

Increasing Reading Scores Through
Audio Technology

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FACULTY APPROVAL

Increasing Reading Scores Through
Audio Technology

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ABSTRACT

The purpose of the project was to determine if the incorporation of audio technology in the reading curriculum improved reading comprehension. Students' reading scores on the district's Measure of Academic Progress (MAP) reading assessment were used to measure student progress. The scores obtained were from the eighth grade students of the researcher's 2009-2010 and 2010-2011 classes. The Plugged-in to Reading program, with a focus on technological audio components, was implemented with the treatment group during the 2010-2011 school-year. The 2009-2010 was the control group before the implementation of the program using audio technology. Reading comprehension scores increased in 2010-2011 after the implementation of the new reading program.

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CHAPTER 1

Introduction

Background for the Project

School districts across the country have focused more intensely on the need to improve scores on state assessments. In Washington State students were required to pass the tenth grade reading, mathematics, and science Measure of Student Progress (MSP) in order to graduate from high school. Therefore, when districts saw a trend in reading scores decreasing from sixth to eighth grade, action needed to take place to better enable students to pass the tenth grade MSP assessment.

From 2007 through 2010, a middle school located in Southeast Washington saw a steady decline in students' reading scores on the MSP. The assessment was given state-wide in the spring, which should have reflected the progress students made throughout the school year based on teaching strategies and curriculum used. In recognizing the decline in reading scores, the school's Leadership Team decided to take action in researching a curriculum to align with state MSP goals, and the Grade Level Equivalency (GLE) state targets, and revised its School Improvement Plan (SIP) accordingly. Since most students in the middle school were identified as needing English as a Second Language (ESL) services, reading programs with audio assistance were recommended by the Leadership Team to guide students in reading word recognition and

comprehension. The researcher was on that Leadership Team and gained insight on the principal's instructions to find and implement a proven effective reading curriculum that would reverse the recent reading assessment score trends in the middle school. Of all the reading programs researched, Plugged-in to Reading, which was read along with MP3 Players and Playaway technology for audio books, was decided upon based on students' needs and alignment with the MSP goals and Washington State GLEs.

Statement of the Problem

Reading scores in middle schools had fallen in recent years. Since textbooks were written at or above grade level, it was key that students were able to read near or at grade level. Students were required to pass the tenth grade MSP state assessment in reading in order to graduate; therefore reading scores needed to improve. This need to change prompted the middle school in Southeast Washington to research reading programs to improve students' reading scores on the MSP, which resulted in the implementation of Plugged-in to Reading in the fall of 2010.

Purpose of the Project

The purpose of the project was to determine if incorporation of technology in the reading curriculum improved reading comprehension. Technologies included in the research were audio books coupled with a physical copy of the book.

Delimitations

The study took place from the fall of 2009 to the spring of 2011. Students' reading scores on the district's Measure of Academic Progress (MAP) reading assessment were used to measure student progress. For this experimental study, the measurements for the control group were MAP reading scores from fall 2009 and spring 2010. The measurements used for the treatment group were MAP reading scores from fall 2010 and spring 2011. The Plugged-in to Reading program, where intensified focus was put on use of the technological audio components, was not implemented until the 2010-2011 school-year. The scores obtained were for eighth grade students of the researcher's 2009-2010 and 2010-2011 classes.

The Plugged-in to Reading program was chosen based on the audio component that could assist the high percentage of ESL students in the Southeastern Washington school district. Forty-three percent of students in the researcher's school spoke English as a second language and fifty-one percent of students were of minority background. Forty-nine percent of the student body at the researcher's school accessed free and reduced lunch and overall did not have preschool education to assist them in their language development before kindergarten. The low income demographics of the student population led the Southeastern Washington district to qualify as Title 1, which was a form of

government funding for school districts with a high percentage of students from low income families (Title 1, 2012).

Assumptions

Student reading comprehension increased based on use of audio technology while reading. Without audio technology, students would have had lower state and district reading assessment results. The researcher's education in reading and teaching experience also contributed to the increase of students' reading assessment scores, having ten years of reading education teaching experience and Teaching English as a Second Language (TESL) degree. The eighth grade students in the study were expected to be able to and willing to follow along in their physical books while listening to the audio books. Also, the delayed implementation of the Plugged-in to Reading program was based on being purchased in the fall of 2010, and would not affect the fact that students' reading scores on the MAP would still improve by the spring of 2011.

Hypothesis

Eighth grade students' reading comprehension scores increased when audio technology was implemented in the reading curriculum.

Null Hypothesis

Eighth grade students' reading comprehension did not increase when audio technology was implemented in the reading curriculum.

Significance of the Project

If found effective, the study would prove reasons for school districts to implement technology in their reading curriculums. Positive results would indicate that the use of audio technology increased reading comprehension in students.

Procedure

The treatment group was the 2010-2011 eighth grade students of the researcher who received the implementation of the Plugged-in to Reading program with audio technology assistance from the winter of 2010 to the spring of 2011. The control group was the 2009-2010 students who were taught a curriculum without reading technology assistance. Students were tested using the MAP reading assessment in the fall of 2010, pre-technology implementation, and compared to their spring 2011 MAP reading assessment scores.

Definition of Terms

MAP. The MAP was the national and state computer-generated standardized assessment that adapted to student responses by increasing in difficulty if the students answered questions correctly. Results defined strands of learning targets to focus on for each student.

MMY. The MMY was the Mental Measurements Yearbook, which was a tool used for selecting specific tests to meet needs.

MP3 Player. An MP3 Player was a moving Picture Experts Group (MPEG) audio layer 3, perceptual audio coding of psychoacoustic compression. These were small handheld devices used to listen to stored audio material.

MSP. The MSP was the Measure of Student Progress standardized assessment used in Washington State. Students took the MSP every spring to assess their reading comprehension levels.

Playaway. A Playaway was a prerecorded audio player that could store up to 800 hours of audio.

Plugged-in to Reading. Plugged-in to Reading was a reading program with literary instruction tools that provided gradual release from teacher to student. The program focused on practicing skills needed for standardized assessments and improving reading comprehension.

Silent Sustained Reading. Silent Sustained Reading was a school based recreational silent reading that increased student reading comprehension through constant reading practice.

textual information. Textual information was information of or relating to a specific text or document that was used for analysis.

Title 1. Title 1 was government funding that was provided to the primary and secondary schools of school districts that had a high percentage of low income student households.

Acronyms

ELL. English Language Learner.

ESL. English as a Second Language.

GLE. Grade Level Equivalence.

MAP. Measure of Academic Progress

MMY. Mental Measurements Yearbook.

MP3. Moving Picture Layer 3 Audio.

MSP. Measure of Student Progress.

SIP. School Improvement Plan.

SSR. Silent Sustained Reading.

TESL. Teaching English as a Second Language.

WASL. Washington Assessment of Student Learning.

CHAPTER 2

Review of Selected Literature

Introduction

Reading scores had dropped throughout recent years across a school district in Southeast Washington. Therefore, in an effort to improve scores, schools, such as the researched middle school, were adopting reading programs that incorporated technology. Numerous reading programs that were available included auditory and/or visual technological assistance in recognition of sounds and textual information. In an era where most state and district assessments were computer-generated, it was even more important that students practice using technology, including computers. Thus the question posed was, had the reading program which included a strong component using technology increased reading comprehension in a middle school?

Reading technology increased student comprehension and interest levels, as was evident in several recently-used reading programs. Auditory acquisition of language assisted in word recognition, which increased reading comprehension. Many successful reading programs intertwined technology to meet students' reading level comprehension needs and have proven to increase reading comprehension. For example, Dr. Janet Allen's Plugged-in to Reading program integrated audio Playaways of various reading levels. These Playaways were accompanied by the physical book to follow along while reading, therefore

allowing visual and auditory word recognition. Other reading programs that addressed auditory and/or visual comprehension included Scholastic, Horizons, Reading Plus, Children's Digital Library, Book Adventure, and Pete's Power Points.

The English as a Second Language Learner

English as a Second Language (ESL) learners had additional needs versus the first language learner. Therefore when reading and comprehending text using phonemic word recognition, "what is obvious to the student from an English-speaking culture and language background may not be so to the second language learner" (Alford, 2001, p.242). ESL students tended to score "significantly lower on phonological processing" (Lipka & Siegel, 2007, p.105). Those recognition needs provoked a requirement to fulfill students' learning deficiencies in language proficiency areas such as verbal, written, comprehension, and auditory/listening. Such language proficiency could have been improved by means of current approaches to literacy through group or individual activities to equip young people to investigate language. Researchers stated that a common belief was that it was the responsibility of educators to have promoted critically literate approaches to the reading and viewing of texts (Alford, 2001). Furthermore, reading was defined as "the phonological decoding of written text, and written text is the representation of sounds when language is spoken," confirming that "listening and reading are closely connected" (Drucker, 2003, p.24).

Fostering the auditory proficiency was done using audio books that students followed along within an actual book. Methods of incorporating audio books were compact disc, MP3 Players, and Playaways. A compact disc could be played and students could follow along in their books as an entire class participated. MP3 Players could be used individually or in a group by way of incorporating a splitter that allowed up to five students to share the same audio device in a group setting, each student having used individual ear-buds to listen along. The Playaways were individual units intended for individual student use in listening to an audio book. The researcher was able to implement use of the MP3 Players and Playaways for mainstreamed Spanish speaking ESL students. Plugged-in to Reading was purchased as part of an adequate balanced literacy program at the middle school where the researcher taught, focusing on the auditory acquisition of language and phonemic awareness and recognition of words in texts (Lipka & Siegel, 2007).

While some educators and researchers had argued that “our existing secondary literacy research does not fully address the demands of the diverse groups of students and communities educators serve,” curriculum developers strived to correct such a dilemma (Alford, 2001, p.239). One curriculum that incorporated all three methods of audio language proficiency acquisition was Janet Allen’s Plugged-in to Reading. The researcher used knowledge gained from a TESL degree to assist in the identification of the best curriculum available to

use to meet students' ESL auditory needs. Multicultural texts from *Plugged-in to Reading* were only a positive addition to the researcher's classroom, enabling the students to identify with text that was somewhat familiar to them, activating prior knowledge (Drucker, 2003). The education "field would need to be made explicit to the ESL learner and not assumed" already acquired proficiency "as a given" (Alford, 2001, p.240). Therefore educators needed to be intentional in directing instruction to be equivocal to the specific needs of the ESL learner, including auditory acquisition and proficiency.

There were several measurement tools that were used to assess ESL students' metacognition in their understanding of what they read. ESL students improved their comprehension and metacognitive awareness through various teaching strategies, including the use of the MAP reading assessment results to tailor lessons to individual students' needs.

When teaching, educators focused on the following when applicable: activating prior knowledge, building on that knowledge, and adding new information during reading to scaffold the ESL students' learning (Alford, 2001). However when a student read material independently such as during Silent Sustained Reading (SSR) in class, the auditory component was a tool that was used to build on the prior knowledge of words that the student may have heard and understood, but not identified or comprehended in written language such as in a book. Therefore the researcher used SSR time for students to use audio books.

Often times ESL learners were familiar with a word when it was spoken, yet could not identify that same word in written material due to a lack of phonemic awareness in how to sound out the letters. Thus audio books allowed students to readily identify the words in writing and read with greater comprehension and fluency.

Strategies that were suggested to be implemented to assist ESL students in language acquisition were the following: previewing text, choral reading, shared reading, paired reading, books with tapes, multicultural literature, language experience, interactive writing, total physical response, narrow reading, and read alouds (Drucker, 2003). Based on the strategies, it was evident that most included some form of audio reading.

Audio Reading Comprehension

Technology, both inside and outside the school library, was changing the way children read, as well as the teacher's approach to teaching (Lamb, 2011). Students were becoming more and more comfortable with using audio technology, regardless if they were ESL or mainstreamed students. Reading comprehension was defined as the process by which readers constructed meaning from text (Lamb, 2011). The Plugged-in to Reading audio curriculum included texts of high interest with multi-levels of reading comprehension that "match cultural schemata and background knowledge of your English-language learners" (Drucker, 2003, p.26). The vocabulary in the texts was also at the ESL students'

word-recognition levels which were critical in the reading process. According to educational researchers, books used while teaching ESL students should have fulfilled the following criteria: “Books should be accurate and contain current information. Books should not reinforce stereotypes, but rather they should reflect the experiences of individuals. Illustrations should realistically depict individuals of different ethnicities. Stories should be appealing” (Drucker, 2003, p.26).

The “academic language proficiency in a second language takes a long time to develop” (Drucker, 2003, p.28). Therefore audio books only assisted ESL students in expediting their word recognition through phonemic methods. The more practice the student had with reading using audio books, the higher their reading comprehension scores could become. The focus was on sound/symbol correspondence by having provided English Language Learners (ELL) “with books and corresponding audiotapes” that “work well with any student who can independently read text” (Drucker, 2003, p.25). Therefore the auditory senses became more refined, which led to higher retention of the material read.

Not only did the use of audio books increase students’ auditory English language proficiency levels, but reading along with audio media also stimulated imagination (Greenfield, 2009). Having coincided with the benefits of audio books, they were believed to have been the fastest growing segment in the book industry, highlighting their popularity among the public, including students

(Irwin, 2009). Also the philosopher William Irwin believed that “reading silently does not fit the modern-day lifestyle where people multi-task,” therefore having practiced the use of audio books in the classroom setting allowed students to adjust to our society’s changing times (Irwin, 2009, p.358).

Audio books were an overall tool to assist all students in phonemic identification of words in a language. By simply having looked at the word as it was being clearly pronounced, the student could identify the word in writing, and how to pronounce and spell the word. Therefore audio reading did not only increase reading comprehension and word recognition, but also the student’s ability to spell words.

Tools for Assessment

The tools used for assessing student reading comprehension were chosen based on student need and state requirements. Students in the Southeastern Washington school district represented a diverse population including a high percentage of ESL and free and reduced lunch students, qualifying as a Title 1 school district. “Title I was established by the Elementary and Secondary Education Act of 1965 in order to distribute funding to schools and school districts with a high percentage of students from low-income families. In order to qualify for Title I funding at least 40% of the students must come from low-income families as defined by the U.S. Census” (Wong, Boben, Kim & Socha, 2009, p.73). Such a representation led the district to select the MAP assessment

as one tool to implement, as opposed to just the MSP state mandated assessment of reading comprehension.

The MAP was a reading assessment that adjusted to student responses throughout the computer-generated examination. The test was one of “recent technological innovations to the assessment of reading comprehension” (Snyder, Caccamise, & Wise, 2005, p.33). If a student answered a question incorrectly, whether due to a language barrier or misunderstanding of the question being asked, the next question presented was easier than the one before. Adversely, if the student answered the question correctly, the following question became more challenging to push the student to better assess their reading comprehension limitations. Therefore, since the MAP reading assessment was adaptive to student response, the assessment presented a more tailored evaluation of each student’s reading comprehension level.

The MAP was used as a tool “to measure the academic progress of students in order to increase teacher effectiveness” (Governor's Business Council, 2006, p.3). The results of the MAP were broken down by individual strands to reveal the specific areas of reading comprehension in which each student had strengths and deficits. Teachers then used that detailed analysis to place students in a reading class based on their specific range of scores and needs according to the strands. Those students then received reading instruction in their regular English class as well as their reading class, to best assist the student in increasing

their reading comprehension. Such assistance was provided through use of various reading program materials, including audio technology. The MAP had also proven to be a valid predictor of students' scores on state assessments, regardless of student reading comprehension needs (Andren, 2010).

The MSP was a state mandated reading assessment that varied quite drastically from that of the format and adaptability of the MAP. The MSP was a paper-generated assessment with the same set of questions that every student answered. This assessment had wording that may have been confusing at times to ESL students, so the results presented a state standard expectation of language proficiency through reading comprehension. A criticism of the MSP was that at times there were some culturally-biased questions, which was difficult to avoid based on constant cultural influences in assessments and educational materials in general.

The MSP was an assessment created to uphold a general standard of reading comprehension across the state of Washington. This idea was adapted from the Californian state assessment that was used to analyze student reading comprehension state-wide. The original assessment was titled the Washington Assessment of Student Learning (WASL), and was revised to become the MSP. Ways in which the WASL differed from the MSP were that the MSP was a shorter and more detailed version the WASL with a more narrowed focus of reading targets based on state expectations. When analyzing the implementation

of the MSP across comparable demographical school districts, it was suggested that students made significant gains in assessment results by monitoring their progress and applying interventions using the MSP (Wong et al., 2009).

In analyzing the results of the MAP, students and educators could then have both a narrowed and general assessment of each student's reading comprehension. Those results enabled students to compare themselves regionally and state-wide to the expectations and demands based on their individual grade level as compared to their reading comprehension grade level. Having such an opportunity allowed students and educators to choose reading strategies and programs that best suited the academic needs of students to increase their reading comprehension levels in ways that made them more competitive locally and globally. At a time where passing the MSP was a state graduation requirement, the results of the MAP presented a scaffold of how students could become successful in the future to prepare for the MSP.

Summary

Due to standardized assessment reading scores having dropped in the Southeastern Washington school district, there was a need to research new reading programs to increase student scores. The school district adopted the Plugged-in to Reading program that incorporated technology to assist the many English as a Second Language learners in the district. Through the new reading program, students used audio reading technology to increase their reading

comprehension and interest levels. The assessment tool used was the MAP reading assessment.

CHAPTER 3

Methodology and Treatment of Data

Introduction

Sixth through eighth grade reading scores had decreased on the district and state assessments in the Southeastern Washington school district. Therefore the researcher's school recognized that action needed to take place to better enable students to pass the tenth grade MSP assessment. The action implemented was a new reading program that included audio reading technology to increase student reading scores.

Methodology

The study performed was quantitative experimental, focusing on two groups of students with the same measurement tool pre and post treatment. This study was chosen because the researcher desired to evaluate the effectiveness of the implementation of a new curricular audio reading program on students' reading comprehension scores. Therefore the quantitative research approach was best suited to this study because it was defined as an approach used to "describe current conditions, investigate relationships, and study cause-effect phenomena" (Gay, Mills, & Airasian, 2006, p.10). The study also followed the experimental research guideline of having at least one independent variable, the audio technology, that was manipulated to determine changes in reading comprehension

scores (Gay et al., 2006). The tool used to measure and gather the assessment results was the MAP.

Participants

The students studied were eighth graders from an ethnically diverse school in Southeastern Washington. The 2009-2010 control group consisted of twenty-three females and twenty-four males as opposed to the 2010-2011 treatment group of fourteen females and twenty-eight males. Twenty-seven of the 2009-2010 control group were ESL students, compared to twenty-five of the 2010-2011 treatment group.

Instruments

There were different ways to collect research data, such as administering a standardized instrument using a self-created instrument, or observing naturally occurring data (Gay et al., 2006). The standardized assessment tool used in the study of the Southeastern Washington school district was the Measure of Academic Progress (MAP) which measured student achievement or setbacks. The MAP was a district implemented assessment administered once in the fall and once in the spring, representing the progress students made throughout one school year at a time.

According to the Mental Measurements Yearbook (MMY), the MAP assessment was very reliable. The MAP assessment was a computer-generated multiple choice question assessment designed to change according to the

responses the student would provide. For example, if a student answered a question correctly, the next question changed to become more challenging. If the student answered a question incorrectly, the next question became less challenging. Therefore the adaptability of the assessment to individual student needs could be seen as a more appropriate assessment with more reliable results.

Design

The researcher decided to use the district MAP scores from the fall and spring to determine the reading comprehension growth within one school year. Two different years were compared, one being the treatment group after the new reading program was implemented, and the other the untreated group before the new reading program was implemented.

First the MAP assessment and Plugged-in to Reading program were purchased for the school district. The MAP assessment was used as a measurement tool in the fall and spring the year before and after implementing the new reading program with audio technology.

The first year studied, 2009-2010, included teaching using the standard district curriculum in the best way to increase students' reading comprehension. This also involved daily twenty minute class sessions of SSR where students read a novel of their choice. Administration of the MAP in the fall on computers allowed students and the teacher to see the students' reading comprehension level and create a goal for the spring score and steps to achieve that goal.

In the spring, the students re-took the MAP assessment and compared their score to that of the fall to analyze their progress or lack thereof. The students also completed the MSP state assessment in the spring to determine their reading comprehension level using a secondary measuring tool. They compared their MSP score to that of the one the year before and theorized the cause of their progress or lack thereof.

The same steps were repeated for the next school year with a new set of students in 2010-2011. After the MAP was taken in the fall, the new Plugged-in to Reading program was implemented in daily lessons throughout the school year. During the daily twenty minute session of SSR, students used the audio technology of the MP3 players or play-a-ways that were included in the new reading program materials. While listening to the audio books, students followed along in the novel, therefore listening and reading simultaneously. This increased student reading comprehension through phonemic identification and awareness.

The MAP assessment scores over the two year period revealed increases in the students' reading comprehension after implementation of the new audio technology reading program.

Procedure

When administering the MAP reading assessment, the school's assessment coordinator loaded the assessment onto computers in a computer lab, each

computer assigned to a different student. The teacher's class was scheduled to take the assessment at a specific time on a specific date. When students from each class arrived in the computer lab, they sat in alphabetical order at the computer that had their name posted on the computer screen in large bold letters. The stop time for the assessment was one hour after the students began the assessment all at the same time, and that stop time was written on the board.

During the assessment, students were not allowed to talk and all of the work needed to answer the questions for the assessment was to be done in the student's head. Therefore no scratch paper or other manipulatives were required or allowed during the assessment. At the completion of the assessment, a window appeared on the computer screen, posting the student's score. The student then raised his or her hand and the teacher approached the student with a clipboard to record the student's score on an alphabetical roster. The scores were also made available to the teacher electronically from the computer-generated MAP assessment program. Following completion of the assessment, the students sat quietly until the entire class was done and read a novel that they brought with them to the testing room.

Treatment of the Data

The results of the MAP reading assessment were inserted into Microsoft Excel documents comparing the spring and fall scores from 2009-2010 and 2010-2011. The scores of students were listed side by side in separate columns and the

2009-2010 columns were titled as pre-treatment and the 2010-2011 columns as treatment. Therefore the reading comprehension progress from the spring to fall of each year were clearly indicated and listed in alphabetical order.

Summary

The research was conducted to determine if the trend of falling reading scores was reversed after the intervention of the new reading program using audio technology. The quantitative experimental study results were measured using the MAP tool. Reading comprehension scores from two separate years compared the pre-treated and treated group results based on the implementation of the new reading program.

CHAPTER 4

Analysis of the Data

Introduction

Due to students' reading scores falling in recent years, it was evident that the Southeastern Washington school district needed to find a solution to that problem. Therefore, a new reading program was researched and implemented focusing on audio technology to assist reading comprehension, especially for the ESL students.

Description of the Environment

The control group was the researcher's 2009-2010 eighth grade student classes and the treatment group was the researcher's 2010-2011 eighth classes that used the new audio technology. The control group 2009-2010 classes included the assessment scores from fall 2009 and were compared to spring 2010 district MAP scores. The 2010-2011 treatment group scores were analyzed from the fall 2010 and were compared to spring 2011 district MAP scores.

The 2010-2011 newly implemented reading program Plugged-in to Reading incorporated audio reading technology to scaffold phonemic awareness to increase reading comprehension. The reading program was intended to assist the high percentage of ESL students in the Southeastern Washington school district.

Hypothesis

Eighth grade students' reading comprehension scores increased when audio technology was implemented in the reading curriculum.

Null Hypothesis

Eighth grade students' reading comprehension did not increase when audio technology was implemented in the reading curriculum.

Results of the Study

The results yielded that the 2009-2010 control group's district MAP reading scores increased an average of 1.931818182 (Table 5) and the 2010-2011 treatment group's reading scores increased an average of 3.730882353 (Table 5). Therefore, there was an increase in reading comprehension scores after the implementation of the new reading program with audio technology.

A three point gain indicated one year's reading level growth. On the MAP, 220 was eighth grade level, so based on the students' MAP scores in the fall of 2009 and 2010, it was apparent that most students entered their eighth grade year reading below grade level (Tables 1, 2, 3, 4). Therefore, considering the reading comprehension deficit students had upon entering the eighth grade, their progress was significant in making one grade level or more improvement in their reading scores during the 2009-2010 and 2010-2011 school-year (Table 5).

Table 1. Period 3/4 Block 2009-2010 MAP Scores and Averages.

Variables that		affected scores	
Fall 09 MAP	Spr 10 MAP	MAP Fall to Spr	
	232	231	-1
	210	219	9
	216	221	5
	214	213	-1
	186	195	9
NA		221	NA
	227	232	5
NA		217	NA
	201	216	15
	202	206	4
	209	201	-8
	216	225	9
	206	187	-19
	200	199	-1
	213	222	9
	221	215	-6
NA		219	NA
	212	225	13
	203	207	4
	190	180	-10
	205	213	8
	201	214	13
	Average		3
	Low		-19
	High		15
	Same		0

Table 2. Period 5/6 Block 2009-2010 MAP Scores and Averages.

Variables that affected scores			
Fall 09 MAP	Spr 10 MAP	MAP Fall to Spr	
221	217		-4
197	209		12
233	229		-4
212	215		3
227	222		-5
212	227		15
210	208		-2
206	212		6
208	210		2
228	225		-3
NA	222	NA	
227	222		-5
NA	224	NA	
211	227		16
195	195		0
218	219		1
203	201		-2
201	197		-4
210	228		18
NA	219	NA	
216	207		-9
216	204		-12
230	234		-4
213	216		3
215	212		-3
	Average	0.863636364	
	Low	-12	
	High	18	
	Same	1	

Table 3. Period 3/4 Block 2010-2011 MAP Scores and Averages.

Variable that		affected scores		
Fall 10 MAP	Spr 11 MAP	MAP Fall to Spr		
	208	224		16
	210	216		6
	207	220		13
	203	205		2
	181	196		15
	203	218		15
NA	NA	NA		
	218	224		6
	215	218		3
	209	196		-13
	205	218		13
	186	NA	NA	
	209	213		4
	204	202		-2
	211	215		4
	218	NA	NA	
	192	192		0
	210	228		18
	224	220		-4
NA		202	NA	
	219	215		-4
	Average		5.411764706	
	Low			-13
	High			18
	Same			1

Table 4. Period 5/6 Block 2010-2011 MAP Scores and Averages.

Variable that affected scores			
Fall 10 MAP	Spr 11 MAP	MAP Fall to Spr	
NA	216	NA	
227	232		5
192	196		4
214	218		4
202	211		9
207	212		5
230	216		-14
233	231		-2
213	211		-2
235	235		0
206	212		6
216	210		-6
210	203		-7
228	223		-5
211	215		4
214	218		4
220	225		5
214	212		-2
224	237		13
227	225		-2
184	206		22
	Average		2.05
	Low		-14
	High		22
	Same		1

Table 5. Overall 2009-2010 and 2010-2011 MAP Score Averages.

2009-2010 MAP		2010-2011 MAP	
Average Difference	1.931818182	Average Difference	3.730882353
Average Low	-15.5	Average Low	-13.5
Average High	16.5	Average High	20
Average Same	0.5	Average Same	1

Findings

The average increase of the district MAP assessment for the 2009-2010 control group was three points for the period 3/4 class and 0.86 for the period 5/6 class (Table 1 and 2). The period 3/4 highest score consisted of a 15 point gain as opposed to the lowest score that was a decline of 19 (Table 1). The period 5/6 highest score was an 18 point gain and the lowest score was a decline of 12 (Table 2).

Conversely, the average increase of the district MAP assessment for the 201-2011 treatment group for period 3/4 was 5.41 and 2.05 for period 5/6 (Table 3 and 4). The period 3/4 highest score consisted of an 18 point gain and the lowest score was a decline of 13 points (Table 3). The period 5/6 highest score was a 22 point gain and the lowest score was a decline of 14 (Tables 4).

Overall when comparing the control group and the treatment group, the students' reading scores increased on average from 2009-2011. The greatest gain of 22 points from the treatment group equaled a gain of seven and one half reading grade levels in one school-year. Therefore, it was assumed that the new reading program with audio technology did in general increase students' reading scores. The hypothesis was accepted and the null hypothesis was rejected.

Discussion

Variables taken into consideration were debilitating health conditions that developed during the school 2009-2010 year amongst students, family tragedies, self-esteem/bullying issues, suicidal attempts/thoughts, traumatic changes in living arrangements, and medication changes. Students who had such variables that may have affected their MAP scores in the spring of 2010 and 2011 were highlighted in Tables 1-4.

Summary

The MAP was an accurate assessment of students' reading comprehension since it adapted to students' responses. The MMY declared that the MAP was a valid assessment. The MAP scores reflected an increase in the treatment group's reading comprehension after the implementation of the new reading program with audio technology. These findings indicated that the new reading program was a beneficial purchase in meeting students' need of increasing their reading scores.

CHAPTER 5

Introduction, Summary, Conclusions and Recommendations

Introduction

The Southeast Washington middle school saw a steady decline in MSP reading scores from 2007 through 2010. The purpose of the project was to determine if incorporation of technology in the reading curriculum would increase reading comprehension. The technologies included in the research were audio books coupled with a physical copy of the book from the Plugged-in to Reading program.

Summary

Based on the need for reading scores to increase on the MSP, the Southeast Washington middle school staff researched reading programs to assist its students. Since most students were primarily ESL, a program with an intense focus on audio reading technology was chosen. The study performed was quantitative experimental, focusing on two groups of students. The control group was the 2009-2010 students before the implementation of the new audio technology program and the treatment group was the 2010-2011 students after the implementation of the program. The students' reading scores were determined using the district MAP standardized computer assessment in the fall and the spring of 2009-2010 and 2010-2011.

Conclusions

Studies had proven that the phonemic recognition of words increased reading comprehension in all students, especially those who were ESL. Therefore, focusing on adopting a reading program with an audio technology component was essential to the intent of increasing students' reading scores on the MSP. The MAP district assessment was used to analyze students' reading scores before and after the implementation of the new reading program, Plugged-in to Reading, that included audio technology.

In analyzing the MAP fall and spring scores from the two groups of students from 2009-2011, it was evident that their reading scores did indeed improve after the implementation of the new program. Student MAP reading scores increased an average of nearly one reading grade level within one school year. The highest student score also increased from five and one half grade levels to seven and a half grade levels in one year. Therefore, the hypothesis was supported and the null hypothesis was rejected.

Recommendations

The researcher recommends repeating the research with the same group of eighth grade students over a longer period of time to assess if the increase in reading scores continues. If the program were to continue to raise reading comprehension scores over time, then the ninth through twelfth grades may determine that it would be beneficial to purchase and implement the program as

well. The researcher could also further investigate the effect that the new program had on students with IEPs and 504 Plans as opposed to mainstream students in classes.

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