technology where a computer is connected to a projector as well as a touch-sensitive board, allowing a range of interactive as well as constructivist teaching and learning activities to take place (Mercer et al. 2010, 196). IWB allows students to develop skills in information, higher order thinking, communication and cooperation, learning and technology usage, which are all essential in the 21st century (Manny-Ikan, Dagan, Tikochinski and Zorman 2011). Students become more attentive, enthusiastic, interactive, participative and motivated

regarding their own learning (Betcher and Lee 2009; Beauchamp 2004). IWBs create the opportunity for lecturers and students to interact with content projected onto a white board surface (Jang 2010, 1744). IWBs can be used as a tool to enhance teaching and as a support tool for students' learning (Smith, Higgins, Wall and Miller 2005, 92), and should not be used as a replacement for the traditional blackboard in classrooms (Cogill 2003, 55). IWBs as technological medium of instruction, especially in distance education, can aid in the process of continuous professional development for teachers.

The professional development programme of the South African Council of Educators (SACE) focuses largely on the management and implementation of the continuing professional teacher development (CPTD) system. SACE started the process of phasing in the CPTD management system in 2013, in line with the CPTD system implementation plan they had approved in November 2012. The implementation process is taking place according to the three identified cohorts − principals and deputy principals (1st cohort), school heads of department (second cohort), and Post Level 1 educators (third cohort) (SACE 2013/14, 24). The Department of Education views the ACE SL as a professional programme and enrols numerous bursaries students (principals, deputy principals and Heads of Departments) each year as part of CPTD. According to Bubb and Early (2007, 4−5), continuous professional development (CPD) creates on-going learning opportunities for adult learning through education, learning, training and support activities to promote growth and development as well as to improve workplace performance. For teaching and learning activities and programmes to be effective, it is crucial to consider the diverse characteristics of adult students, who come from different backgrounds, work in different contexts and have their own unique experiences, knowledge, skills and competencies (Bubb and Early 2007, 13). Continuing professional teacher development can achieve its full potential through the utilisation of a blended learning environment.

Blended learning refers to a combination of various approaches to learning, making use of multiple delivery methods such as contact learning, self-paced learning and online collaborative learning to deliver a particular programme or course (Wei and Huang 2013, 111−112, 126). Blended teaching and learning provides unique opportunities that neither contact teaching nor fully online teaching can deliver on their own (Heinze and Procter 2012, 77). The success of blended learning is dependent on grounded learning theories and pedagogical strategies (Hadjerrouit 2008, 181) as well as on utilising the strengths of each of the multiple delivery methods (Garrison and Vaughan 2008, 5). A combination of multiple delivery methods provides better learning outcomes as each method's strengths can enhance the teaching and learning experience (Cragg, Dunning and Ellis 2008, 116, 124, 125). Blended learning allows the lecturer to create a hybrid learning environment that fosters collaboration and flexibility and focuses on student-centred instruction (Tucker 2012, 13). For the purpose of this article a blended learning environment will imply the use of contact learning, self-paced learning and learning through the use of IWBs which allows for the reduction of contact classrooms.

4. AIMS FOR THIS STUDY

The aim of this study was to determine the participants' first experiences with IWBs as part of a blended learning environment. Through the participants' experiences, issues such as contextual factors, contact classes versus IWB, impact of IWB experience on the ACE SL programme, impact of IWB experience on the integration of technology at participants' schools, presenters and improvement of IWB sessions are discussed. Recommendations are made to improve IWB sessions as part of a blended learning environment.

5. METHOD

According to (Morrison 2007, 19), 'methodology provides the rationale for the ways in which researchers conduct research activities'. A qualitative mode of inquiry was applied, focusing on the participants' deeper understanding of the phenomena being studied in a natural setting and how they construct meaning through their experiences and perspectives (Nieuwenhuis 2007, 50; Merriam 1998, 6). The sample of qualitative research is usually small in scale and purposively selected on the basis of certain criteria (Ritchie and Lewis 2003, 5).

Both purposive and convenience sampling were implemented as the participants had a defining characteristic and were easy to access, making them the holders of the required data (Ritchie and Lewis 2003, 79,81). All the students were enrolled by the Department of Education as part of their programme that focuses on continuing professional teacher development; no other students were part of this cohort of students. The methodological rationale for utilising open-ended questionnaires was the fact that the 50 adult students were enrolled in the ACE SL programme. As the students were at various centres, it was more convenient to have them complete open-ended questionnaires than to conduct focus group interviews. The fact that the participants did not live near the centres and did not have the time nor wanted to spend money travelling for the interviews also contributed. Thirty-three participants were female and 17 male; between the age of 39 and 58; 19 held the position of head of department (HOD), 17 were deputy principals and 14 principals. This group of students can be described as adult students as they were all over the age of 24 and returning to higher education (Thomas 2013, 215).

They were the group that attended traditional contact sessions for their first year, and after that they were introduced to their first IWB experiences. It was also convenient (Fraenkel and Wallen 2008, 123) in the sense that the questionnaires were handed out on the last contact session before their first IWB session in Pretoria, Rustenburg and Potchefstroom, where the research was explained and the necessary consent forms were signed. Open-ended questionnaires allow the participants to 'write a free account in their own terms, to explain and qualify their own responses and avoid the limitations of pre-

set categories of response' (Cohen, Manion and Morrison 2011, 382). The response rate of questionnaires is optimal, with quick completion time (Maree and Pietersen 2010). The students completed the questionnaires directly after the second IWB session at the venue. The information obtained from the open-ended questionnaires was compared while searching for recurring regularities and patterns in the data, and assigned into categories (Bogdan and Biklen 2006, 159). For reliability to be established in this study, the results had to be consistent with the data collected (Merriam 1998, 206). Peer checking took place, and colleagues' opinions were obtained on the data analysis and clearing researcher bias before the study was implemented, to enhance trustworthiness (Jansen 2010, 38). A computer-based qualitative data analysis program, Atlas.ti™, was used to aid the researcher in the data analysis process, where the researchers identify and synthesise patterns of students' perceptions on their IWB experiences.

6. DISCUSSION OF FINDINGS

The findings are discussed in relation to the aims for this study. It must be kept in mind that the participants' age was between 39 and 58 years, and a number of participants indicated their resistance to change, which corresponds with copious research indicating that one of the biggest problems is resistance to change (Kumar 2008, 559).

6.1. Contextual factors

The participants were asked to indicate what they found most frustrating in the IWB session. Most of the participants complained about the sound quality: 'I couldn't hear properly ..., sound was not clear enough ..., speakers were not audible enough ..., frustrating sitting at the back I could not hear, I lost interest.'

The next constraint that participants complained about was the breakdown in the network when the signal was lost for a number of times during the sessions. Participants found it hard to keep track of the content the lecturer was presenting, as the presentation continued although breakdowns in transmission occurred at different intervals at the centres in Rustenburg and Pretoria. Participants commented '... losing the presenter during presentation, ... the session goes blank or jams, ... technology fails along the way ..., computers were off-line'. One participant commented 'the IWB is not working for me, as contextual factors are over-seeding the positive expectations'. Problems identified with the use of IWB, especially technical problems, have an enormous impact on effective IWB sessions (Hall and Higgins 2005).

Participants mentioned that writing on the IWB was difficult. It is noteworthy to mention that during the two IWB sessions, only 15 students had the opportunity to write on the IWBs on activities given during the sessions. Participants commented 'writing on the IWB is not user friendly ..., it was very difficult and frustrating ..., board was tricky to write ..., board not easy to write'. Although research has indicated that students are

eager to interact physically with the whiteboards (Becta 2003, 3; Virtual Learning 2010, 2) it did not seem to be the case with this group of students.

Participants' main concern was the venue itself. Some comments were: '... we had to write on our laps as there were not enough tables, ... there was not enough space for all the students, ... over-crowding in the class'. Participants indicated distractions such as '... my concentration was distracted from students who came late, ... we had to listen to people in the other room'.

The factors concerning sound quality and breakdown in transmission can be dealt with if the necessary technical support systems are in place. As students become more exposed to writing on the whiteboard, they will become confident and it will become easier. The aspects with regard to venue itself form part of the overall satisfaction and stakeholders need to look into these aspects in order to maintain the standards of a high quality programme (Francois 2013, 326).

6.2. Contact classes versus IWBs

There were mixed feelings with regard to what type of teaching the participants preferred. A limited number of participants preferred the IWB sessions to the contact sessions. Participants stated '... IWB, it's easy to use, save time and is an in-thing ... IWB to motivate and improve my knowledge, ... I prefer IWB session because it is easy and does not differ much from the normal teaching, ... IWB if the small problems can be taken care of '. Some participants were impartial and indicated that both methods can be used alternately. 'Both, they are unique in their own way ..., it would not be easy to choose one, both must be used interactively ..., both there is advantage in contact and IWB is new ways of doing things, ... better if both is used, combination of the two.' The majority of the participants preferred traditional contact sessions. This coincides with the statement made by Francois (2013, xvii) that, although students battle to allocate time to attend contact classes and alternative teaching is offered, they still prefer contact teaching. Participants indicated that the main reason for them preferring contact session is the fact that they feel it is better having face-to-face interaction. Statements were made such as '... presenter is able to give us his/her whole attention; ... our challenges are addressed immediately; ... face-to-face we benefit more; personal contact gives my eye contact for better understanding; ... contact sessions are more fulfilling'. One very interesting comment made by a participant was '... choose contact classes because we see lecturer in person and not the machine'. Some participants indicated that they preferred contact sessions, because there were too many technical problems with IWBs '... contact session no disturbance at all as far as sound is concerned; ... I do not have to worry about technical problems interrupting the lesson; ... contact session we won't have network problems'. Research by Rafferty et al. (2013, 46) indicates that students who are used to the traditional mode of delivery will initially resist change and will need time to adjust.

The participants were asked if they would recommend continuing the IWB sessions. A few participants indicated that they were too old for the use of IWB; '... IWB must not be used in student of our age, use it for students at campus'. This confirms Thomas's (2013, 206) statement that technology can be scary and awkward, especially for adult learners. Participants stated they would not advise that IWB continue: '... it's frustrating, ... no we cannot learn at the same pace; ... we don't pay attention; ... I will not attend IWB it doesn't work for me; ... makes me doubtful will not attend again; ... no unless there is no understanding required, I will not attend a class that frustrates me this much; ... not for our course our course is special'. According to King (2002) students may experience a 'journey of transformation' and it will take time for them to become confident in using new technology and to change their perceptions regarding the technology used.

Participants advised that IWB sessions should be presented in conjunction with contact sessions. Some stated: '... it should be used but not replace contact sessions, ... both will work; ... yes we will become used to it; ... after IWB session you must follow-up with contact session'. Some participants indicated that IWB should continue '... it's for the coming generation; ... yes we want to use technology in our school; ... we will get used to it; ... the advanced modern technology in our lives is important; ... the way of the future'. In future IWBs, self-regulated learning and contact session will be utilised as part of a blended environment.

The majority of the participants indicated that IWB sessions are designed more for cooperative learning than for individual learning, but perceived it as positive: '... focus more on cooperative learning, we share, it's made for large groups, we are networking; ... it's important to share ideas, clarify issues with others in the same working environment as you; ... I liked working with the groups from the other centres'. This concurs with a statement of Bennett and Lockyer (2008, 289): 'IWBs have the potential to encourage collaboration, creating a shared learning environment capable of teaching strategies involving whole classes or small groups'. Participants felt that hearing others' opinions when given the opportunity to work together was of great value and enjoyed the interaction with the other two centres. Participants also felt that IWB can cater for individual as well as cooperative learning: '... it can focus on both depends on the lecturer; ... people were asked their personal view and group discussions also took place; ... with good intentions, planning it can work for both'. Participants also indicated that IWB sessions are not designed to provide for only individual students' demands and had a negative perception of the IWB sessions as they experienced that IWB did not cater for them as individual students and commented as follows: '... individual learning can only be possible with contact sessions; ... no place for individual; ... leaves individual behind; ... the lecturer cannot see you as an individual'.

Participants were asked what impact, if any, the IWB sessions would have on their academic performance in the ACE SL programme.

6.3. Impact of IWB experience on the ACE SL programme

Participants perceived their experience with IWB sessions differently, as the participants had mixed opinions on the impact that the IWB sessions would have on their academic achievement in the ACE SL programme. Most of the participants indicated that it would not have a negative impact on their studies. Participants indicated that some IWB sessions should be continued so that they can become used to the sessions: '... with time we will get used to it'. This coincides with the statement made by Rafferty et al. (2013, 46) that students need time to adjust. Participants stated that contact sessions should not be replaced completely by IWB: '... we need both then we will pass'. The majority had also thought about strategies to overcome their negative experiences with IWB. Participants indicated that it would require them to prepare better for the IWB sessions and not depend completely on the presenter supplying the content; '... I must come prepared to the IWB session; ... no time to page in book, have to make notes before IWB session; ... work through material and indicate what I don't understand'. Participants also mentioned strategies such as: '... I will have to listen more attentively and channel my audio and visual skill; ... I will be attentive because the lecturer cannot repeat or start over; I will not be shy to write on board I must just get the practice; ... you need to go through your work again after the IWB session to make sure you understand'.

Some participants were positive and looked forward to having more IWB sessions and commented: '... it helped me to be alert and hear opinions of other students from other centres; ... it was a new approach and made content interesting; ... helped me to hear other opinions and made me think differently on the content; ... some content was explained in ways that will help me remember'. Only a few participants indicated that the IWB would have a negative impact on their studies: '... I was disorientated and lost focus, some aspects I don't understand, who will explain it now, my marks will be poor; ... I can't learn in such away, my marks will come down; ... if it continues my performance will drop'. Although there was not a pertinent question on the impact of IWBs on the integration of technology at the participants' school, the participants commented on it in the section on the impact of IWB sessions on their studies.

6.4. Impact of IWB experience on the integration of technology at their school

Some participants indicated a positive attitude towards the integration of ICT in their schools. Comments included: '... it is thought provoking and it makes me think what technology can do at our school, ... we as schools we must implement technology mode to be abreast with the international school; ... it is my duty to tell colleagues about technology; ... technology will help me to develop my school; ... I can introduce it at my school; ... I can use technology at my work station; ... I must show staff'. This confirms what various researchers have acknowledged: the importance of leadership in the

educational environment and the influential capacity these leaders have (Pashiardis and Brauckmann 2009, 120; Bush 2007). Griswold (2013) confirms that students will react differently based on their experiences with technologies, and these experiences will determine the level of enthusiasm to incorporate it in their own teaching, educational processes and in the school context. Participants were asked to comment on the presenters.

6.5. Presenters

Two presenters were responsible for teaching three modules at the two IWB sessions that took place once a month. The two presenters did not have much experience in IWB as it was also new to them; they had previously mostly presented contact classes. They had had a few training sessions before to familiarise themselves with the use of the IWB. Francois (2013, 326) emphasises the fact that lecturers have to receive the appropriate training and orientation; follow-up sessions on ways to improve is extremely important. Participants had positive comments about the presenters: '... through my experience they were good; ... each lecturer was unique in their own special way; ... they both tried to involve the students; ... they were excellent I asked questions and they could answer them; ... they are doing fine using a lot of techniques and different styles ...'. Participants also felt that the problems with the technical aspects hampered the presenters' performances: '... they were both fine except the device itself kept on disturbing the effective flow; ... I was still listening then it jammed, not so good'.

6.6. Improvement of the IWB sessions

Using IWB in the teaching and learning environment can increase student motivation and engagement; however, the integration of such technology is not without challenges and difficulties (Manny-Ikan et al. 2011) which need to be overcome to reach the full potential. Numerous participants indicated that the technical problems had an influence on the IWB sessions: '... I think the presenters should be IWB literate as sometimes when there were technical problems they could not resolve it; ... technical problems make the lectures not so good; ... wires and gadgets caught lecturer off guard'. Presenters need technical support prior to and during the presentation; rapid 'troubleshooting' support is of the utmost importance (Smith et al. 2005, 98). As participants indicated: '... they must have technicians available to solve the problems; ... they must employ technologically inclined people at the centres who can help'.

Other advice the participants gave to help the presenters to improve their presentations was: '... presenters must slow down a bit to give us time to cope; ... use class lists to call students randomly to present and not only those who have the courage to stand up; ... there must be other ways to check if centres are present than asking the whole time; ... they must repeat, do it again for the slower learner; ... you are too fast;

... give practical work before IWB sessions so that students can prepare; ... not all the picture were clear; ... they must be work shaped [workshopped] to use IWB; ... give more time in between to ask questions and not only at the end of the lecture; ... they must just relax and teach as they always do; ... practice makes perfect, keep on familiarizing yourself with the IWB'. Even though literature indicates one of the advantages of IWB is that it is faster paced (Jang 2010, 1746), it was too fast for this group of students. Possibly when they get used to presentations via the IWB the pace will not seem so fast. Presenters also need to be aware from the start of the presentation whether the students are on track or whether the pace is too fast, and subsequently implement appropriate strategies. Research done by Glover and Miller (2007, 17) indicates that presenters need time to develop their technological fluency and to apply pedagogic principles effectively in their IWB presentations to maximise student participation. Attention must be given to the pedagogical training of presenters, especially to make presenters knowledgeable as well as empower them in the correct usage of various effective IWB strategies (Manny-Ikan et al. 2011). Jang (2010, 1744) agrees that presenters for the 21st century need to be equipped with Technological Pedagogical Content Knowledge (TPCK) to promote effective teaching and learning. For IWBs to be utilised effectively, presenters must receive appropriate and relevant training on incorporating the use of IWBs into presenters' pedagogical knowledge (Kennewell and Beauchamp 2007, 240). The participants mostly experienced that the presenters were too fast in their presentations and felt that they should slow down. An effective presenter engages in a balance of appropriate strategies and has the capacity to adapt according to the students' needs and situation (Gillen, Staarman, Littleton, Mercer and Twiner 2006, 10). Some participants merely stated they did not like the IWB sessions and did not want to suggest any improvements: '... I don't like these sessions I won't suggest any improvement'.

Almost everyone agreed that there was room for improvement, especially on the technical side of the IWB presentations: '... very excellent presentations; it is just that there are technical problems that need improvement'.

7. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

As the last intake for the ACE SL is at the end of 2015, and new programmes such as the Advanced Diploma (AD) and Post Graduate Diploma (PGDip) in Management and Leadership will be phased in from 2016 by the Faculty of Education Sciences in collaboration with the UODL, it is imperative for the future success of these new programmes that IWB be utilised optimally and effectively. If we do not utilise students' first IWB experience efficiently and effectively, the participants' negative experience will impact negatively on the remaining IWB sessions. Even though it won't necessarily be students' first IWB experience, it is important that the lecturers, when starting any whiteboard session, establish the characteristics, understandings of the mode of delivery and needs of each new enrolled group of students, as there is no 'one-size-fits-all'

approach (Rafferty et al. 2013, 46). It is important and necessary not only to monitor the content of such programmes, but also to continuously evaluate the standard and quality of the presentations. Without this monitoring in place, there can be no assurance of effective teaching and learning taking place through IWBs. It must be noted that the participants' experience was based on their perceptions after they had received two IWB sessions only. But the fact still remains that one ineffective IWB session will require many brilliant IWB sessions to eradicate students' perceived perceptions and experiences of that one poor session. Most of the students preferred the contact sessions, because they were used to them, and it will take time for them to adjust to this type of teaching and learning (Rafferty et al. 2013, 46; Okita 2013, 172). When starting IWB sessions with students who have no previous experience in IWB sessions, it is advisable to have an introductory session where the presenter can inform and prepare students (Thomas 2013, 206). It would be advisable to give students tips and strategies when certain issues present themselves in IWB sessions, and tell them what they can do. Exposing studens to working cooperatively and giving hints on how to write on the IWB will also help. Presenters should not assume that students in an IWB session will be able to adjust to the new mode; students need assistance in the transition from contact sessions to IWB sessions. As a few participants exclaimed: '... wonderful experience, I need to have more than two sessions, thank you and keep up the good work; ... IWB was a lifetime experience for me, especially the interaction between the centres; ... I like the IWB, looking forward to the next'.

The lecturer is not solely responsible for insuring the success of IWB use; students have to accept their share of responsibility. It is imperative that not only the lecturers are trained, but also the students. Pool (2014, 200) suggests that students be helped with coping and adaptation strategies to ensure effective learning in an blended environment. Esterhuizen (2012, 144−145) indicates that intervention strategies are needed that will help presenters and improve reliability of the technology. For novice presenters to implement IWB and present lectures to inexperienced students should be seen as a learning opportunity that can be utilised effectively, and will ultimately add to a much needed effective blended learning experience. IWB technology can appeal to adult students and may improve their interaction, learning and engagement (Hayes 2010, 8), keeping in mind the specific group of adult students in front of the presenters with their own unique characteristics that have to be considered. A study done by Heinze and Procter (2012, 184) suggests that blended learning is especially valuable to students who combine work and study. It is recommended that for the benefit of distance students a blended learning approach should be followed, as the study has indicated that a combination, a multiple approach to learning, is needed to ensure effective teaching and learning. Successful use of IWBs can be greatly beneficial to the students, enhancing a blended learning environment and presenting a much needed quality programme for the development of our educational leaders. The UODL is currently working on its e-maturity as suggested by Esterhuizen (Esterhuizen 2012,

178). According to (Esterhuizen 2012, xxiii), e-Maturity indicates 'the extent to which organisations make strategic and effective use of ICT in order to improve educational outcomes'. The constraint that had the biggest impact on the students' perception was the unreliability of the technology being used.

Further research on the use of the IWB is needed as soon as the students are used to the IWB being part of their medium of instruction, embedded in the blended learning environment, and, as Becta ICT Research (Becta 2003, 3) states 'the novelty has worn off'.

The focus of this study was on SMT-members' perceptions of the use of IWBs for continuous professional development (CPD) via IWB sessions. The aim of the study was to establish students' perceptions regarding their first experiences with the use of IWBs, and to make recommendations and indicate the importance of a sound and reliable technological environment for the effective use of IWBs as part of a blended learning environment. It is important to learn from every experience with IWBs and share lessons learnt to improve current IWBs practices. In summary, IWBs have certain limitations that should be addressed to ensure maximum learning by adult learners who study via the distance mode of delivery.

REFERENCES

Beauchamp, G. 2004. Teacher use of the interactive whiteboard in primary schools: Towards an effective transition framework. *Technology, Pedagogy and Education* 13(3): 327−348.

Becta. 2003. What the research says about interactive whiteboards. http://dera.ioe.ac.uk/5318/1/wtrs_whiteboards.pdf (accessed 15 March 2015).

Bennet, S. and L. Lockyer. 2008. A study of teachers' integration of interactive whiteboards into four Australian primary school classrooms. *Learning, Media and Technology* 33(4): 289−300.

Betcher, C. and M. Lee. 2009. *The intercative whiteboard revolution − teaching with IWBs*. Victoria, Australia: ACER Press.

Bogdan, R. C. and S. K. Biklen. 2006. *Qualitative research for education. An introduction to theories and methods.* (5th ed). Boston: Pearson.

Bubb, S. and P. Early. 2007. *Leading and managing continuing professional development.* (2nd ed). London: Paul Chapman Publishing.

Bush, T. 2007. Educational leadership and management: Theory, policy and practice. *South African Journal of Education* 27(3): 391−406.

Cameron, L. 2013. Giving teaching advice meaning: The importance of contextualizing pedagogical instruction within the discipline. In *Outlooks and opportunities in blende and distance learning*, ed. B. Tynan, J. Willems and R. James. United States of America: IGI Global.

Chapman, J. D. 2005. Recuitement, retention and development of school principals. http://www.unesco.org/iiep (accessed 10 July 2014).

Cogill, J. 2003. The use of interactive whiteboards in the primary school: Effects on pedagogy. In *ICT in schools research and evaluation series*, edited by Becta. London: Queen's Printer.

Cohen, L., L. Manion and K. Morrison. 2011. *Research methods in education.* (7th ed). London: Routledge.

Cragg, C. E., J. Dunning and J. Ellis. 2008. Teacher and student behaviors in face-to-face and online courses: Dealing with complex concepts. *Journal of Distance Education* 22(3): 115−128.

Esterhuizen, H. D. 2012. *The intergration of learning teachnology in open distance learning at the North-West University.* North-West: North-West University.

Fraenkel, J. R. and N. E. Wallen. 2008. *How to design and evaluate research in education.* (7th ed). New York: McGraw-Hill.

Francois, E. J. 2013. Quality matters in transcultural blended learning and teaching in postsecondary education: A conceptional framework. In *Transcultural blended learning and teaching in postsecondary education*, ed. E. J. Francois. United States of America: IGI Global.

Garrison, D. R. and N. D. Vaughan. 2008. *Blended learning in higher education: Framework, principles and gudelines.* San Francisco: Jossey-Bass.

Gillen, J., J. K. Staarman, K. Littleton, N. Mercer and A. Twiner. 2006. A 'learning revolution'? Investigating pedagogic pratices around interactive whiteboards in British primary classrooms. http://oro.open.ac.uk/9866/2/IWB-09_final_edit_SK.pdf (accessed 23 March 2014).

Glover, D. and D. Miller. 2007. The evalution of an effective pedagogy for teachers using interactive whiteboards in mathematics and modern languages: an empirica; analysis from the secondary sector. *Learning, Media and Technology* 32(1): 5−20.

Griswold, W. 2013. Transformative learning and educational technology integration in a post-totalitarian context: Professional development among school teachers in rural Siberia, Russia. In *Transcultural blended learning and teaching in postsecondary education*, ed. E. J. Francois. United States of America: IGI Global.

Hadjerrouit, S. 2008. Towards a blended learning model for teaching and learning computer programming: A case study. *Informatics in Education* 7(2): 181−210.

Hall, I. and S. Higgins. 2005. Primary school students' perceptions of interactivewhiteboards. *Journal of Computer Assisted Learning* 21: 102−117.

Hayes, T. 2010. Interactive whiteboards for teaching training. http://scholarspace.manoa.hawaii.edu/bitstream/handle/10125/15398/Hayes_lit_review.pdf?sequence=3 (accessed 9 February 2014).

Heinze, A. and C. Procter. 2012. Refining current practices in mobile and blended learning, ed. D. Parsons. United States of America: IGI Global.

Jang, S.-J. 2010. Integrating the interactive whiteboard and peer coaching to develop the TPACK of secondary science teachers. *Computers and Education* 55: 1744−1751.

Jansen, J. D. 2010. The language of research. In *First steps in research*, ed. K. Maree. Pretoria: Van Schaik Publishers.

Kennewell, S. and G. Beauchamp. 2007. The features of interactive whiteboards and their influence on learning. *Learning, Media and Technology* 32(3): 227−241.

Kennewell, S., S. Tanner, S. Jones and G. Beauchamp. 2008. Analysing the use of interactive technology to implement interactive teaching. *Journal of Computer Assisted Learning* 24: 61−73.

King, K. P. 2002. *Keeping pace with technology: Educational technology that transforms: Vol 1. The challenges and promise for K-12 educators*. New York: Hampton Press, Inc.

Kumar, R. 2008. Convergence of ICT and education. *World Academy of Science, Engineering and Technology* (4). http://waset.org/publications/3700/convergence-of-ict-and-education (accessed 5 April 2014).

Manny-Ikan, E., O. Dagan, T. B. Tikochinski and R. Zorman. 2011. Using the interactive white board in teaching and learning − an evaluation of the smart classroom pilot project. *Interdisciplinary Journal of E-Learning and Learning Objects* 7: 249−273.

Maree, K. and J. Pietersen. 2010. Surveys and the use of questionnaires. In *First steps in research*, ed. K. Maree. Pretoria: Van Schaik Publishers.

Mercer, N., S. Hennessy and P. Warwick. 2010. Using interactive whiteboards to orchestrate classroom dialogue. *Technology, Pedagogy and Education* 19(2): 195−209.

Merriam, S. B. 1998. *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass Inc.

Morrison, M. 2007. What do we mean by educational research? In *Research methods in educational leadership and management*, ed. A. R. J. Briggs and M. Coleman: SAGE Publications Ltd.

Ngcobo, T. 2012. Leadership development challenges in South African schools: The advanced certificate: Education (school management and leadership). *Africa Education Review* 9(3): 417−433.

Nieuwenhuis, J. 2007. Introducing qualitative research. In *First steps in research*, ed. K. Maree. Pietermaritzburg: Van Schaik Publishers.

North-West University. 2015. Calender 2015, edited by North-West University.

Okita, S. Y. 2013. Educational technology and instructional design in synchronous blended learning environments. In *Transculture blended learning and teaching in postsecondary education*, ed. E. J. Francois. United States of America: IGI Global.

Pashiardis, P. and S. Brauckmann. 2009. Professional development needs for school principals. *Common Wealth Partnership*. http://www.cedol.org/wp-content/uploads/2012/02/41-46-2010.pdf (accessed 23 November 2013).

Pool, J. 2014. *An investigation of communities of inquiry within a blended mode of delivery for technology education*. Potchefstroom: North-West University.

Rafferty, J. M., J. Munday and J. Buchan. 2013. Ten rules of thumb in blended and felxible learning: A study on pedagogies, challenges, and changing perspectives. In *Outlooks and opportunities in blended and distance learning*, ed. B. Tynan, J. Willems and R. James. United States of America: IGI Global.

Ritchie, J. and J. Lewis. 2003. *Qualitative research practice. A guide for Social Science Students and Researchers*. London: Sage Publications.

SACE. 2013/14. *Annual report 2013/14*, edited by Department of Educaton. Centurion: South African Council for Educators.

Smith, H. J., S. Higgins, K. Wall and J. Miller. 2005. Interactive whiteboards: Boon or bandwagon? A critical review of the literature. *Journal of Computer Assisted Learning* 21: 91−101.

Swan, K., A. Kratcoski, J. Schenker and M. Van-'t Hooft. 2010. Interactive whireboards and student achievement. In *Interactive whiteboards for education: theory, research and practice*, ed. M. Thomas and E. C. Schmid. United States of America: IGI Global.

Thomas, G. E. 2013. Facilitating learning with adult students in the transcultural classroom. In *Transcultural blended learning and teaching in postsecondary education*, ed. E. J. Francois. United States of America: IGI Global.

Tucker, C. R. 2012. *Blended learning in grades 4−12*. United States of America: Corwin.

Turel, Y. K. and T. E. Johnson. 2012. Teachers' belief and use of interactive whiteboards for teaching and learning. *Educational Technology & Society* 15(1): 381−394.

Virtual Learning. 2014. *Interactive whiteboards case studies: New tools, new pedagogies, new learning?* http://virtuallearning.org.uk/wp-content/uploads/2010/10/Case_Studies.pdf (accessed 6 May 2014).

Wei, P., H.-C. and C.-Y. Huang. 2013. Blended lesrning design and teaching strategies: Case of the program planning course. In *Transculture blended learning and teaching in postsecondary education*, ed. E. J. Francois. United States of America: IGI Global.