Students' perceptions on IWB through the lens of the community of inquiry framework

Molly Patricia van Niekerk

Department of Education Studies, Faculty of Education, North-West University, Potchefstroom Campus, South Africa
Molly.vanniekerk@nwu.ac.za

Interactive whiteboards (IWBs) are being utilised at a rapidly increasing rate, especially in distance education (DE). As a medium of instruction they allow the presenter to simultaneously interact with numerous students at different centres across the country. This study is unique in the sense that a collaborative learning community is created between two groups separated by distance. If utilised correctly and efficiently, IWBs have the potential to enhance the teaching and learning experience for the student. This article focuses on the perceptions of students (adult learners) from various school management teams (SMT), pertaining to their experiences with several IWB sessions. Open-ended questionnaires were completed by 45 students enrolled for the Advanced Certificate in Education (School Management and Leadership) (ACE SL). Participants' perceptions with regard to their IWB learning experience were determined according to the Community of Inquiry (CoI) framework, creating a collaborative constructivist educational experience. This article will indicate how important it is to focus on keeping the balance between the three presences in the CoI and also highlight the crucial role that presenters play to ensure an effective teaching and learning experience through the use of IWBs.

Keywords: cognitive presence; community of inquiry (CoI); distance education (DE); interactive whiteboard (IWB); school management team (SMT); social presence; teaching and learning experience; teaching presence

Introduction

Interactive whiteboards (IWBs) have been utilised for quite a number of years and have seen widespread research, especially in educational settings, on the impact they have had on teaching and learning (Hayes, 2010; Kennewell, Tanner, Jones & Beauchamp, 2008; Parks, 2013; Smith, Higgins, Wall & Miller, 2005; Türel & Johnson, 2012). The manner in which presenters apply technology as medium of instruction will impact on how students perceive their learning experience (Rafferty, Munday & Buchan, 2013). The interactive whiteboard itself is merely a presentation tool, and the focus should be on how the IWBs are utilised to enhance the teaching and learning experience (Matthews, 2009:17; Sharma, Barrett & Jones, 2011:11). Francois (2013:322-323) emphasises the fact that teaching effectiveness as well as the quality of any programme are not only determined by the curriculum content, but also by how the programme is delivered.

Hayes (2010:3) acknowledges the fact that most research on the use of the IWB focuses primarily on teachers and learners in K-12 and university settings, and not on the effect it has on adult learners. There has been a variety of research done on CoI, with the focus mostly on online courses (Akyol & Garrison, 2008; Garrison & Akyol, 2013; Swan, Garrison & Richardson, 2009) and used in studies to inform effective instructional design (Richardson, Arbaugh, Cleveland-Innes, Ice, Swan & Garrison, 2012; Shearer, 2013), but no research has been conducted on the CoI, where the focus is the use of IWB as presentation tool between two groups separated by distance.

Since the students enrolled for this course are adults, they are ideally suited to express their perceptions on the use of IWBs, and the effect thereof on their learning experience. This research focuses on SMT members' learning experiences with lectures using IWBs as medium of instruction. Although these students are enrolled in distance education, they receive half their lectures through a contact mode of delivery, and the other half through the use of IWBs. In the IWB sessions, the lectures are transmitted from the North-West University Potchefstroom Campus to Rustenburg centre. Potchefstroom students actually sit in the IWB studio, attending the lecture, while the presentation session to the Rustenburg centre takes place. The presenter, using IWBs, interacts with all students, and thus creates a collaborative learning environment with the two groups.

This makes this study all the more unique, in the sense that there is collaborative interaction between two groups of students who are separated by distance. No extant research could be found on a similar context where the IWB was used as presentation tool to ensure a collaborative learning community between two groups. Moller, Robison and Huett (2012) accentuate the fact that, especially educational programmes found in distance education, do not optimally use available technology or proven designs that provoke higher cognitive thinking, and where presenters create a dynamic social interaction context.

Quality teaching through the utilisation of IWBs depends on the presenter, who is required to orchestrate all the features presented in that specific classroom environment in order to reach the planned learning objectives (Kennewell et al., 2008:65-66). The presenter must keep in mind the specific profile of students attending the IWB session, as the characteristics of the group of students will impact on the success of the presentation (Hayes, 2010:1). These participants were adult learners, ranging from 37 to 58 years in age. To maintain quality in any programme, students' perceptions with regard to their learning experience should be determined on a regular basis, and the presenter should adjust accordingly, to ensure that effective teaching and learning takes place.

This research was based on the CoI theoretical framework (Garrison, Anderson & Archer, 1999), which was ideally suited, as this framework describes learning experiences in various higher education learning environments, such as face-to-face, online and others (Garrison & Akyol, 2013; Garrison, Anderson & Archer, 2010). This framework will provide order, as well as the necessary understanding of the potential and effectiveness of using IWBs in the ACE SL programme, to create and sustain a community of inquiry (Garrison et al., 2010:6). According to Garrison (2011:111), an educational community of inquiry creates the opportunity for individuals to work collaboratively, allowing for critical discourse and reflection to take place and creating the opportunity to construct personal meaning as well as mutual understanding. The CoI consists of three interactive presences, namely social-, cognitive- and teaching presence (Garrison et al., 1999). The discussion on the findings will be done according to the three presences of the CoI framework, as well as by looking at the participants' comments, so as to help improve the utilisation of IWBs.

The focus of this study was on 45 SMT-members enrolled in ACE SL programme for professional development using IWBs. The 45 SMT-members formed part of the Continuous Professional Teacher Development (CPTD) management system in 2013; where the implementation plan was approved by the South African Council for Educators (SACE) in November 2012 (SACE, 2014:24). Being part of the implementation process, principals and deputy principals (first cohort) and Heads of Departments (HODs) (second cohort) were enrolled as bursary students, funded by the Department of Education (DoE). The aim of the study was to establish students' perceptions after six IWB sessions, to determine the effect these had on their learning experiences, and establish what can be done to improve the IWB sessions.

This research accentuates the importance of continuous reflection for national and international presenters utilising IWBs in their teaching and learning practices. It makes presenters aware of the uniqueness of every adult student group and requires presenters to adapt their teaching styles. Advisable teaching and learning practices are given to improve and reflect on current practices. The importance of utilising IWB effectively for quality programmes nationally and internationally is emphasised.

Background to the Study

Improvement of the training and development of educational leaders is high on the agenda of most educational institutions and education departments, as large sums are allocated and invested annually for continuing professional development (CPD) (Bubb & Early, 2007:1-2). The 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). The ACE SL is a professional, practice-based and developmental programme for school leadership in South Africa.

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 DoE gave bursaries to the selected group of students currently in leadership positions. Most of the participants stay in remote areas and were required to travel vast distances to the nearest centrum to attend IWB sessions. There is no formal qualification required for a teacher to get promoted to a leadership position, which is why the Department deemed it necessary to give the participants the opportunity to be educated in leadership and management practices.

A significant factor that influenced the decision to start utilising IWBs was the fact that the Unit for Open Distance Learning (UODL) already had at least two 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 done via IWBs. One of the benefits of using IWBs is that all the sessions are recorded, and if students could not attend certain sessions, or wanted to review content or prepare for the exam they can do so at their own convenience, accessing the recorded IWB sessions by following a certain link via the internet The importance of this research is to establish adult participants' perceptions with regard to the use of IWBs and the effect it has on their learning experience. This will help the presenters to adjust their teaching strategies to ensure a quality programme through which effective teaching and learning can take place.

Literature Review

An IWB is a large interactive display that connects to a computer, and a projector that projects the image onto the whiteboard where the users control the actions by using an e-pen or a finger (Manny-Ikan, Dagan, Tikochinski & Zorman, 2011; Sharma et al., 2011:7; Smith et al., 2005). Interactive whiteboards (IWBs) allow students to develop information, higher order thinking, communication and cooperation, and learning and technology usage skills, which are all much needed for the 21st century (Manny-Ikan et al., 2011). Interactive whiteboards (IWBs) can be used as a tool to enhance teaching and as a support tool for students' learning (Smith et al., 2005:92). IWBs allow for the use of various forms of multimedia, allowing

presenters to personalise the learning content that can add another dimension to the traditional teaching and learning scenario, making lessons very interesting (Sharma et al., 2011:10). Interactive whiteboards (IWBs) are most suitable for collaborative teaching, and can meet the needs of a wide range of students (Miller & Glover, 2010).

Moore (2013) defines distance education (DE) as the interaction between lecturer and student, separated between time and space. It must involve two-way communication in order for the lecturer to facilitate and support the educational process. Technology is usually used to mediate the two-way communication (Garrison & Shale, 1987). Distance education (DE) has become a viable option for many students, giving them educational opportunities otherwise not possible. Known principles and theoretical frameworks need to guide effective practice to deliver quality teaching and learning opportunities, even though separated by distance (Moller et al., 2012). For teaching and learning activities and programmes to be effective, it is crucial to consider the diverse characteristics of adult students, as adults come from different backgrounds, work in different context and have their own unique experiences, knowledge, skills and competencies (Bubb & Early, 2007:13). The group of participants can be described as adult students, as they were all over the age of 24, and returning to higher education (Thomas, 2013:215).

Moller et al. (2012) point out that presenters have to exploit the unique opportunity that technology provides in its ability to aid in creating a cognitive and social presence. IWB can be effectively utilised to create a teaching, social and cognitive presence. CoI has been recognised as the ideal theoretical framework in higher education to create and sustain collaborative learning communities, by creating three interrelated presences (Akyol & Garrison, 2008).

As indicated in the introduction, the research was based on the CoI framework. Three types of presence are interlinked in the CoI theoretical framework and create a collaborative constructivist learning experience, where critical end reflective thinking takes place (Garrison et al., 1999). Social presence creates a naturally developed, trusting environment, where students experience group cohesion, allowing open communication for students to project their individual personalities and develop relationships (Garrison & Akyol, 2013:107). Open communication gives students opportunities to reflect critically and share meaning on content and comments made by the lecturer and fellow students (Garrison et al., 2010:7). Addressing each other by name, students perceive themselves as being part of the CoI, where words such as "we" and "our" are often used. Social presence is required to augment and maintain collaboration and the sharing of meaning (Garrison & Akyol, 2013:108).

The second element of presence is cognitive presence, which forms the core of CoI. In this presence, the focus is on critical thinking, where the students generate new knowledge and justify present knowledge; it requires students' continuous engagement (Garrison et al., 2010:6). In this presence, students construct meaning through reflection and discourse (Swan et al., 2009). For this to be maintained requires that the presenter (teaching presence) regularly monitors the situation, ensuring student engagement in activities by generating curiosity and questioning (Garrison & Akyol, 2013:109-110).

Teaching presence is the third element in the CoI framework. Teaching presence is necessary to ensure that the intended learning outcomes are reached, and is responsible for the integration of the social and cognitive presences in a collaborative CoI (Swan et al., 2009). Therefore, the responsibility lies with the presenter to create a meaningful and prolific community of inquiry (Garrison & Akyol, 2013:110-111). This can be achieved through thought provoking and relevant activities that require the presenter to be knowledgeable about the learning content and the particular group of students being taught. Teaching presence determines the structure, facilitation and direction of the teaching and learning experience that is crucial for interactivity (Swan et al., 2009). The presenter has to select appropriate and relevant collaborative learning activities, such as to guide student discussions through a significant approach, ensuring that the students stay focused. It requires the presenter to direct the instruction through intervening, summarising the discussions, and also providing relevant information (Swan et al., 2009). There has to be a balance between the three presences to ensure an effective and sustainable collaborative constructivist learning experience. The presenter, being responsible to maintain the balance, aids in the process of ensuring that students have an effective teaching and learning experience through the use of IWBs.

Even though the students are separated by distance, the presenter uses the IWB as a tool to create a learning experience by ensuring there is interaction between social, cognitive and teaching presences. The social presence as experienced by the participants as the environment where the group in Rustenburg and the group in Potchefstroom via the IWB are connected socially and expressively with each other. The cognitive presence is created by the presenter where the presenter stimulates the participants thinking by encouraging them to debate, reflect and confirm issues between the two groups. The IWB as presentation tool allows the presenters to construct a teaching experience that

steers the social and cognitive presence creating an unusual learning experience for the participants.

Methodology

A qualitative mode of inquiry was applied, focusing on the participants' deeper understanding of a particular phenomenon being studied in a natural setting, and how they construct meaning through their experiences and perspectives (Gay, Mills & Airasian, 2011:7; Merriam, 1998:6). The numbers of participants in qualitative research tend to be small and selected purposively according to certain criteria (Gay et al., 2011:8). Both purposive- and convenience sampling were implemented as the participants had defining characteristics, and were easy to access, making them the holders of the required data (Ritchie & Lewis, 2003:79, 81).

All the students were enrolled by the DoE as part of the DoE 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 45 adult students were enrolled in the ACE SL programme. As the students were at two centres, it was more convenient to have them complete open-ended questionnaires. Another reason for not using focus group interviews was the fact that the participants do not live near the centres, and they neither had the time nor wanted to spend any money travelling for the interviews. Questionnaires give the participants the opportunity to express themselves by writing down the answers to certain questions (Gay et al., 2011). The open-ended questionnaires give the participants the opportunity to write unrestricted answers and write in their own words their perceptions on certain issues (Best & Kahn, 2003:302). The validity of the questionnaire was enhanced by asking colleagues their expert opinion, ensuring that the terminology was interpreted correctly by all the participants, and that it was sent in for language editing (Best & Kahn, 2003:312).

The participants were 21 female and 24 male, between the age of 37 and fifty-eight. Six held the position of HOD, 15 were deputy principals and 24 were principals. The participants attended six IWB sessions and five contact sessions. They were ideally suited to express their experience with regard to the IWB sessions in the ACE SL programme, and to establish the impact the IWBs had on their learning experiences. Making use of questionnaires was convenient for the researcher as well as the participants in the sense that the questionnaires were handed out on the last contact sessions at two different centres, where the research was explained and the necessary consent forms were signed. The response rate of questionnaires is optimal and quick completion time can be administered (Maree & Pietersen, 2010).

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 & Biklen, 2006:159). For reliability to be established in this study, the results needed to be consistent with the data collected (Merriam, 1998:206). Member checking took place, and opinion of colleagues as well as clearing researcher bias before 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 analyses process were the researchers identify and synthesize patterns of students' perceptions on their IWB experiences.

Discussion

The findings will be discussed under various headings relating to this study.

Perceived Attitude towards IWB Experience

The participants' (P) age ranged from 37-58 years. Although their teaching experience in their current management position ranged between two to 25 years, none of them were familiar with IWBs. Some participants stated: "*...it was the first time in nearly 20 years that I found myself again in a formal teaching situation*" (P33); "*...was too far back that I had to sit in a class*" (P43), "*a person fears the unknown*" (P12); "*...I was fearful at my age I can't see properly*" (P18), "*I was scared I couldn't see on the whiteboard*" (P6). All participants were exposed to their first IWB session a few months previously.

Participants perceived their first IWB session differently. Most of the participants were nervous and uncomfortable in their first IWB session as they experienced fear and dislike. It was a new teaching and learning situation and the participants did not know what to expect or how to respond in the sessions. Participants indicated their resistance to change, which corresponds with research indicating that one of the biggest problems when implementing new technology into existing practices is resistance to change (Kumar, 2008). Comments participants made: "*...dislike towards it*" (P3); "*I was not used to it and I felt it is wasting my time*" (P21); "*...fear. I was worried what the other students at other centres would think of my answers*" (P40); "*...I thought we were being cheated and not getting quality teaching; ...I was scared and doubtful*" (P39); "*...I felt nervous*" (P13), "*I was scared that quality teaching would be sacrificed just because the University wants to save money*" (P7); "*...it was to different and effected my concentration I didn't like it*" (P25).

The pre-perceived attitude towards using technology will also impact on the effectiveness of IWBs. Some students will reveal technophilia (a

strong enthusiasm) and others technophobia (a fear or dislike) towards technology (Esterhuizen, 2012: xxv). This confirms findings of research done by Griswold (2013:133-135), where the author notes that when confronted with new technology, students will experience it as difficult.

Despite it being a new experience many participants were enthusiastic towards their first IWB session: "*I was enthusiastic to see how technology can be part of teaching*" (P1); "*...I was excited*" (P4), "*it showed me how technology advanced*" (P45); "*...I listened and engaged in awe*" (P27); "*...I couldn't wait*" (P36), "*I experienced enthusiasm*" (P10).

After having attended six interactive whiteboard sessions, the participants were asked to indicate in what way, if any, their experience had changed since their first IWBs. This was a very important question to ask, as literature suggests that as soon as "the novelty has worn off" and students are used to the "new" technology being part of their medium of instruction, further research is required (British Educational Communications and Technology Agency (Becta), 2003:3). Most participants' negative experience of their first IWBs had changed to positive: "*I am used to it now, we interact normally...*" (P21); "*I grew better with the interaction...*" (P39); "*I changed positively...*" (P13); "*at first confusing, but I started to enjoy it*" (P25); "*...it is now acceptable, fear made place for enthusiasm because it became interesting*" (P3); "*...I am more relaxed now and don't experience anxiety towards the session*" (P5); "*...the dislike did not stay for long; I realised that I am actually part of the lesson on the other side and that I can actually participate, I got used to it*" (P42).

Only five participants indicated they were unsatisfied with the IWBs and still perceived the use of IWBs as an unfulfilling experience: "*...it is not personal and the presenters do not ask me to participate*" (P33); "*I might as well not be there*" (P12); "*...it is frustrating as I get bored and don't participate*" (P18), "*...I don't enjoy it much I am not used to the technology and will never like it*" (P40). The rest of the participants gradually got used to the use of IWBs as medium of instruction and started to participate and even enjoyed the IWBs. Comments made by the participants: "*I find it stimulating and thought provoking*" (P9); "*...I was surprised that teaching can be technologically enhanced in such a way...*" (P20); "*At the moment I am comfortable with the IWBs*" (P32); "*...the experience that I have is that it promotes total participation*" (P15); "*...gradually I overcame my fear and now I enjoy it, as views are exchanged instantly*" (P23); "*...I am now fine with it as it the same as being in contact class, I must just play my part by being actively involved, then it is the same*" (P37).

As the participants got used to the IWB sessions, the students also indicated that it seemed that the presenters got better and also relaxed more as a few participants noted the following: "*...the more the IWB took place the better we understood the presenter*" (P2); "*...the teaching situations got better as we now understand each other*" (P11); "*...we know now what to expect from each other, they even start calling us by the name*" (P24).

A worthy point to make is that the participants who were totally against the IWB sessions and preferred contact sessions, fell in the age group between 49 and 58, and there was not one in the age group between 37 and 48 who did not feel positive about IWB sessions, they all wanted IWBs to continue.

COI Framework
The CoI provided the necessary framework to order and help understand the potential and effectiveness of using IWBs in the ACE SL programme to create and sustain a collaborative community of inquiry. The data will be discussed according to the three types of presences that are interlinked in the COI framework and create a certain collaborative constructivist learning experience. Participants' recommendations to improve the utilisation of IWBs to create an effective teaching and learning environment will also be indicated.

Social presence
Social presence was not established at the first IWB session. Referring to the participants' comments on how they perceived their first IWB session and how they experienced the last, it is clear that creating a trusting environment takes time and frequent interaction between the specific group members. Participants did eventually experience group cohesion, and participants could openly communicate with each other, expressing their own views, and even develop relationships among themselves (Garrison & Akyol, 2013:107). Comments that confirm the above statements were made by the participants: "*...it took me a while to get to know my fellow students*" (P3); "*at first I did not like to respond in front of them, now I am good*" (P25); "*...we have come to know each other in the group and we encourage each other to speak, we not scared anymore to speak in front of others*" (P42); "*...it fosters cooperation, we encourage now each other to speak*" (P16).

When presenters address students by their name, the students perceive themselves as being part of CoI (Garrison & Akyol, 2013:108). This is confirmed by a statement made by a participant (P28): "*I valued it when the presenter asked me to respond, I was thanked very nicely and* [that] *made me feel good. Now I listen and take notes, I felt special*" [sic]. Pertinent to this study, six

participants requested that during the IWBs, the presenter must know the students' names and ask them personally to respond to a question. They stated: "[the] *presenter must call student by name to make it more personalised*" (P8); "*...they have to know us by name in order for us to respond*" (P23).

The participants enjoyed the activities most of all when there was opportunity for open communication and discussion between the groups at the different centres: "*...the discussions that come from the learning content between the centres were very interesting...*" (P21); "*independent learning and learning from colleagues from the other centre*" (P32); "*...we are able to share information with students from other centres*" (P24); "*...it is interactive, it initiates debate among my peers*" (P4); "*...it is so fun* [sic] *in the sense that our own views are not confined to the class we hear what others say at the other centres, thus broadening our understanding regarding certain issues*" (P10). Open communication gives students the opportunity to critically reflect on content and voice their opinion on certain issues (Garrison et al., 2010:7).

Most participants acknowledged the fact that they actively engage through discussions and evaluation the learning content: "*...I highlight important information and discuss issues with colleagues in my group*" (P14); "*...I write down examples appropriate to my situation as possible solutions*" (P15); "*...I mostly take part in discussions*" (P22); "*...we are given the opportunity to ask and respond to questions, it is up to you to take the opportunity*" (P40); "*I engage in the discussions and respond to the challenges provided by the presenters*" (P44). Miller and Glover (2010) accentuates the fact that IWBs can only be successful if the students interact and participate in activities during IWB sessions.

Cognitive presence

The second element of presence is the cognitive presence, which forms the core of CoI. The main factor here is to create the opportunity for the students to focus on their critical thinking, and to engage the students in activities where their present knowledge is justified and new knowledge is developed (Garrison et al., 2010:6). It was confirmed by the participants' comments the presenters seemed to establish an effective cognitive presence: "*...they help us to focus on the content...*" (P34); "*...they pause give opportunity for questions, clarity and those who seek further explanation*" (P17); "*...they explain a lot and give us time to give our views*" (P1); "*...presenters move step by step to make sure we follow*" (P8).

The presenter (teaching presence) is required to monitor the situation and ensure that the students are actively engaged through asking questions and creating curiosity (Garrison & Akyol, 2013:109-110). All the participants agreed that the key factor to effective IWB sessions is that the students have to participate actively in the session. The presenter must implement various strategies to ensure that all students in the session form part of the group and participate actively. Participants stated: "*...presenters need to be energetic*" (P33); "[the presenters need to be] *persuasive and encouraging to ensure that we participate*" (P19); "*...they must put extra effort in to keep it interesting and keep me motivated to listen*" (P26); "*...they must focus more on discussions and debate so that the information may sound without misconception*" (P3); "*...more time should be given to students for discussions as it is the only time most of us can participate*" (P14); "*...they must do thorough preparation and have strategies* [so] *as to not make us bored*" (P15); "*...it has to be practically, we need to get involved with the content*" (P39).

The presenters utilised the IWBs in such a way as to allow the participants to construct their own knowledge, and opportunity was given for critical and reflective thinking, a prerequisite in the cognitive presence (Swan et al., 2009). Participants commented: "*...it helps you to form your own opinion with regard to your own experience and what the content says...*" (P23); "*I critically have to analyse the content as I have to give my opinion*" (P20); "*...it makes learning easier as I attach meaning to the information...*" (P45); "*...during the session I do self-reflection of what is being presented to measure my own understanding, it makes me to listen* [sic] *and construct my own thinking in regard to the content and my answers*" (P32), "*...we discuss the relevance of the content to our own situation so that we can implement it properly*" (P5); "*...I have to focus and critically think about the content*" (P13).

The participants were asked to comment on the skills they thought were developed when the presenters used the IWB as medium of instruction. Communication-, thinking-, reading-, learning-, and listening skills were developed most, according to the participants. Participants stated: "*I develop-*[ed] *my communication and thinking skills, as my thoughts get stimulated and I communicate my thinking with fellow students*" (P2); "*...peer education, how to learn and work with your peers*" (P9); "*...taking note*" (P14); "*...communication that is brief and to the point*" (P10); "*...it forces me to concentrate, otherwise I am left behind*" (P38); "*...thinking skills as we have to think very fast and to the point*" (P16); "*...listening and reading skills have to be on track if you want the IWB to work for you*" (P21); "*...listening, thinking, information digestion and learning skills because issues are discussed over large group of people where more ideas are cited*" (P40), "*...we get chance to simulate our thinking*" (P36); "*...a lot of facts are given and aspects are discussed, gives you time to form your own thinking*" (P29); "*...it motivates you*

to think about the content and how it is relevant to your own situation" (P6).

The participants also commented on how the use of IWBs assisted them on familiarising themselves with the content, and how they were "forced" to later recap the learning content. Some comments were: "*...IWBs gives you opportunity to go through your work, it forces you to go through the content*" (P3); "*...the interesting nature of presentation motivated to do individual study at home*" (P27); "*...we cover a wide range of scope of content through summaries and discussions*" (P11); "*...the IWBs plays a major role in sharpening the content*" (P19); "*...your attention is being enforced* [sic]*, when you go back home you have to read again, your notes were so short you have to write them properly otherwise later you won't know what is going on*" (P42), "*...you need to make a follow-up after the session and equip oneself with the content*" (P35).

Teaching presence

Teaching presence is the third element in the CoI framework. Through utilising the teaching presence the presenter integrates the social and cognitive presence. Creating an effective and sustainable CoI lies in the hands of the presenter. The teaching presence determines the structure, facilitation and direction of the teaching and learning experience that is crucial for interactivity (Garrison & Akyol, 2013:110-111). According to the participants' perception, the lectures did manage to establish a teaching presence, as their comments indicated: "*the questions asked by the presenters are stimulating and requires* [sic] *you to think and form an opinion*" (P7); "*...one is forced in discussions, your colleagues and presenters expect it from you...*" (P25); "*we discuss our response first then allow for one to respond...*" (P31); "*we gain from listening to our colleagues and hear their different ideas and opinions...*" (P43); "*sometimes when I have something to say they give me a chance to speak...*" (P8); "*...they make time for discussions*" (P12).

Three presenters presented three modules in an IWB session. The participants were asked if the presenters' presentation styles differ and in what way. Most participants indicated that the presenters do have different styles in the way they present the particular module. The participants stated: "*...they do differ, some are more easier to follow*" (P4); "*...some presenters talk very fast, makes it difficult to follow*" (P18); "*...language proficiency is also a factor, some presenters are easier to understand*" (P16), "*...presenters are not all that audible, they mumble*" (P27); "*...they must pay attention to the use of their voice, sometimes it is on the same tone, can become boring*" (P33); "*...there is a presenter I can't hear clearly as the pronunciation of words is not clear*" (P41); "*...some presenters must be more*

enthusiastic and lively" (P39); "*...the one presenter is more lively that the others, that makes you want to participate, the other a bit boring*" (P7); "*...one presenter is not full of passion towards the content, then it puts you to sleep*" (P21). This concurs with Moller et al.'s (2012:7) statement: "effective distance learning is based in sound instructional strategies and is not information presentation". Presenters therefore have to pay attention, especially to their communication, where it has to be clear and audible. The enthusiasm of the presenter gets carried over to the students, and the presenter must keep that in mind when utilising the IWBs.

The participants indicated that the presenters also have to focus on important factors that have an influence over how the participants perceive their learning experience through the use of IWBs. Participants stated: "*...presenters must not read a lot of content, that we can do, as it becomes boring*" (P33); "*...they must be experts on the content presented, give more relevant topics to discuss*" (P15); "*...give some content that we have to read for the next session so that we can be prepared*" (P6); "*...they must not do the same in every IWBs they must keep it exciting*" (P44). It is up to the presenter to keep students motivated and interested in the content.

Perceived Overall IWB Experience

The participants were asked to indicate what they find most frustrating in the IWB sessions. Most of the participants complained about the sound quality: "*...when the signal is poor we battle to hear...*" (P12); "*network interruptions, this is a big factor, because we lose track as the presenter just continues with the content*" (P42); "*...interrupted communication sometimes the presenter cannot hear us or vice versa*" (P23); "*...when the instrument is not audible enough*" (P11); "*...sound is a problem*" (P37).

Other factors the participants indicated were: "*...time is the problem, time cannot be extended if you need further explanation*" (P18); "*interaction will be switched of and the session will stop immediately*" (P7); "*...to listen without seeing is very difficult, if only we could see the presenter, the screen is so small they put it off...*" (P25); "*screens are a bit small if you sit at the back you can't see clearly...*" (P13); "*we can't always see the presenter and the picture is very small...*" (P39); "*sometimes the page numbers of the lecturer is not the same as what our books are...*" (P16).

The participants were asked to comment on the overall impact that the use of IWBs would have on the ACE SL programme. It appears that most participants perceived the use of IWBs by the presenters as having added value to the programme. Comments were: "*...at the moment I feel all the students stand to benefit from the sessions /programme in its current form and structure*"

(P9); "*...IWBS adds value to the programme as the students at the different centres can share their views*" (P32); "*...all the groups are given opportunity to deliberate around certain issues and finally a conclusion is reached together, it adds value for sure* [sic]" (P24); "*...I have gained a lot of knowledge and practical examples that I can apply in my context which gives value to the programme*" (P37). This concurs with the findings from the study done by Hayes (2010), which noted that IWB technology can appeal to adult students, and has the potential to improve their interaction, engagement and learning experience.

Summary, Conclusion and Recommendations

Although the COI framework was implemented to provide order and better understanding of the potential and effectiveness of using IWBs in the ACE SL, it must be kept in mind that every IWB session is a unique combination of different elements, such as the specific group dynamics of students, context, subject matter, presenter and the utilisation of the IWB. This is confirmed by the research done by Akyol and Garrison (2008), showing that the prominence and interaction of the three presences is determined based on the specific purpose, participants and technological context. The COI framework is based on creating a collaborative constructivist educational experience (Swan et al., 2009). The IWB sessions did eventually create collaborative constructivist educational experiences and the crucial factor is to keep balance between the three presences. The three presences have to interlink and the presenter is responsible to maintain and establish balance between the three presences. In the findings it was clear that the social presence was not there from the first IWB session, but that it developed gradually, and eventually there was group cohesion. Presenters must be aware of this fact, and must not expect it in a students' first IWB session. Presenters should have a special introductory session with the students to explain what is expected of them and prepare the students on how the IWB sessions are going to work (Thomas, 2013). Pool (2014) also suggests that students be helped with coping and adaptation strategies to ensure effective learning. It is also important that the presenters, when starting IWBs, establish the characteristics, understandings and needs of each newly enrolled group of students as there can be no "one-size-fits-all" approach, especially when working with adult students (Rafferty et al., 2013). By doing this, the presenters will be able to establish an effective social presence much quicker than was the case with this particular group of students.

As noted by Swan et al. (2009) the three presences are not fixed; they are ever-evolving and changing; they shift and interact differently as various factors influence the three presences (Swan et al., 2009). It seemed that the presenters were able to create and keep the balance between the three presences by applying various teaching and learning strategies.

The participants identified areas where the presenters can improve to ensure that the three presences are utilised effectively and are sustained, by applying effective teaching and learning strategies. It is therefore essential to frequently determine students' perceptions with regard to their IWB learning experience, and for presenters to adjust accordingly to ensure that effective teaching and learning takes place, subsequently ensuring that a quality programme is delivered. Francois (2013) accentuates the importance of follow-up sessions for the presenters to improve on their teaching styles and strategies.

However, the participants also identified areas which were not up to standard, such as certain technical factors. The UODL is continuously working on the technical aspects that sometimes hamper the smooth running of IWBs. Presenters are also given technical support prior to and during the IWB sessions; as Smith et al. (2005) indicate, rapid "troubleshooting" support is of the utmost importance to make the utilisation of IWBs successful.

IWBs do have the potential to enhance effective collaborative teaching and learning environment if utilised correctly by the presenters. Presenters have to be aware that they should continually improve and evaluate their performance (Morgan, 2008) to ensure best practices and effective learning environment. The last intake for the ACE SL is in 2016, and new programmes such as the Advanced Diploma in Education (ADE) and Post Graduate Diploma (PGDip) in Management and Leadership will be phased in from 2017/2018.

It is imperative for the future success of new programmes nationally and internationally that IWBs be utilised by the presenters, where constructivist collaborative learning experiences are created through the three presences of the CoI. Especially when looking at the next generation of distance education, it is imperative to focus on effective distance education, as Moller et al. (2012) so clearly indicate that for many decades, effective distance education for learners in remote areas has been limited, and there is a need for quality. This research is, however, not only applicable to the training of SMT-members, but the teaching and learning of any group of adult learners where presenters utilise IWBs.

Although the sample size is only 45 participants, and only two groups were studied over a period of six IWB sessions, it is an important initial step that needs to be taken. Further and continuous research is required, especially when more groups over distance come together as a collaborative learning community via IWB. Technology innovation such as IWBs have to be utilised effectively

and efficiently through continuous reflection and implementation of best practice in order to make the transition from mediocrity to excellence.

References

Akyol Z & Garrison DR 2008. The development of a community of inquiry over time in an online course: Understanding the progression and integration of social, cognitive and teaching presence. *Journal of Asynchronous Learning Networks*, 12(3-4):3-22.

British Educational Communications and Technology Agency (Becta) 2003. *What the research says about interactive whiteboards*. Coventry: Becta. Available at http://dera.ioe.ac.uk/5318/7/wtrs_whiteboards_Redacted.pdf. Accessed 15 March 2015.

Best JW & Kahn JV 2003. *Research in education*. Boston: Pearson.

Bogdan RC & Biklen SK 2006. *Qualitative research for education. An introduction to theories and methods* (5th ed). Boston: Pearson.

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

Esterhuizen HD 2012. The integration of learning technologies in open distance learning at the North-West University. PhD thesis. Potchefstroom: North-West University. Available at http://www.academia.edu/3879652/The_integration_of_learning_technologies_in_open_distance_learning_at_the_North-West_University. Accessed 10 November 2015.

Francois EJ 2013. Quality matters in transcultural blended learning and teaching in postsecondary education: A conceptional framework. In EJ Francois (ed). *Transcultural blended learning and teaching in postsecondary education*. Hershey, PA: IGI Global. doi: 10.4018/978-1-4666-2014-8

Garrison DR 2011. *E-Learning in the 21st century: A framework for research and practice* (2nd ed). London: Routledge.

Garrison DR & Akyol Z 2013. The community of inquiry theoretical framework. In MG Moore (ed). *Handbook of distance education* (3rd ed). New York, NY: Routledge.

Garrison DR, Anderson T & Archer W 1999. Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3):87-105. doi: 10.1016/S1096-7516(00)00016-6

Garrison DR, Anderson T & Archer W 2010. The first decade of the community of inquiry framework: A retrospective. *The Internet and Higher Education*, 13(1-2):5-9. doi: 10.1016/j.iheduc.2009.10.003

Garrison DR & Shale D 1987. Mapping the boundaries of distance education: Problems in defining the field. *American Journal of Distance Education*, 1(1):7-13.

Gay LR, Mills GE & Airasian PW 2011. *Educational research: Competencies for analysis and applications* (10th ed). Boston: Pearson.

Griswold W 2013. Transformative learning and educational technology integration in a post-totalitarian context: Professional development among school teachers in rural Siberia, Russia. In

EJ Francois (ed). *Transcultural blended learning and teaching in postsecondary education*. Hershey, PA: IGI Global. doi: 10.4018/978-1-4666-2014-8

Hayes TL 2010. *Interactive whiteboards for teaching training: A literature review*. Available at http://scholarspace.manoa.hawaii.edu/bitstream/handle/10125/15398/Hayes_lit_review.pdf?sequence=3. Accessed 9 February 2014.

Jansen JD 2010. The language of research. In K Maree (ed). *First steps in research*. Pretoria: Van Schaik Publishers.

Kennewell S, Tanner H, Jones S & Beauchamp G 2008. Analysing the use of interactive technology to implement interactive teaching. *Journal of Computer Assisted Learning*, 24(1):61-73. doi: 10.1111/j.1365-2729.2007.00244.x

Kumar R 2008. Convergence of ICT and education. *World Academy of Science, Engineering and Technology*, 40:556-559. Available at http://waset.org/publications/3700/convergence-of-ict-and-education. Accessed 5 April 2014.

Manny-Ikan E, Dagan O, Tikochinski TB & Zorman R 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. Available at http://www.ijello.org/Volume7/IJELLOv7p249-273Manny-Ikan763.pdf. Accessed 4 August 2014.

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

Matthews J 2009. *Global Products: Interactive whiteboards*. Michigan: Cherry Lake Publishing. Available at http://bowlerschool.net/ebooks/NF_GL-K-5/InteractiveWhiteboards.pdf. Accessed 12 November 2015.

Merriam SB 1998. *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass Publishers.

Miller D & Glover D 2010. Interactive whiteboards: a literature survey. In M Thomas & EC Schmid (eds). *Interactive whiteboards for education: Theory, research and practice*. United States of America: IGI Global.

Moller L, Robison D & Huett JB 2012. Unconstrained learning: Principles for the next generation of distance education. In L Moller & JB Huett (eds). *The next generation of distance education*. New York: Springer-Verlag. doi: 10.1007/978-1-4614-1785-9

Moore MG 2013. The theory of transational distance. In MG Moore (ed). *Handbook of distance education* (3rd ed). New York, NY: Routledge.

Morgan GL 2008. Improving student engagement: Use of the interactive whiteboard as an instructional tool to improve engagement and behavior in the junior high school classroom. PhD dissertation. Lynchburg, VA: Liberty University. Available at http://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=1140&context=doctoral. Accessed 7 August 2014.

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. doi: 10.1080/18146627.2012.742644

North-West University 2015. *Institutional Calender 2015*. Available at http://www.nwu.ac.za/sites/www.nwu.ac.za/files/fil es/i-institutional-information/Inst%20almanac/2.15.1-2015-Timetable_e%20%28web22%29.pdf. Accessed 23 January 2015.

Parks AN 2013. Smart boards, money and the pedagogy of watching. In MP Clough, JK Olson & DS Niederhauser (eds). *The nature of technology: Implications for learning and teaching*. Rotterdam: Sense Publishers. doi: 10.1007/978-94-6209-269-3

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

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

Richardson JC, Arbaugh JB, Cleveland-Innes M, Ice P, Swan KP & Garrison DR 2012. Using the community of inquiry framework to inform effective instructional design. In L Moller & JB Huett (eds). *The next generation of distance education: Unconstrained learning*. London: Springer.

Ritchie J & Lewis J (eds.) 2003. *Qualitative research practice: A guide for social science students and researchers*. London: SAGE Publications. Available at https://mthoyibi.files.wordpress.com/2011/10/quali tative-research-practice_a-guide-for-social-science-students-and-researchers_jane-ritchie-and-jane-lewis-eds_20031.pdf. Accessed 16 November 2015.

South African Council of Educators (SACE) 2014, *Annual report 2013/4*. Centurion: SACE. Available at http://www.sace.org.za/upload/files/SACE%20Ann ual%20Report%202014.pdf. Accessed 16 November 2015.

Sharma P, Barrett B & Jones F 2011. *400 ideas for interactive whiteboards: Instant activities using technology*. Oxford, UK: Macmillan Education.

Shearer RL 2013. Theory to practice in instructional design. In MG Moore (ed). *Handbook of distance education* (3rd ed). New York, NY: Routledge.

Smith HJ, Higgins S, Wall K & Miller J 2005. Interactive whiteboards: boon or bandwagon? A critical review of the literature. *Journal of Computer Assisted Learning*, 21(2):91-101. doi: 10.1111/j.1365-2729.2005.00117.x

Swan K, Garrison DR & Richardson JC 2009. A constructivist approach to online learning: The community of inquiry framework. In CR Payne (ed). *Information technology and constructivism in higher education: Progressive learning frameworks*. Hershey, PA: IGI Global.

Thomas GE 2013. Facilitating learning with adult students in the transcultural classroom. In EJ Francois (ed). *Transcultural blended learning and teaching in postsecondary education*. Hershey, PA: IGI Global. doi: 10.4018/978-1-4666-2014-8

Türel YK & Johnson TE 2012. Teachers' belief and use of interactive whiteboards for teaching and learning. *Educational Technology & Society*, 15(1):381-394. Available at http://www.ifets.info/journals/15_1/32.pdf. Accessed 18 November 2015.