Running Head: Using Whiteboards to Enhance Literacy in Dual Language Classrooms

Using Whiteboards to Enhance Literacy in Dual Language Classrooms: Pre-Service Teachers’ Reflections on Conducting a Language Experience Approach Using Whiteboard Technology with English Language Learners

Abstract

The purpose of this study was to analyze pre-service teachers reflections as they conducted, observed, and reflected on a Language Experience Approach (LEA) and an electronic whiteboard activity. Pre-service teachers compared student interactions and responses between a traditional LEA and extensions conducted using electronic whiteboard activities created and conducted by the pre-service teachers as part of integration and development of technology skills during field placements. The reactions of the elementary students in the field placement classroom were recorded as notes along with the participants’ perceptions of the effectiveness of the lesson. The reflections were used help participants self-assess their lesson preparation and delivery using electronic whiteboards. Participants also assessed the elementary students’ understanding, interaction, and motivation during the lesson. Findings revealed that during the electronic whiteboard lesson, students were more highly engaged in the activity and had more interactions with text.

Key words: whiteboards, SMART Board, Language Experience Approach, LEA, field observations, technology integration, elementary education, dual language, literacy, teacher education, interactive, student-centered

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# Introduction

The use of technology has been one of the standard components of the curriculum for decades in Texas classrooms. The most common instructional technologies and materials used in classrooms are computers, projectors, the internet, overhead projectors, televisions, videos, models and electronic whiteboards (EWB). In todays modern society, technology abounds in our everyday lives from smartphones, iPads™, iPods™, computers, to tablets. Today’s generation of students is technology savvy and most have been exposed to these technologies from a very young age and are high motivated by them. More and more school districts are recognizing this and are aware of the importance that technology has on our society and are now integrating instructional technology into classrooms. One type of technology that is changing the way teachers teach and students learn is the electronic whiteboard. Electronic whiteboards can augment paper and pencil activities by allowing students to make their own discoveries through first-hand, authentic, challenging, interactive experiences (Preston & Mowbray, 2008). Whiteboards facilitate a more interactive teaching style that is more student-centered than traditional instruction using presentation software. These devices provide a range of digital resources that allow teachers to incorporate short, focused, highly interactive activities into their lessons (Preston & Mowbray, 2008).

Despite the value of whiteboards in the classroom, only 12 percent of classrooms in the United States (Davis, 2007) actually use whiteboards. Further, many educators feel as though they are being asked to use technology to teach students when they have not been fully trained on how to use such tools. Many educators felt unprepared to teach students using new technologies such as EWBs and thus are resistant to doing so (O'Hanlan, 2007). Worse yet, is the fact that students in are not allowed access to personal technology during school hours (Beeland 2002). In many schools, students are required to "power-down" before entering school; as “80 percent of districts in the United States prohibit students from chatting online and instant messaging each other at school, and more than 60 percent prohibit blogging.” (Ward, 2008, p. 53). Students often express a desire to touch and use the technology independently but are prevented from doing so by the teacher (Beeland 2002; Solvie 2004).

Teachers need to begin viewing the technology not as a tool for learning and teaching but more as a tool for students to use rather than for the teacher to control. Viewing digital technologies as learning resources may provide a way to think about a mutually beneficial relationship between literacy and technology, and draws on contemporary literacy and play perspectives to inform pedagogy. Vygotsky’s work (1978) in particular, describes children’s use of cultural tools as conductors of learning. Literacy instruction no longer needs to be limited to written text-only. The use of electronic whiteboards allows for the sharing of reading experiences in a new way. According to Solvie (2004), this tool has the potential to excite new readers and writers and to establish more effective methods of instruction. Studies that have used interactive technology to teach emergent literacy skills have reported positive results and marked improvements in pretend “reading” and story sequencing (Hutinger, Bell, Daytner, & Johanson, 2005). Written and oral languages develop concurrently and are best learned when children have opportunities to observe and interact with others who read and write.

In her study, Solvie (2004) modeled ways in which readers can interact with written texts. She was able to project a written text or book and manipulate it interactively highlighting or writing on the touchscreen to show text features and functions. She also provided shared reading and writing experiences, such as, morning messages, graphic organizers and vocabulary activities. This allowed her to reach all students. A relationship between literacy and technology can be identified in contemporary literacy and play perspectives. Indeed, the most widely claimed advantage of whiteboards is that they motivate students because they make learning more enjoyable and interesting, which results in improved attention and behavior (Smith, Higgins, Wall, & Miller, 2005).

# Methodology

During the Fall 2014 semester, 49 students enrolled in the field-based, elementary education program at the University of Texas – Pan American participated in two courses as part of their block courses: EDCI 3332: Learning, Motivation & Technology Integration in the Elementary School and READ 3323: Reading Acquisition. The program consists of four ‘blocks’ in which cohorts of students complete courses related to pedagogy and participate in 48 hours of field observations in which they were to conduct structured and planned activities with students in their assigned classroom. The majority of the students were Mexican American (96%), female (90%), and between the ages of 20 & 45 years old.

As part of the university coursework, participants were taught how to use the electronic whiteboards. They had an opportunity to watch the tutorial video as well as several teacher-created demonstrations of electronic whiteboard activities. Additionally, students used the SMART Board® as they rotated in groups. Pre-service teacher students were assigned to use the one of the classroom computers attached to the SMART Board and download the trial version of Smart Notes®. After downloading the software, students were given a variety of assignments to help them become familiar with using the software to design activities for the elementary classroom.

Participants were required to conduct a Language Experience Approach (LEA) and enrich the lesson through a SMART Board activity they had created. Participants were given a set of guiding questions to stimulate observations of elementary classroom students during SMART Board activities. As a final requirement, participants were asked to share their findings and perceptions and reflect on the SMART Board activities and their effectiveness with the elementary students. This study analyzed the following guiding questions as part of the pre-service teachers’ observations:

1. Describe the students’ enthusiasm and involvement?
2. Describe your perception of student oral language level and what language students preferred to use or language they defaulted to despite the language of instruction?
3. What is your perception of the overall success of the LEA assignment?
4. Describe or explain any roadblocks, difficulties or obstacles you encountered in planning and implementing the LEA whiteboard activity?
5. Describe your overall perceptions of the assignment and your perception of its effectiveness?
6. How effective do you think your electronic whiteboard lesson was?
7. Which lesson do you perceive to be more effective and appealing to the students, the traditional activity, or the electronic whiteboard activity?

Data Collection and Analysis

The purpose of the current study was to analyze pre-service teachers’ perceptions and reflections of two presentation formats. A phenomenological data analysis was used to identify common themes in the reflections. Data were collected through a three-stage process. Students were instructed to keep a journal of observations as they conducted the whiteboard enhanced LEA. Additionally; the researchers conducted classroom observations and recorded notes of the assigned activities. Lastly, informal discussions of the activities were held and notes of the discussions were recorded. Triangulation of data occurred through the analysis of observations, student reflection logs, and informal discussions. Data were analyzed to identify themes and clusters of meaning. Successful data collection and analysis in phenomenology is a systematic, three-step process. First, researchers must “bracket” their own experiences; second, they must “horizonalize” their findings, such that they list important statements and weigh them equally. Third, researchers must create “clusters of meaning” that essentially enable them to find emergent themes among the previously listed questions (Moustakas, 1994). In this step, researchers verify data through separate processes of theme clustering. Using the three-step process, researchers can examine data and identify important statements and compile a list of themes.

The records from the observations were coded, based on verbal and nonverbal behaviors of the elementary students. Participants also recorded evidence of how students responded to the activity and how effective it was in engaging students. Data were also analyzed based on the whiteboard strategies the teacher used to enhance both reading and writing skills. Pre-service teachers’ reflections were analyzed and coded to identify emergent themes. Lastly, the anecdotal notes of the informal discussion were analyzed and coded to identify emergent themes. Finally, all data and themes that emerged were analyzed to create clusters of meaning.

Results

Results revealed that when a group of early childhood through 5th grade students across 49 classrooms, were introduced to a Language Experience Approach Lesson, that was extended with the use of an electronic whiteboard, their enthusiasm was obvious. They engaged in dialogue, expanded their thoughts, writing and literacy learning as they participated in the lesson. The whiteboard offered many practical uses for teaching content, reviewing material, and inviting collaboration through paired social interaction and communication.

The questions that guided student observations and stimulated reflection are listed below along with actual responses from pre-service teachers’ reflections. These statements are the themes that emerged as data were analyzed.

1. Describe the students’ enthusiasm and involvement?

* “Students responded positively.”
* “Students were engaged and enjoyed the activity.”
* “Students elaborated more as they dictated thus extending writing and oral language.”
* “PK-5 Students were able to work cooperatively.”

1. Describe your perception of student oral language level and what language students preferred to use or language they defaulted to despite the language of instruction?

* “Whiteboard allowed for interactions children had opportunities to apply oral, reading, writing and editing skills.”
* “Provided social interactions between PK-5 students.”
* “Allowed PK-5 students to connect ideas and share when normally they may not have talked.”
* “Facilitates their learning and literacy growth and development.”

1. What is your perception of the overall success of the LEA assignment?

* “Participants stated they would definitely use an electronic whiteboard or other available technology to enhance teaching and learning.”
* “Students elaborated more as they dictated thus extending writing and oral language.”

1. Describe or explain any roadblocks, difficulties, or obstacles you encountered, when planning, or implementing the LEA or the electronic whiteboard activity. (In planning the LEA activity, a majority (94%) of participants reported not having any problems, and only (6%) reported difficulties.)

* The topic chosen for the LEA was not a topic that the children were familiar with.
* Ten minutes before conducting the LEA, the mentor teacher said that it needed to be content related and cover force and motion.
* When planning or implementing the electronic whiteboard activity, 42% categorized themselves as having difficulty understanding the software, or not being tech savvy, or having technical issues with the hardware.

An analysis of the data revealed the following common themes.

* Difficulty developing the whiteboard activity or idea
* Difficulty learning to use the software
* Mentor teacher did not really use the technology
* Board parts were missing so it didn’t work.
* Lack of access to whiteboard hardware for practice
* Board was not working properly
* Hard to get used to using it

Table 1 shows the frequency of common statements that were taken from pre-service teachers (N=49) perceptions that occurred frequently and were the basis for themes that emerged from data analysis. Despite that a majority of participants experienced technical problems in learning how to use the electronic whiteboard software and felt that they needed more time to practice with it, in the end they all experienced a successful activity. The pre-service teachers indicated that they would definitely use the LEA and Electronic Whiteboard as a teaching activity again.

- Insert Table 1 Here -

1. Describe your overall perceptions of the Assignment and your perception of the activity and its effectiveness?

The most common themes were:

* Students wanted to tell about their experiences
* The experience allowed the students to connect on a more meaningful level
* Allowed students to be creative and also socialize about a topic that was familiar to PK-5 students
* Motivated PK-5 students to write and think carefully about what they are writing
* They feel like it is their work not the teachers
* Students were very excited to do an activity that they got to give input and create
* Students were engaged and enjoyed the activity

Table 2 shows the percentage of students that were actively engaged during the traditional LEA activity despite gaps in participation the [re-service teacher comments revealed that the overall experience was exciting for the students because student involved activities were rare occurrences in the classroom since often activities were teacher centered. Pre-service teachers were able to see the different levels of understanding and reported students responded positively.

- Insert Table 2 Here -

1. How effective do you think your electronic whiteboard lesson was?

An overwhelming majority (100%) of pre-service teachers stated that the electronic whiteboard was more appealing to students and motivated them to interact. The most common themes were:

* From 1 to 10, it was a 10!
* Students understood what they were supposed to do and increased oral language and writing; therefore, it was an overall effective assignment
* The Smart Board lesson was really effective for the students, because it was a fun activity for learning

Table 3 shows the percentage of students that were actively engaged during the whiteboard enhanced LEA; comments revealed that the overall experience was exciting for the students because student-centered activities were rare occurrences in the classroom since activities were often teacher-centered.

- Insert Table 3 Here -

1. Which lesson do you perceive to be more effective and appealing to the students, the traditional LEA activity or the electronic whiteboard activity?

Overall, 100% of the students had a positive experience using the interactive whiteboard and pre-service teachers perceived that the students learned better when using it for lessons. Pre-service teachers perceived that students pay more attention when the interactive whiteboard was used. They also reported that they enjoyed teaching with an interactive whiteboard and felt that they thought that students found lessons are more interesting when using an interactive whiteboard. The themes that emerged were:

* The interactive whiteboard is a tool that educators can use to engage students
* Using the LEA and Whiteboard activity consistently could definitely improve a child’s literacy
* LEA and Whiteboard activity created ownership for PK-5 students of the outcome
* Provided cooperative learning opportunities for PK-5 students
* Provided social interactions between PK-5 students
* Created authentic learning opportunities for literacy through reading, writing and vocabulary development
* My lesson was a success. It was really effective. By the end of the lesson they were familiar with the differences between nouns and proper nouns
* Assignment allowed them to expand their vocabulary
* The last theme that emerged in this study was that observed by the researchers

Tables 4 & 5 show that when the electronic whiteboard was utilized consistently, students who received literacy instruction with the electronic whiteboard displayed on-task behavior 90% of the time during a one-half hour instructional period, whereas the students who received traditional literacy instruction, without the electronic whiteboard, displayed on-task behavior 81% of the time. The particular activities that students utilized in the electronic whiteboard activity did not have opportunities for the use of language or writing. Most activities developed were game like and thus the language used was more limited and related to the activity. The electronic whiteboard activities did provide increased hands-on opportunities for students as opposed to the traditional LEA during dictation. Following the dictation component of the LEA the students were afforded time for authentic paired activities and writing extensions. While this allowed for extended on task time, there was less enthusiasm and reduced engagement. The following data were gathered during classroom observations.

- Insert Table 4 Here –

- Insert Table 5 Here -

Conclusion

In this study, participants were asked to use the Language Experience Approach in one of two ways. Students enrolled in READ 3323 used a traditional LEA activity during field observations while students in EDCI 3332 used whiteboard enhanced LEA. Both groups were asked to reflect on their experiences. Findings suggest that students were more engaged, active, and on task during the whiteboard based LEA activity in contrast to students who participated in an LEA that was not enhanced with the use of an electronic whiteboard. Further, students participating in the whiteboard activity responded more positively and were more motivated than students who participated in the traditional LEA. Pre-service teachers across 49 classrooms indicated that they would use both activities the LEA and electronic whiteboards regularly for delivery of instruction, and reported that they may use it as their primary mode of instruction. Results from the interactions, time-on-task, and language use data support the use of the electronic whiteboard for helping students’ literacy.

While the results of this study suggest that the Whiteboard can be an effective tool to actively engage students in a lesson and to make instruction more interactive, there are a few obstacles to overcome. Data indicated that some of the obstacles include: teacher resistance to using the whiteboard, lack of familiarity in using the whiteboard, and lack of access to whiteboards. In their reflections, participants reported that many of their cooperating teachers did not make use of manipulatives or electronic whiteboards in the classroom. Participants also indicated that many of their mentor teachers stated that they did not feel confident using electronic whiteboards as part of their lessons. Thus, there is a need for professional development for teachers (O'Hanlan, 2007) to enable them to use EWBs. Professional development is essential; effective teaching with electronic whiteboards is dependent upon teacher dexterity with the tool (O'Hanlan, 2007).

Training can help to overcome the obstacles of resistance to the technology and lack of familiarity with the technology. The lack of access to whiteboards highlights the need for all schools to have a minimum level of technology resources across all classrooms. Schools have a limited amount of funds available for technology purchases and have to be judicious in what they invest in; however, given the transformative power of whiteboards to engage students and allow teachers to teach in a more interactive manner it appears that whiteboards should be a priority when considering technology purchases.

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Table 1

Overall Perceptions of developing activities

|  |  |
| --- | --- |
| Perception | Number of occurrences out of all participants |
| Difficulty in developing or implementing the LEA | 6 |
| Using an interactive whiteboard is difficult. | 21 |
| Difficulty manipulating board or missing parts | 6 |
| Difficulty developing the whiteboard activity or idea | 7 |
| No difficulty with implementing electronic whiteboard activity | 3 |

Table 2

Percentage of Students Actively Engaged During the Traditional LEA Activity

|  |  |  |  |
| --- | --- | --- | --- |
| Behavior | Frequency | | |
|  | Always | Sometimes | Never |
| Students were focused on the LEA | 88% | 10% | 2% |
| Students were actively engaged in the LEA | 90% | 9% | 1% |
| Students Contributed to the LEA Activity | 40% | 50% | 10% |

Table 3

Percentage of students that were actively engaged during the whiteboard enhanced LEA

|  |  |  |  |
| --- | --- | --- | --- |
| Behavior | Frequency | | |
|  | Always | Sometimes | Never |
| Students were focused on the LEA | 100% | 0% | 0% |
| Students were actively engaged in the LEA | 100% | 0% | 0% |
| Students contributed to the LEA Activity | 100% | 0% | 0% |
| Students had access to the electronic whiteboard | 100% | 0% | 0% |
| Students used the electronic whiteboard effectively | 98% | 2% | 0% |

Table 4

Frequency of Student On-task Behavior During Traditional LEA

|  |  |  |  |
| --- | --- | --- | --- |
| Behavior | Frequency | | |
|  | Always | Sometimes | Never |
| Students were engaged | 81% | 10% | 9% |
| Students elaborated more as they dictated thus extending writing and oral language | 95% | 9% | 1% |
| Students were able to write on LEA Chart | 10% | 30% | 60% |

Table 5

Frequency of Student On-task Behavior During Whiteboard LEA

|  |  |  |  |
| --- | --- | --- | --- |
| Behavior | Frequency | | |
|  | Always | Sometimes | Never |
| Students were engaged | 90% | 9% | 1% |
| Students elaborated more as they dictated thus extending writing and oral language | 83% | 17% | 0% |
| Students were able to manipulate and use the whiteboard. | 89% | 10% | 1% |

Using Whiteboards to Enhance Literacy in Dual Language Classrooms: Pre-Service Teachers’ Reflections on Conducting a Language Experience Approach Using Whiteboard Technology with English Language Learners

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August 28, 2015

Dr. Donald Perrin  
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Dear Dr. Perrin:

Enclosed is a paper, entitled *Using Whiteboards to Enhance Literacy in Dual Language Classrooms: Pre-Service Teachers’ Reflections on Conducting a Language Experience Approach Using Whiteboard Technology with English Language Learners*. Please accept it as a candidate for publication in the *International Journal of Instructional Technology and Distance Learning*. This study involves the use of electronic whiteboards as part of a Language Experience Approach to enhance interaction, motivation, and student engagement.

We look forward to your review of our manuscript and welcome your comments and suggestions. Below, please find contact information for each author:

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This paper is our original unpublished work, and it has not been submitted to any other journal for review.

Sincerely,

Michael Whitacre, Ed.D.