Exploration Of Strategies That Lecturers Employ to Promote the Use of Smart Board Devices: Participatory Action Learning and Action Research Approach

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Abstract

This study aims to explore the underutilisation of Smart boards in a private higher education institution and the efforts made by lecturers to revitalise and fully use these devices. Smart boards are interactive whiteboards that have been introduced in educational settings to improve teaching and learning experiences. However, despite the potential benefits of Smart boards, they are often underutilised in higher education settings. This study seeks to understand the factors contributing to the underutilisation of Smart boards and the strategies that lecturers employ to promote their use. The research design considered a constructivist paradigm to observe the participants in their natural environment, in this case, seven purposively selected lecturers from the School of Education at a Private Higher Education Institution (PHEI). The study used qualitative methods and a participatory methodology: Participatory Action Learning and Action Research (PALAR) approach that includes three cycles of focus group interviews. We aimed to contribute to understanding what kinds of research, knowledge, and action we need to create, to achieve practical engagement and improvement – for positive and sustainable implementation of Smart board devices. Thematic coding was utilised to analyse the data collected from the lecturers working at a PHEI. The findings suggest that the underutilisation of Smart boards is due to a lack of training and support for lecturers, and technological challenges. We are interested in the efforts lecturers make to address these challenges by seeking additional training, developing new teaching strategies, and collaborating with colleagues. The study concludes by recommending the type of support private higher education institutions should provide to adequately train and align teaching strategies and practical applications that ensure full utilisation of Smart boards in teaching practices.

Keywords: Smart board, PALAR approach, Teaching Strategies, Theory of Change

1. Introduction

This study aims to explore the underutilisation of Smart boards in a private higher education institution (PHEI) and the efforts made by lecturers to revitalise and fully use these devices. Smart boards are interactive whiteboards that have been introduced in educational settings to improve teaching and learning experiences. However, despite the potential benefits and the increasing popularity of Smart board devices in educational settings, there is a need to investigate the strategies that lecturers employ to effectively promote their use in the classroom.

Previous research has explored the benefits of integrating Smart board devices into instructional practices (Jelyani, Janfaza & Soori, 2014; Bingimlas, 2015); implementation of a Smart board for reading comprehension (Rajabi & Khodabakhshzadeh, 2015); improvement of students' engagement, motivation, and learning outcomes in technical education courses (Bakare, Ariyo & Ojo, 2021); the effect of Smart board use on academic achievement and emphasised several challenges that lecturers encounter (Akar, 2020) there is still a need to investigate the strategies that lecturers employ to effectively promote the use of Smart board devices use in lecture rooms.

To address this gap, this study will investigate the strategies that lecturers employ to promote the use of Smart board devices in their classrooms, with a specific focus on the PALAR approach. The Participatory Action Learning and Action Research (PALAR) approach includes pre-planning and preparation, accessing relevant content, launching interactive activities, facilitating the application of content, and reviewing learning outcomes (Zuber-Skerritt, 2015). By exploring the PALAR approach, this study aims to provide a comprehensive understanding of the strategies used by lecturers to promote the use of Smart board devices and their effectiveness in enhancing classroom instruction.

1.1 The following research questions are considered:

What strategies can lecturers employ to promote the use of Smart board devices in the classroom?
How can the PALAR approach be used to support lecturers to use Smart board devices in a Private Higher Education Institution?

1.2 Aim and Objectives:

This study aims to emphasise a cognisance for teaching strategies that could promote and support the effective use of Smart board devices and their effectiveness in enhancing classroom instruction.

The following objectives are considered:

Ascertain the use of the PALAR approach to elicit lecturers' views and experiences when reflecting or interacting with the Smart board;
Identify the shift in teaching strategies when using the Smart board device;
Explore the use of Smart board devices in higher education settings;
Examine the effectiveness of Smart board devices in enhancing classroom instruction.

2. Theoretical Framework

The Theory of Change (Lewin, 1946) will be used in this study to effect change brought about by the inclusion and supported use of Smart board devices and to explore the strategies that lecturers employ to promote the use of Smart board devices. The Theory of Change is a description of the strategies, actions, conditions, and resources that facilitate change and outcomes (Harries, 2014). The theory of change is a method that explains how a given intervention, or set of interventions, is expected to lead to a specific developmental change. In this study, it will refer to the lecturers using different strategies to promote the use of Smart boards in the classroom to effect change. The theory is based on a collaborative and participatory process that will be used as the theoretical framework for this study to effect change in a PHEI. The Theory of Change, together with the PALAR approach will be used to establish a core team that will work together to create strategies that lecturers employ to promote the use of Smart board devices. Please see the Conceptual framework as depicted in Table 1 in the Methodology section which indicates the link between the Theory of Change and PALAR approach and how they work together to create change.

3. Methodology

3.1 Research Design

The paradigm used for this study will be Constructivism, which is defined by Urquhart (2013) as the study of phenomena within social settings. Constructivists believe that knowledge is socially manufactured and that it may change depending on the circumstances. A qualitative research approach is utilised in this study. Du Plooy-Cilliers, Davis & Bezuidenhout (2014) describe qualitative research as research that focuses on people by communicating with or observing these participants in their natural environment – in this case lecturers from the School of Education at a PHEI. Qualitative researchers collect a wide variety of descriptive data in a context to understand what is being observed or studied (Du Plooy-Cilliers et al., 2014).

The study is based on Participatory Action Learning and Action Research (PALAR) approach that emerges from a qualitative research methodology. Within the PALAR approach, participants should understand and live the PALAR paradigm. This means working effectively

in small groups, rather than large ones; using mainly qualitative research methods, rather than quantitative methods; and doing research with the participants to work together to effect change and collect data (Wood, 2020). PALAR is focused on finding solutions to problems for a specific group, for this study, it will include the core group that consists of lecturers from a PHEI to find strategies that lecturers employ to use Smart board devices effectively in the classroom. Through a longitudinal study, three cycles were used, within the PALAR approach to collect data using semi-structured focus group interviews, and purposeful discussions. The Theory of Change was utilised as the theoretical framework as indicated in Table 1 as it aligns with the inputs, activities, outputs, outcomes, and impact of the PALAR approach (Harries, 2014).

3.2 Population and Sampling

The population considered for this study is lecturers within the School of Education in a PHEI. The sample is focused on seven lecturers within the School of Education who utilised the Smartboard devices within the allocated venues. The seven lecturers were purposively selected. According to Rai and Thapa (2015), purposive sampling comprises various non-probability sampling methods that target specific groups. The main aim of purposive sampling is to focus on specific characteristics of a population in this study the focus is on the seven lecturers working at a PHEI (Rai & Thapa, 2015).

Table 1: Conceptual framework using the PALAR Cycle adapted from Wood (2020)

Cycle	Cycle 1	Cycle 2	Cycle 3	Research questions
PALAR approach	Pre-planning and preparation,	Accessing relevant content, Launching interactive activities, Facilitating the application of content.	Reviewing learning outcomes	How can the PALAR approach be used to support lecturers when using Smart board devices in PHEIs?
Theory of change	Inputs	Activities Outputs	Outcomes Impact	How can the PALAR approach be used to support lecturers when using Smart board devices in PHEIs?
Study considerations	Consider prior knowledge and prior experiences	Consider views and experiences during training	Consider teaching strategies and	What strategies can lecturers employ to promote the use

	regarding Smart board training	and implementation	new views that arise.	of Smart board devices in the classroom?

3.3 Data collection methods

The participants in the core group generated the data by collaborating in focus groups and using semi-structured questionnaires about the topic. A core group is a group of people who work together to find a solution to a problem (Wood & Zuber-Skerrit, 2013). The core group consists of six lecturers from the School of Education at a PHEI. The focus groups are divided into three PALAR cycles that will be used to answer the research questions. These three cycles will consist of three workshop sessions with the core group to generate knowledge about the topic. This study used a non-probability sampling method – participants were deliberately selected by the researcher. For the purposes of this study, a convenience sampling strategy was used. With convenience sampling, people are selected because they are effortlessly and conveniently available (Farrokhi & Mahmoudi-Hamidabad, 2012).

3.4 Data analysis

Thematic coding is used to analyse the data collected from the lecturers working at a PHEI. The purpose of thematic coding is to identify patterns of meaning across a dataset that provide answers to the research questions (Du Plooy-Cilliers et al., 2014). According to Guest, MacQueen, and Namey (2012), thematic analysis is used to describe and identify different ideas in data, like themes. In this study, thematic coding is used to organise the different themes, which includes using the PALAR approach to support lecturers to use Smart board devices and emphasise strategies employed by lecturers to promote the use of Smart board devices. Figure 1 depicts the thematic analysis process that will be used in this study.

4 Findings/Results

The findings of the study have been revealed according to the criteria of the theoretical framework which includes the Theory of Change, together with the PALAR approach. The Theory of Change is utilised in this study to consider the change brought about by the inclusion and support the use of Smart board devices and to explore the strategies that lecturers employ to promote the use of Smart board devices.

4.1 PALAR Cycle 1: Pre-planning and preparation

Cycle 1 focused on the pre-planning and preparation of the Smart board training that was provided to the lecturers. The cycle considers the prior knowledge and prior experiences regarding Smart board devices.

Theory of change (within PALAR Cycle 1): Based on the inputs.

As part of the drive for technology-enhanced learning design in the School of Education, the integration of Smart boards was emphasised for teaching and learning practices into the teaching environments. The training consisted of three days of official Smart certification training. The Smart board training presented reliable interactivity to the classroom and aimed to present the creative power of multitouch interaction to deliver rich and engaging learning experiences. Training included creating a Smart Notebook File, using the standard pen, the capture tool, the text tool, action panel, and the shape tool. This allowed participants to insert images, do ordering and grouping of images, use measuring tools in action, and navigate the lesson activity builder.

The following themes emerged from PALAR Cycle 1: Utilisation of smart board, Smart board training received, and pre-smart board training teaching strategies.

Table 2: PALAR Cycle 1 Themes

Themes	Utilization of smart board. Smart board training received	Pre-smart board training Teaching strategies
Lecturer 1	No	Student-centered
Lecturer 2	No	Constructivist approach
Lecturer 3	No	Flipped classroom
Lecturer 4	No	Gamification
Lecturer 5	No	Progressive and Pragmatic approach
Lecturer 6	No	Student-centered

4.1.1 Study Considerations for Cycle 1

Cycle 1 focused on the prior knowledge and prior experiences of the lecturers regarding the Smart board training that they have received. Considering prior knowledge and the use of Smart boards the data revealed that 100% of the participants did not have Smart board training prior to this study. The data also revealed that the teaching strategies utilised by the lecturers prior to the training included a student-centered approach, a constructivist approach, flipped classroom, gamification, and a progressive and pragmatic approach. This links directly to (Jelyani, et al., 2014) that recommends that smart board training could provide opportunities for lecturers to utilise different teaching strategies in their classrooms. Smart board training could also assist lecturers to utilize the same teaching strategies as mentioned above but to adapt and modify them to cater for students with different learning styles such as visual, auditory, and kinaesthetic learning styles.

4.2 PALAR Cycle 2: Accessing content, launching activities, and facilitating the application of content.

Cycle 2 focuses on assessing relevant content, launching interactive activities, and facilitating application of content through the Smart board training. The cycle considers the views and experiences of the lecturers during the Smart board training and the implementation.

Theory of change (within PALAR Cycle 2): Based on the outputs/ activities.

When asked: What were your experience and perceptions regarding the Smart board training? Both positive responses that celebrate the value (smart capabilities, encourages engagement, and enhances lessons) of incorporating Smart boards were highlighted as well as the challenges were identified (lack of existing templates, inability to import PowerPoint slides, can be time-consuming, and limited access to Smart boards). Lecturers' responses are as follows:

Theme 1: Value identified

Lecturer 1: "Initially thought that it would be an interactive white board but learned that it works as an interactive whiteboard along with so many more Smart capabilities. From creating interactive game-based activities to pre-structured lesson plans".

Lecturer 4: "Very useful device as it allows us to engage our classes by inserting images of possible characters, settings, and problems. We can also include our students and allow them to work in small groups to create a story based on the images.

Lecturer 5: "Learned how to enhance lessons by using an image that sparks curiosity and questions about an upcoming unit or topic. Interactive sessions where students can come up and write or draw over the image. They can share what they're thinking about, things they wonder about, questions they have, and connections they've made. Learning is further extended by using images that link to other pages in a Smart Notebook lesson or even to a website that I would like my students to visit. I could also link it to another page within a lesson as it is a terrific way to differentiate content for students."

Theme 2: Challenges identified.

Lecturer 2: "I found the lack of templates to create slides a concern"

Lecturer 4: "You can also not import Powerpoint templates (meaning most of your existing work needs to be recreated should you want to use Smart board only)."

Lecturer 6: "I can see the value, but I also realise it will take time to develop and integrate content within existing content".

Lecturer 3: " One of the venues we lecture in does not have a Smart board. Meaning that one group will be able to be taught a module on the Smart board whereas the other will not. Therefore I need to differentiate my lessons to accommodate both groups. The one module I lecture is in a venue where no student has access to smarboards. Which makes it very difficult. We also do not have a hands-on educational technologist who can assist with smarboard issues which I feel if we had, the integration of the Smart board would be much easier and more motivated."

4.2.1 Study Consideration for Cycle 2

Cycle 2 focused on the views and experiences of lecturers during Smart board training and implementation of it. It considers assessing relevant content, launching interactive activities, and facilitating application of content through Smart board training. The data revealed that the Smart board training contributed towards the lecturer's teaching strategies. It assisted the lecturers in developing interactive game-based activities, collaborating with students, and enhancing lessons by integrating technology. The data also revealed that the lecturers experienced challenges during cycle 2 which included, a lack of templates, time-consuming and limited access to Smart boards. The challenges identified in our study, including the limited technical support, time constraints, and accessibility constraints resonate with the findings presented by (Bingimlas, 2015). Bingimlas (2015) found similar barriers encountered by lecturers working at a higher education institution. Overall, the data revealed that the lecturers had a positive experience during the Smart board training. This observation aligns with the findings of Jelyani, et al., (2014) study. Jelyani, et al., (2014) study uncovered a positive impact of utilising smart board devices within a classroom setting. It had a positive effect on student engagement, motivation, learning styles, and students' understanding.

4.3 PALAR Cycle 3: Reviewing learning outcomes

Cycle 3 focused on reviewing the learning outcomes that were achieved after receiving the Smart board training. The cycle considers the teaching strategies and new views that arose from the Smart board training received.

Theory of change (within PALAR Cycle 3): Based on the outcome/ impact.
Actively using the Smart board capabilities in practical teaching and learning examples allowed the lecturers to consider a shift in implementation in practice. The following themes emerged from Cycle 3: Changed Teaching strategies and implementation of activities after training.

Table 3: PALAR Cycle 3 Themes

Themes	Changed Teaching strategies	Implementation of activities
Lecturer 1	Learned a lot about the value of integrating technology successfully.	I have implemented gamification and use interactive resources thus far.
Lecturer 2	Not really, my strategies remained the same but it has enhanced my approach. where I would have used additional apps such as Kahoot and Padlet, the Smartboard capabilities allow me to use the Smartboard for interactive games and discussions.	I have imported existing lesson and curriculum resources and added interactive activities as well as enhanced lessons by downloading Smart Notebook files from Smart Exchange and customize them for your class.
Lecturer 3	Technology incorporated into an existing teaching strategy	I have used the smart board to present and explain (writing and text tools), as well as some designed activities (such as shout it out); and also interactive multimedia to encourage discussions, quick recaps (like with the dice) etc.
Lecturer 4	Yes. I have become more creative in my thinking and planning for lessons. I am more aware of how I can now use the smart board to transform my teaching.	I made use of the games available on the smart notebook app, such as Super Sort and the Monster Quiz. This has allowed students to engage with content and interact with one another.
Lecturer 5	I have adapted it into my teaching practice permanently.	I am likely to attend another workshop in the future, but I think an ongoing collaboration/showcase/share session could be useful - where we get together and share among ourselves as lecturers on different campuses what we have been doing.
Lecturer 6	I am still using a student-centered approach. However, I have learned a lot from the other lecturers involved and how they have integrated the use of smart boards into their lecture sessions.	I have also just shown some of the tools to my students, like the analog and digital clocks, for when they are teaching subjects during Teaching Experience.

4.3.1 Study Considerations for Cycle 3

Cycle 3 considers the teaching strategies and new views that arose from receiving Smart board training. The lecturers all had existing teaching strategies that they used in class prior to the Smart board training, as mentioned in Cycle 1. However, the data revealed that the lecturers did not change their teaching strategies, but it was enhanced through the training received. The lecturers adapted the skills and knowledge that they have received through the Smart board training into their existing teaching strategies. Many lecturers are willing to attend another Smart board training session to enhance their lecturing skills. This aligns with the outcomes of

Rajabi & Khodabakhshzadeh (2015) study, which concluded that the implementation of smart board devices can lead to an improvement in student participation, class interactions, and discussions. This also has a positive effect on lecturers' teaching strategies, as they are equipped with new skills and knowledge to create an enjoyable learning environment which impacts the lecturer's teaching strategies and learning experiences for the students.

5 Conclusion

The purpose of the study was to identify the strategies lecturers employ to promote the use of Smart board devices in the classroom. The study also focused on how the PALAR approach was utilised to support lecturers in the use of Smart board devices in a PHEI. The limitations of the study revealed the small sample size, time constraints, access to participants who completed the Smart board training, and the data collection methods were time-consuming. The study was executed to consider if the Smart board training received by the lecturers assisted them in promoting the use of Smart board devices in their classrooms. Building upon the current findings, it is evident that the smartboard training made a significant contribution to the lecturer's teaching strategies. The training contributed towards adapting their current teaching strategies but modifying these strategies with the skills and knowledge acquired through the training. However, the challenges surfaced within Cycle 2, as mentioned in 4.2.1. Based on the present findings the Smart board training contributed towards the lecturer's teaching strategies. These findings directly align with the literature review. The literature, which includes studies done by Jelyani, Janfaza & Soori, (2014); Bingimlas, (2015); and Rajabi & Khodabakhshzadeh, (2015) has highlighted the positive impact that smart board training could have on lecturers' teaching strategies.

References

Akar, H. (2020). The Effect of Smart Board Use on Academic Achievement: A Meta-Analytical and Thematic Study. *International Journal of Education in Mathematics, Science and Technology*, *8*(3), 261-273.

Bakare, J., Ariyo, S. O., & Ojo, S. A. (2021). Constraints and Performance Gap Analysis (CPGA) of Lecturers in Utilizing Smart Boards for Improving Students' Engagement, Motivation and Learning Outcomes (SEMLOs). *International Journal of Research in Education and Science*, *7*(3), 681-714.

Bingimlas, K. (2015, June). The use of smart boards in enhancing learning and teaching in high education. In *EdMedia+ Innovate Learning* (pp. 598-602). Association for the Advancement of Computing in Education (AACE).

Du Plooy-Cilliers, F. Davis, & C. Bezuidenhout, R. 2014. Research Matters. Cape Town. Juta and Company Ltd.

Farrokhi, F., & Mahmoudi-Hamidabad, A. (2012). After a Summer: Pedagogical Developments in Cross-Cultural Settings. Theory and Practice in Language Studies, 2(4), 647-656.

Guest, G., MacQueen, K. M., & Namey, E. E. (2012). Applied thematic analysis. Thousand oaks; California: SAGE publications.

Harries E, Hodgson L, Noble J. (2014) Creating your Theory of change: NPC's practical guide. New Philanthropy Capital, London. 30 p. Url: https://www.thinknpc.org/wpcontent/uploads/2018/07/Creating-your-theory-of-change1.pdf

Jelyani, S. J., Janfaza, A., & Soori, A. (2014). Integration of SMART boards in EFL classrooms. *International Journal of Education and Literacy Studies*, *2*(2), 20-23.

Lewin, K. (1946) Action research and minority problems. J Soc. Issues 2(4): 34–46.

Rajabi, A., & Khodabakhshzadeh, H. (2015). The effect of implementation of smart board on Iranian lower-intermediate EFL learners' reading comprehension and their intrinsic motivation in reading. *Mediterranean Journal of Social Sciences*, *6*(4), 281.

Rai, N., & Thapa, B. (2015). A study on purposive sampling method in research. *Kathmandu: Kathmandu School of Law*, *5*.

Urquhart, C. (2013). *Grounded Theory for Qualitative Research*. Manchester: SAGE.

Wood, L. & Zuber-Skerrit, O. 2013. PALAR as a methodology for community engagement by faculties of education. *South African Journal of Education*, *33*(4), 1-15. Retrieved 13 November 2020, from http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0256-01002013000400003&lng=en&tlng=en.

Zuber-Skerritt, O. (2015). Participatory action learning and action research (PALAR) for community engagement: A theoretical framework. *Educational research for social change*, *4*(1), 5-25.