

**The Effectiveness of the SMART Board  
While Instructing  
Limited English Proficient Learners**

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## **Purpose**

The purpose of this project was to investigate the progress limited English proficient (LEP) second graders achieve in literacy using the interactive SMART Board daily over the course of an eight month period. Hillandale Elementary follows North Carolina's K-2 assessment in which students spell and read 100 high frequency words correctly in order to be on grade level at the end of the school year. Hillandale Elementary has a high population of LEP students, (38%) who are not only required to pass the same assessment as our native English speakers but are also acquiring English as a second language in the process. LEP students have few years to master their English skills in listening, speaking, reading, writing and comprehension. 72% of the students at Hillandale qualify for free or reduced lunch. Many students do not have computers or have access to technology in their homes. These students are only exposed to technology when it is used at school. Using the SMART Board was a means to expose students to the world of technology while using it as a method of learning.

The objective of this project was to add another method of teaching spelling words as well as their meanings, through the interaction of the SMART Board. Since students were actively involved in their learning, research suggests their retention will increase significantly, compared to students who would not be actively involved with the same information (Thompson & Thompson, 2005). Students had spelling reinforced by creating words on the SMART Board. Students practiced writing the words correctly on spelling tests and then applied these words correctly in writing samples. Word meaning was introduced and reinforced using graphics which helped in comprehension in their reading as it related to the other content areas such as science and social studies.

## **Background**

The Hispanic population, thus the limited English proficient population, has increased 129% in North Carolina between April 1, 1990 and July 1, 1997 (June 2008). Teachers of LEP students must know how to work and help these students succeed academically, yet no additional training is provided for teachers within our county. In order for students to learn English, the content must be meaningful for them as learners (Freeman & Freeman, 2000). LEP students must not just memorize the spelling words but practice them until they are automatic. When spelling words can be in the form of content areas such as theme based curriculum, they will know the word's meaning and expand their vocabulary in English (Freeman & Freeman, 2004). All students acquire new knowledge through linking it to prior knowledge, deepening understanding and using learned material in meaningful ways. Students are able to scaffold instruction thus building their English proficiency (Freeman & Freeman, 2004). This allows students to build confidence and assist them in transferring information in future years when they are required to pass the North Carolina End of Grade test in order to be promoted to the next grade. The No Child Left Behind Act of 2001 has clearly defined goals for LEP students in which they are expected to meet the same state achievement standards as all students. With the use of the SMART Board as a learning tool, this helped increase academic success for these students in second grade.

## **Research Methodology**

Two second grade classes were used for this research design. One contained the SMART Board which was used daily primarily for spelling and writing activities. The other classroom with no SMART Board used traditional teaching methods. Weekly

planning occurred with the two teachers to assure the same spelling words were taught. Writing instruction and content area were planned together also. Both classes used as much as possible similar lesson plans throughout the year. Due to the high population of LEP students, the same monthly themes were used throughout the school year as well.

Data from all LEP students in both classes was collected and evaluated. There were nine LEP students in the classroom with the SMART Board and six LEP students in the classroom without the SMART Board. Three females from each of these LEP groups were selected to be followed more thoroughly throughout this study. Each of the students selected had comparable English proficiency skills as shown in Chart 1. Their levels of English proficiency were provided by the English as a Second Language Teacher (ESL). Students were administered the IPT test, Ballard & Tighe during the spring of the previous school year. Each student’s first language was Spanish. They live in homes where Spanish is the spoken language.

#### ENGLISH PROFICIENCY SKILLS

SMART Board	Listening	Reading	Writing	Speaking	Comprehension
Student 1	S	A	IH	S	A
Student 2	A	IH	IL	A	IH
Student 3	IH	A	IH	IH	IH

No SMART Board	Listening	Reading	Writing	Speaking	Comprehension
Student 1	A	S	IH	S	A
Student 2	S	IL	IH	S	IH
Student 3	A	IL	IH	A	IL

**S** = Superior    **A** = Advance    **IH** = Intermediate High    **IL**= Intermediate Low

NOTE: A student is determined proficient in English when they achieve a Superior rating in each of the above five categories.

**Chart 1**

Students participated in three Word Sprees during the school year. The first Word Spree was administered within the first two weeks of school, the second one occurred in January and the last one in May. They were to write as many words as they could think of within a five minute time period. Words that were spelled correctly were counted. Proper nouns were not counted in this exercise. The Word Spree was used to determine the number of words a student could think of and spell correctly. Students had the freedom to think of any words they could spell. Students participated in this exercise in the cafeteria and outside in the courtyard where the visible words were fewer than if they remained in the classroom.

Both classes were given a pretest of reading and writing the required 100 words for second grade within the first two weeks of the school year. This was used to establish a baseline and use as a comparison at the end of the year. Weekly spelling tests were recorded. Each 7<sup>th</sup> week during the school year a review test was given of the previous six weeks spelling words.

Four writing samples were collected throughout the school year. They were gathered at the end of each quarter. They were scored according to the writing rubric for second grade established by our county. The rubric included items such as pre-writing, spelling, conventions, punctuation, details, and elaboration. This allowed teachers to determine if students were on grade level for each grading period.

The SMART Board was used daily for spelling activities. Students were asked to spell the words using the different instruments available with the SMART Board. We used it for reading their spelling words, writing sentences with the spelling words and for

different games emphasizing the use of the spelling words. It was also used for modeling pre-writing activities and recording student's responses to writing activities.

When students had questions concerning practically anything that could be answered using the internet, the SMART Board was utilized. For example, students were able to see what their rainforest animals actually looked like by using the <http://en.wikipedia.org/wiki/> web site. If they had a question concerning a specific holiday while discussing the calendar, we would look it up on the internet and have their questions answered. The students were given the freedom to ask any question they were interested in and the SMART Board was used to answer those questions. This allowed students to determine the areas they wanted to pursue academically.

### **Summary of Results**

The results of the Word Spree are recorded in Chart 2. The three students using the SMART Board during this study had an 18.7 gain in the number of words they wrote from September to May. The three students without the use of the SMART Board during the same time period had a 9.3 gain in the number of words. There was a significant increase for those using the SMART Board compared to those who did not. However, when all LEP students' scores were considered in both classes, the gain is slightly more in the classroom without the SMART Board, .3. The class without the use of the SMART Board had more words written both at the beginning of the year and at the end of the year.

#### WORD SPREE

SMART Board	SEPT.	JAN.	MAY	Average for the 3 Students		Average for all LEP students	
				Beginning	End	Beginning	End
Student 1	10	39	31	Beginning	End	Beginning	End
Student 2	11	26	35	8.6	27.3	10.1	22.7
Student 3	5	6	16	Gain of 18.7 words		Gain of 12.6 words	

NO SMART Board	SEPT.	JAN.	MAY	Average for the 3 Students		Average for all LEP students	
				Beginning	End	Beginning	End
Student 1	22	24	21	Beginning	End	Beginning	End
Student 2	12	32	37	17.3	26.6	15.6	28.7
Student 3	18	27	22	Gain of 9.3 words		Gain of 12.9 words	

**Chart 2**

When considering the gains in spelling the 100 required words for second grade, there is a slight advantage for the students using the SMART Board. These results can be viewed in Chart 3. For the purpose of documentation, the students' average for the review tests, which were administered each 7<sup>th</sup> week throughout the school year, was determined and used to be compared with those not utilizing the SMART Board in their classroom. These review tests were words that were taken from the six previous weeks spelling words. Their scores for the pre-test administered the first two weeks of school, were recorded. Their post-test administered the last month of school were also recorded. All LEP students' scores from each class, of the pre-test and the post-test were averaged to show the percent of words gained during the same time period.

**SPELLING 100 REQUIRED SECOND GRADE WORDS**

SMART Board	Average review test	Pre-test	Post-test	Average for the 3 Students		Average for all LEP students	
				Pre-test	Post-test	Pre-test	Post-test
Student 1	88.8%	29%	91%	Pre-test	Post-test	Pre-test	Post-test
Student 2	85%	29%	77%	37.3%	86.3%	38.8%	89.7%
Student 3	99.6%	54%	91%	Gain of 49%		Gain of 50.9%	

NO SMART Board	Average review test	Pre-test	Post-test	Average for the 3 Students		Average for all LEP students	
				Pre-test	Post-test	Pre-test	Post-test
Student 1	90.2%	26%	88%	Pre-test	Post-test	Pre-test	Post-test
Student 2	89.3%	31%	87%	28%	74%	24.4%	74%
Student 3	54%	27%	47%	Gain of 46%		Gain of 49.6%	

**Chart 3**

Students are required to be assessed reading the 100 required second grade words. They are the same words as those they had to spell correctly. The three students utilizing the SMART Board were able to read the list of words 100% accurately. While students without the SMART Board had a 94.3% accuracy rate when reading the same words. The results of the Reading the 100 words can be seen in Chart 4.

LEP students with the SMART Board began with a higher percent of students being able to read the 100 words correctly. Therefore, there is not a significant gain as the LEP Students not using the SMART Board.

#### SPELLING 100 REQUIRED SECOND GRADE WORDS

SMART Board	SEPT.	MAY	Average for the 3 Students		Average for all LEP students	
Student 1	88%	100%	SEPT.	MAY	SEPT.	MAY
Student 2	85%	100%	91%	100%	93.2%	97.8%
Student 3	*100%	-----	Gain of 9 words		Gain of 4.6 words	

NO SMART Board	SEPT.	MAY	Average for the 3 Students		Average for all LEP students	
Student 1	*95%	-----	SEPT.	MAY	SEPT.	MAY
Student 2	*93%	-----	88.3%	94.3%	77.8%	95%
Student 3	77%*	95%	Gain of 6 words		Gain of 17.2 words	

\* 90% or higher does not require re-assessing

#### Chart 4

The required writing samples were not as easily compared as originally thought. To determine if students were on grade level in writing, teachers used a writing rubric provided by our county. For the purpose of this study, the number of words was counted in each writing sample. The words that were not spelled correctly were evaluated to determine if they were second grade spelling words. After determining the number of



correctly spelled words, a percentage was given to each writing sample. The summary of this data can be seen in Chart 5.

When evaluating the writing samples and the data collected, those students using the SMART Board in their classroom were more consistent in the number of words used and the number of words spelled correctly. Those students' scores not utilizing the SMART Board would vary sometimes nine percentage points from one sample to the next. Also noting Student 3 in the classroom not using the SMART Board, her last writing sample consisted of 103 words, but with only 84% accuracy. Thus concluding a lot of words does not necessarily translate into spelling words correctly.

#### EVALUATION OF WRITING SAMPLES

SMART BOARD	Sample 1		Sample 2		Sample 3		Sample 4	
	# words	% correct	# words	% correct	# words	% correct	# words	% correct
Student 1	64	97%	70	94%	66	94%	115	97%
Student 2	60	93%	61	93%	107	93%	107	97%
Student 3	56	95%	42	98%	50	98%	88	98%

NO SMART BOARD	Sample 1		Sample 2		Sample 3		Sample 4	
	# words	% correct	# words	% correct	# words	% correct	# words	% correct
Student 1	37	98%	19	89%	59	92%	57	96%
Student 2	69	99%	54	93%	96	97%	86	95%
Student 3	34	94%	54	93%	53	96%	103	84%

**Chart 5**

## **Final Evaluation**

Instructing LEP students in the classroom takes many different avenues. Learning in English may take four to seven years (Rasmussen, 2000). The LEP students in second grade are seven – eight year olds. It will take time to build their background knowledge, spoken vocabulary, listening skills and transferring their thoughts onto paper thus writing proficiently in English.

In evaluating the effectiveness of the SMART Board while instructing LEP students, did it make a difference? The answer would be unequivocally YES! The students were able to be exposed to another means of academic information. Their awareness of available technology was also heightened. They were engaged while using the SMART Board. One student expressed excitement over the SMART Board by stating, “Mrs. Wuerzer, we use the SMART Board for everything!” When students were asked to write about second grade at the end of the year, two students wrote specifically about their experience with the SMART Board. A male student explained the SMART Board was used for, “writing, reading, math and special activities.” A female student gave a detailed account of the way she wrote on the SMART Board and the different designs she was able to choose from while using her finger to write. She also added how the SMART Board was used for spelling our spelling words.

The SMART Board was used while parents were observing the classroom during our three days of “Take a Peek.” Parents were invited into the classroom to observe their child’s teacher teaching during reading, math, writing or reviewing the weekly spelling words. This was another means of including parents in their child’s education. Parents were exposed to a type of technology that was a very new area for them.

The three individual students that were followed using the SMART Board for this study made observable growth in English proficiency during the school year. The following will describe their end of year achievements. Student 1 was on grade level in math and writing. She was above grade level in reading. Student 2 made gains in reading, in which she was on grade level, but was slightly below grade level in writing and math. She will need time to become more proficient in English and vocabulary associated with these subjects. Student 3 was on grade level in math, reading and writing. She was capable of reading more advanced texts, but her comprehension was weak, therefore the need for more exposure to vocabulary skills is needed.

The ESL teacher administered the IPT test to determine English proficiency. Unfortunately due to changes made on the state level and the type of test to administer, results of this may not be available for comparison. As the teacher of these LEP students, they have made growth in English proficiency. There are no test scores to validate this information at this time other than the expectations established by our county to determine if students are on grade level.

The SMART Board used with LEP students gave them opportunities to learn and acquire English like they never had before. This research project made a difference in their educational journey and acquiring English as a second language while they were in the second grade at Hillandale Elementary.

## References

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