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EXPLORING ELEMENTARY TEACHERS' PRACTICES WITH RESPONSE TO IWBS

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Abstract

The purpose of this study is to examine how American elementary public school teachers perceive and use interactive whiteboards (IWBs). The qualitative case study method was used for this study. Nine teachers were selected for this study and the IWBs usage for at least a year was used as the criteria. Data were collected through 2 Skype or phone interviews and teachers' lesson plan snapshots. As the results of the research, various themes on teachers' experiences emerged. The results show that participants have positive attitudes towards IWBs and consider them helpful. However, teachers also stated about the need for additional planning time, professional development, technology support, and technology upgrades.

Keywords

Interactive Whiteboard, Elementary Education, Educational Technology, Elementary Teacher

1. Introduction

Technologies like IWBs are almost a disrupting technological advancement and challenge educators to innovate new approaches of educating. Consequently, the introduction of innovation into education when it does not focus on connecting it to pedagogy does not transform learning and teaching (Warwick et al., 2013). To encourage IWB incorporation in elementary education and improve programs to support the teachers' attainment in the

technology integration process generally, an understanding of the practices of elementary teachers in forming, providing, and assessing lessons using IWBs is required.

Assimilating new technology into all parts of education is a continuing process, and IWBs' integration is not an exemption. What is essentially unknown is how elementary educators make the day-to-day decisions to develop new ways of adding in IWB technology by linking it with pedagogy to produce appropriate learning tasks (Hennessy, 2017; Sundberg, Spante, & Stenlund, 2012; Varol, 2013). There is only a partial research on using the IWB educational resources in lesson development and integrating the IWB teaching approaches and procedures in elementary school (Lopez & Krockover, 2014). In addition, there is not much known about assessing and apprehending students' knowledge using IWBs in elementary school (Struyven, Blicke, & De Roeck, 2014; Teck, 2013). Research, like this study, introduces educators to new concepts of the positive modifications that IWBs can establish in education methods and techniques and can create recognition for new technologies in elementary schoolrooms (Bakadam & Asiri, 2012; De Vita, Verschaffel, & Elen, 2018; Hennessy & London, 2013).

Vockley (2007) praised to be true that in a digital world, no association could achieve the desired outcomes without incorporating technology into everyday practices. Current studies have shown that the educational system might not be able to prepare today's diverse students to execute in the global economy without the thorough use of technology, and it is the educator's mission to merger innovative techniques and technologies into their daily teachings so that students might be prosperous in their future lives (Davis, 2018; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Şad & Özhan, 2012). Encouraging ground-breaking technology integration in elementary education by developing programs to upkeep the teachers' success in the technology incorporation process is obligatory for educators to provide learners with the prospective to develop 21st century skills and awareness.

This study has backed the existing literature on IWBs by evolving a better understanding of educator experiences as they assimilate an innovative technology into their schoolrooms. As the use of technology grows, the outcomes of this study might provide elementary teachers with an extra support in forming lessons for educating students in the 21st century (Arpacık, Kurşun, & Göktaş, 2018; Hennessy & London, 2013; Peled, Medvin & Domanski, 2015). When there is more understanding of the necessities of elementary teachers, school administrators might be able to more successfully guide teachers in productively mixing technology in their instruction

through the contribution of professional development courses (Hennessy, 2017; Tertemiz et al., 2015; Yang & Teng, 2014).

2. Method

The purpose of this qualitative research was to study the practices and observations of elementary teachers concerning IWBs. The contributors of this research study were narrowed down to PreK-5 school educators employed in public schools who had access to IWBs in their schoolrooms. The usage of a qualitative case study methodology delivered in-depth understanding and assisted to recognize patterns and themes concerning the experiences of participants. A case study method offered opportunities for the participants to explain their individual experiences (see Merriam, 1998).

2.1 Participants

Purposeful sampling was used for the participants' recruitment; according to Creswell (2007), a purposeful sampling is a procedure of specifically selecting locations and individuals for providing the understanding of the research problem. It was set to select a sample of a minimum of 8-10 teachers using the given criteria: (a) teachers identify themselves as full-time public school elementary educators, (b) teachers specify that they have applied the IWBs into their professional practice, and (c) teachers must have used the IWBs at least a whole academic year. According to Patton (2002), using 1-10 contributors will make the qualitative study saturation likely. Through the sampling, an effort was made to embrace diversity, male and female and multiple racial-ethnic groups.

2.2 Data Collection

This research used: (1) two semi-structured interviews and (2) reviews of lesson plan artifacts to comprehend the experiences of the teachers on the concerns being addressed. The research data was placed together using a researcher-created interview procedure to guarantee that each interview concentrated on the same content (Patton, 2002). The interview questions were open-ended and obligated more than yes or no answers. Planning an interview schedule, it was significant to ask questions that would gather as much information about the research question as conceivable and point out the research objectives and aims (Britten, 2007).

2.3 Process

The first interview with the study participants was arranged in a one-week time frame. The second interview was booked within two weeks of the first. The transcripts were emailed

within two weeks of the concluding interview for the participants' answer. Throughout the first one-hour interview via Skype or phone, the purpose of the research, the participants' rights, and the study discretion were presented. The second phone or Skype interview timetable was discussed at the end of the first interview.

The second interview was forty-five minutes to one hour. At the conclusion, the participants were aware that the email with the transcripts of their interviews would be sent for the accurateness review. Later on, their replies to the transcripts were emailed back. This approach of member validation would decrease possible bias and gave the participants the chance to change or add replies in order to intensify the study results validity.

Each interview individually was audio recorded and transcribed. The interviews were evaluated to produce themes and review data (Patton, 2002). Additionally, the educators were asked to willingly email a lesson design snapshot for analysis. Data sources triangulation was a prime strategy that would maintain the principle in this case study that the topic was explored from numerous viewpoints. In addition, the assessment of the data would improve data quality based on the idea conjunction principles and the conclusions confirmation (Knafl & Breitmayer, 1989).

2.4 Data Analysis

A database was generated using a Dedoose software package to consolidate, manage, and code the case study data and uphold evidence established on the case study protocol. Yin (2009) acknowledged the importance of organizing research data efficiently in a database. The database usage enhanced the case study dependability as it empowered to collect and track data sources with the notes and interview transcripts. After the initial coding was finalized, the research data was shared with the research contributors to ensure data reliability. The participant's names and their individualities were detached for discretion. Each participant was given a pseudonym.

3. Findings

Themes on teachers' experiences consisted of (1) *developing lessons with IWBs*, (2) *teaching with IWBs*, and (3) *assessing with IWBs*. Themes on teachers' perceptions were (1) *productive integration of IWBs*, (2) *pedagogical practices*, (3) *issues with IWBs*, and (4) *school support*.

3.1 Developing Lessons with IWBs

A common agreement among the participants was that in most activities, the quality of lesson planning affects the quality of results. All the participants agreed that time and energy must be devoted to planning and preparing each lesson with IWBs. The teachers stated that to ensure the greatest probability of learning, they must carefully select and arrange IWB activities that would produce the desired learning outcomes in students. The themes in this category were resources and collaboration.

3.1.1 Resources

Each of the participants expressed that the IWB lesson resources should relate to the lesson objectives and aid the students and the teachers in the teaching-learning process. Each teacher agreed that students are able to grasp and recall facts and concepts in IWB lessons designed with interesting interactive materials and arranged in a way that enhanced learning. Teachers have indicated that they used videos, interactive games, educational websites, and software, graphics, and images

“Actually, all of the IWBs tools can be appropriate for the specific lessons. All of them have their place when you use it appropriately. You have to mix them up. You have to see what works best for your kids” (Teacher2) (Samsonova, 2017).

Same teachers mentioned Safari Montage software and BrainPOP, Reading A-Z, and ABCMouse educational website as the software they mainly used.

“I usually use Safari Montage and our IWBs for our math curriculum such as the HMH Curious George Videos as well as the interactive math games. My kindergarten students enjoy these games. The IWBs is the only technology available to show videos in our classrooms. We are a new school and do not have televisions to show the Morning News or do the pledge together as a school. It is easy to adjust the volume and size of the item being projected” (Teacher 5) (Samsonova, 2017).

All study participants mentioned the Notebook or PowerPoint presentations as the main features of the IWB lesson development that offers a structure to a lesson presentation, aiding in the pacing and order of the IWB lessons. In addition, teachers agreed that these presentations make it easier to present the lesson objectives, rubrics, materials, and clear summaries.

“I always prepare my lessons using PPT or notebooks as my guide. Each slide has the objective and activity. I prefer PowerPoint or Notebook documents with links to sound graphics or video links. I typically will search for the topic that I am teaching and then

use an existing PPT or notebook format as a template to customize it to my lesson plan and students' needs" (Teacher 3) (Samsonova, 2017).

3.1.2 Collaboration

The next common code under this theme was the opportunity to interact and share the IWB lesson plan ideas and resources with colleagues. Five teacher participants found value in the opportunity to collaborate and develop new ideas together; three of them reported that the IWB lesson collaboration was a school policy. Three participants regretted that there was no collaboration taking place in their schools. Only one participant found that working alone contributed to his integration of IWBs.

"I do not create my own lessons. My team and I share links to our lesson plans. Our grade level is divided into teams for lesson planning. One teacher creates the Science and Social Studies plans with some assistance from our CRT [curriculum team]. Two other teachers are responsible for the ELA [English language art] lesson plans. Being on a team with another teacher, I complete the math lesson plans. Then we have our Team Leader upload these to SharePoint, and we all use the same plans" (Teacher 4) (Samsonova, 2017).

3.2 Teaching with IWBs

All teachers stated that according to their school policy they should use IWBs for teaching, but each teacher had different ways to use them in their classrooms. They use IWBs for social studies, reading, math, science, and writing lessons; and for the whole group and small group settings. One of the teacher mainly focused on the Projector functions of IWBs. Meeting individual student needs and aligning lessons to the common core standards topics arose during the interview process and lesson snapshots analysis

"I use it most of the time to introduce my lessons. In some subjects, it is easier to use the IWB; for example, if I am teaching Social Studies or Math. It is more visual and engaging. For example, for Writing lessons I can use it continuously, every day going back to the lesson and show the writing process. In Reading, we can read together and answer the questions written on the board" (Teacher 2) (Samsonova, 2017).

"We are using the IWB to enhance student learning in a whole group or small group setting.... We use the IWB in our classroom throughout the day; however, perhaps not in every lesson. In Writing, I use it for sentence starters. In Reading, we use it for the book we are reading aloud and also for singing songs like with www.havefunteaching.com.

The entire Math lesson is done using the IWB. I portray the workbook page we are using, and it keeps students focused on what we are learning. Also during Intervention Time, the IWB is often used as a station. This way I can observe the station while working one on one with students at a nearby table. The students could be working on a worksheet that is being portrayed on the IWB” (Teacher 9) (Samsonova, 2017).

3.3 Assessing with IWBs

All teacher had indicated a complex set of practical examples and beliefs about how to use IWBs to create a clear picture of students’ gaps and achievements. All types of educational assessments were taking place in teacher participants’ practices with IWBs, such as (a) informal, (b) formal and (c) summative assessments.

“Interactive features allow me to assess students informally during or after the lesson. With the I Do, We Do, You Do, the IWB allows you to assess students throughout the lessons. It presents the I Do, clearly assessing all styles of learners, and We Do can be used for share and guided practice, assessing students before sending them off to work independently” (Teacher 6) (Samsonova, 2017).

“I use the Ladybug to freeze worksheets or workbook pages we are using that day to have students write on the IWB. This way I can see their letter formation and correct any errors right at that moment. In Kindergarten, it stops poor habits, i.e. pushing up with their pencils vs. pulling down to make numbers or letters. It allows me to provide immediate feedback and I can model for the entire class how I’d like them to write at their seats” (Teacher 3) (Samsonova, 2017).

Teachers had mentioned videos as a formative assessment tool.

“Videos can be a really powerful teaching tool if they are used effectively. Instead of just playing a video and letting it run, I prepare or set the purpose for the video, including a graphic organizer/focus question/note taking, pause the video to check for understanding, and follow up with some type of formative assessment. I also use whiteboards or other types of formative assessment on paper to ensure that all students are staying on task even while someone else is using the IWB” (Teacher 7) (Samsonova, 2017).

3.4 Productive Integration of IWBs

The teachers stated that integrating IWBs into everyday classroom practice created new possibilities for them as educators. The IWBs advantages include the possibilities for lesson differentiation, creating dynamic lessons, engaging students, and fostering students’ critical-

thinking and problem-solving skills. The discovered themes were (a) interactivity, (b) learning differentiation, (c) motivation, engagement, and active learning, (d) and critical thinking and problem-solving skills.

3.4.1 Interactivity

IWBs help to produce a more dynamic learning experience. According to the participants, the IWBs advantages are virtual manipulatives usage that enhances students' understanding and learning. In addition, using interactive IWBs increase tests results and enrich students' achievement.

"I think that when using interactive technology, the students are more engaged and retain more information, so they score better on tests and are able to show a better understanding" (Teacher 8) (Samsonova, 2017).

3.4.2 Learning Differentiation

The teacher participants' common agreement was that learners who naturally had varying abilities, interests, and learning needs are more successful when they were taught in ways that were receptive to their readiness levels, learning profiles, and interests. IWBs help them differentiate their instruction.

"The use of IWB is highly beneficial, especially for students with severe cognitive delays. This population benefits from repetition and drill, so the use of adequate videos and PowerPoint presentations enhance their language and processing skills. Students always have the opportunity to repeat a lesson that they may have difficulties with, by re-reading unknown vocabulary or finding key details in a text" (Teacher 6) (Samsonova, 2017).

3.4.3 Motivation, Engagement, and Active Learning

The teacher participants emphasized that motivation and engagement are important in education and perceived IWBs as a way to boost it in their classrooms. The IWB was seen as a tool that supports the increase learners' motivation, and makes learning more accessible and active by integrating numerous technologies and engaging learners through interactive lessons.

"Students these days are easily bored. By integrating technology, we can keep it fresh exciting and extremely interactive. I love technology! I honestly think it keeps our tech savvy kids engaged more because they are used to technology being in many aspects of their lives. Each year I am excited to present the materials to the students and each year they are eager to see what we are doing" (Teacher 5) (Samsonova, 2017).

3.4.4 Critical Thinking and Problem-Solving Skills

The study participants were asked about the specific 21st century skills that can be provided by IWBs. Four participants stated that it could contribute to the higher order thinking skills development, such as problem-solving and critical thinking. Teachers specified that “for students to develop advanced thinking skills, they need access to a continuously growing array of technological activities and tools to encourage decision-making, problem-solving, cooperation, and communication skills” (Samsonova, 2017). Learning with IWBs might contribute to the development information, communication and cooperation, higher order thinking, and independent learning skills.

“The problem-solving skills are apparent in real lifetime experiences vs. worksheets being graded and later returned. You can observe exactly how the student derived at their answer and can have them provide evidence by having them underline or “Show you their thinking” (Teacher 3) (Samsonova, 2017).

3.5 Pedagogical Practices

Teachers shared their own pedagogical techniques that can be useful in practice with IWBs. The themes accrued in this category were: (a) students’ learning styles and abilities, (b) students’ interests, (c) Gradual Release Mode, (d) student-centered approach, (e) real-world connections, (f) creativity, and (g) the “Pulling Sticks” technique.

3.5.1 Students’ Learning Styles and Abilities

The teacher participants described the importance of using every available strategy, resource, and a tool to meet every learning style and ability of teaching with IWBs.

“Teachers must be aware of the learning style of the students; some students may find the use of IWB over-stimulating or the distracting. Teachers should use different techniques and approaches to make sure students learned the objective of the lesson. For instance, instruction should be implemented in the small segment, a lot of repetition is highly recommended to make sure that all students accomplished the desired goal or outcome” (Teacher 7) (Samsonova, 2017).

3.5.2 Students’ Interests

Teachers stressed that IWBs resources and activities must be developmentally appropriate, challenging and engaging for learners. It is imperative to refocus students when distracted and give them age-appropriate activities. According to the participants, “teachers have to know the students’ interests and preferences earlier in the year, keep the track on them and

incorporate their interests into the interactive lessons” (Samsonova, 2017).

3.5.3 Gradual Release Mode

Teachers shared the Gradual Release Model for scaffolding instruction as a pedagogical approach for IWBs instructions. That model moves instructions from teacher to student-centered and is structured as (I do), prompt (We do), and practice (You do).

“Using the IWBs really facilitates the gradual release model for teaching. Using the IWB, teachers can first model a concept (I do), then guide students through the practice of a concept (We do), and finally, post problems for students to practice independently (You do). Having a presentation or activities pre-planned and posted on the IWB helps teachers stay focused on the learning targets, but also allows for flexibility as needed. Teachers need to have very good monitoring skills and “witness” to effectively use the IWBs” (Teacher 8) (Samsonova, 2017).

3.5.4 Student-Centered Approach

Teachers believed that teaching with IWBs, educators should move from a teacher to a student-centered method, and focus on meaning making, inquiry, and authentic activities. The main instructional goals must be creating an environment where knowledge is built by learners and educators, rather than coming directly from the teacher.

“The skill most effective when using IWBs in whole class learning is for the teachers to learn to alter instruction to be more dynamic and interactive. The skills needed are to alter learning away from being teacher-centered to a more interactive designer of instruction using technology. Most likely, instruction methods are most meaningful and produce the best results when knowledge is skillfully taught in an interactive manner. It is contingent on teachers professionalism to use fewer teacher-centered instruction. Teachers must create skills that stimulate instruction using the IWBs as a presentation tool to make teaching more interactive with all students” (Teacher 5) (Samsonova, 2017).

3.5.5 Real-World Connections

Teachers described the value of real-world connections that includes authentic experiences similar to ones learners might likely encounter in life. Also, they emphasized that educators should link novel information being taught in the lessons to the students’ prior knowledge. They affirmed that “relating learning to real world situations and problems, building

on prior knowledge and understanding skills needed for success in the current lesson on the IWB were essential in teaching with IWBs” (Samsonova, 2017).

3.5.6 Creativity

Teachers also highlighted that that creativity and content knowledge are skills needed to teach lessons with IWBs.

“ Two important skills, knowing the material being taught well and using IWBs to present follow-ups or demonstrate the lesson through an alternative, the creative way through the use of pictures, write-ups, charts, etc. are needed with IWBs as well as having a different follow-up for the same lesson. Demonstrating through a graph, showing dynamic pictures and seeing the recorded work and the child’s face if they are following up and if the resources are being effective....” (Teacher 9) (Samsonova, 2017).

3.5.7 “Pulling Sticks” Technique

The participants defined classroom management techniques while teaching with the IWBs. Teachers emphasized that effective management techniques raised the learners’ achievement and made it possible for the educators to conduct instructions with IWBs more productively. The “pulling sticks” technique was one they used more frequently.

3.6 Issues with IWBs

The teacher participants had overall positive perceptions about using IWBs in their everyday teaching and felt comfy using them. However, some teachers acknowledged that they experienced some problems. They described the need for more technical support and additional time for planning lessons with IWBs. Two themes emerged in the data analysis about problems integrating IWBs: time issues and technical difficulties.

3.8 School Support

According to the interview responses, the teacher participants cited the productive support from the school administration, such as buying new software and providing professional development. Some participants said there was no support. All teachers specified that they needed teacher collaboration, additional training, new software, and more troubleshooting support at school.

3.6 Conclusion

This study implied a qualitative case study methodology to recognize the real-world experiences and reactions of educators adding new technology into their everyday classroom experiences. As an outcome, this study identified issues applicable to the use of new technology

in classrooms and figured that teacher participants had positive approaches toward IWBs and found them very advantageous. In addition, this research identified that IWBs improved practices in innovative classrooms by helping form differentiated learning prototypes thus meeting the necessities of diverse pupils with a more personalized educational environment (Arpacık, Kurşun, & Göktaş, 2018; Karimzadeh, Richter, Basten, & Michalik, 2017; Yakubova & Taber-Doughty, 2013).

The teachers' shared experiences and outlooks on IWBs incorporation covered in this study might suggest other educator's examples and propositions on how to implement technology in teaching and learning. Participants of this study informed that time for the lesson development was a noteworthy concern and they needed more premade lessons accessible for immediate use with IWB lesson templates. A practical recommendation would be the formation of a database with IWB lessons templates (PowerPoint or Notebooks) for different subjects that are taught in elementary school (Fraser & Garofalo, 2015; Yee et al., 2017). In addition, certain teachers' IWB blogs, wikis, and electronic portfolios can be formed that allow the teacher to cooperate and share IWB lesson and assessments ideas as well as helpful web links.

This research study has some boundaries. The teachers who partook in this study were nominated because they were elementary and public school teachers. Middle, high school, and higher education teachers were disqualified from the research, as well as charter and private school teachers. Another limitation of the study was the exclusion of school administration and students from the analysis. The addition of these members would add more understanding of IWBs' benefits and usage. In addition, the minor number of participants restricted the transferability to other educational contexts.

There is incomplete research on using the IWB-based learning resources in lesson development and including the IWB teaching methods and processes in elementary schools. There is also not much known about measuring and evaluating the students' learning abilities using IWBs in elementary school. Research on the assessment of learning has instantaneous implications for schools that could integrate IWBs into their assessment model (Hennessy, 2017).

In reaction to the study discoveries, district personnel could cultivate additional professional development classes to strengthen the lesson and assessment development for IWBs. They can sustain teachers by obtaining IWB material including new software, boards and updating current software. School administration can offer technical assistance of existing

smartboards and brush up their policy for professional development by providing supplementary preparation time for teachers to create IWB lessons. The study discovered that teachers who assumed they were sustained by the district administrators were more likely to develop innovative new models for incorporating IWBs to advance higher level learning outcome. More support and proactive professional development for teachers integrating new technologies would consequence in effective instructions (Beach & Willows, 2014; De Santis, 2012; Zygaitiene, Vainoryte, & Barkauskaite, 2015).

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