DIGITAL LEARNING LAB INTERVENTION

A Special Project

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FACULTY APPROVAL

DIGITAL LEARNING LAB INTERVENTION

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ABSTRACT

The purpose of this experimental research study was to significantly determine if the Digital Learning Lab program intervention improved seventh grade students' reading scores as measured by the Measure of Academic Progress reading assessment. To accomplish this purpose, a review of selected literature was conducted, essential baseline data were obtained and analyzed, and related conclusions and recommendations were formulated.

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CHAPTER 1

Introduction

Background for the Project

Many children cannot read well enough to excel in school, a situation that has fueled a vocal debate in school districts about the best ways to teaching literacy (reading and writing). Students at risk for educational failure represented the fastest-growing segment of our school population. Needed is a clear understanding of the basic concepts and skills that would assist to raise students' achievement in reading in both the quantity and quality; change is needed to ensure their success in acquiring an education.

Horace Mann (1796-1859) has been credited as the individual responsible for the establishment of the American common schools. The origin of our public school system promoted the notion that a free, public education should be the birthright of every child (Garcia, 1991, p. 14). Mann wrote:

> Education . . . is the great equalizer of the conditions of men—the balance wheel of the social machinery. . . .This idea . . . gives each man the independence and the means by which he can resist the selfishness of other men (Messerli, 1972, p. 213).

Learning to read in school requires that students master three skills: The first skill is to understand and use Standard English, the English dialect used in American classrooms. The second was to understand the relationship between letters and phonemes to retrieve the pronunciation of an unknown printed string of letters or to spell words correctly. The third skill is reading for meaning. By acquiring these skills students are enabled to apply reading knowledge and skills as a primary vehicle for learning.

Statement of the Problem

The Mt. Adams School District (MASD) needed to improve students' reading scores. Mt. Adams Middle School (MAMS) was selected to model the reading improvement plan for the district. With this objective in mind, MAMS administrators made the decision to create a Digital Learning Lab (DLL) program to improve students' reading skills. To implement this program, MAMS made hour-long DLL classes available to students, on an elective base. Students with lower reading achievement scores were required to enroll in DLL classes. Phrased as a question, the problem which represents the focus of the present study may be stated as follows: Did the DLL program intervention significantly improve seventh grade reading scores as measured by the Measure of Academic Progress (MAP) reading assessment?

Purpose of the Project

The purpose of this experimental research study was to significantly determine if the DLL program intervention improved seventh grade students' reading scores as measured by the MAP reading assessment. To accomplish this purpose, a review of selected literature was conducted, essential baseline data were obtained and analyzed and related conclusions and recommendations were formulated.

Delimitations

The present study was confined to MAMS and utilized baseline data obtained for the 2006-2007 school year. The DLL reading assessment was used to pre-test participating students during fall semester 2006 and to post-test students at the end of spring semester 2007.

Assumptions

The assumption was made that students involved in the study attended classes regularly through both semesters. This allowed for all students to receive equal access in the DLL program. The further assumption was made that the student performance data for MAP fall and spring testing data was measured correctly and represented an accurate description of each student's reading grade level.

Hypothesis

Reading level scores of students who participate in the DLL Reading program will show significant improvement as measured by the MAPS assessment.

Null Hypothesis

There will be no significant improvement in reading levels scores after participation in the DLL program. Significance was determined for $p \geq$ at 0.05, 0.01, and 0.001 levels.

Significance of the Project

Increased pressures from the school board, taxpayers, and legislators caused the MASD and MAMS to focus on increasing students' reading scores; therefore, the decision to adopt the DLL program, and the accompanying need to determine whether the DLL program increased students' reading scores required supporting data and documentation. Accordingly, the researcher undertook the study to provide that documentation. Finally, the researcher hoped that the present study would contribute to the growing body of research related to the importance of reading and language acquisition.

If the DLL classes continued to be successful, the MASD would model their success to other schools as well as reaching the district's goal to improve students' reading abilities, success in the content areas, and reading scores.

Procedure

Procedures employed in the present study evolved in several stages as follows:

1. During the 2005-2006 school years, MASD officials identified low reading scores among middle-level students on the WASL exam as a major district problem in need of correction.
2. At this time MASD administrators made the determination to adopt the DLL program in the hope of raising reading scores.
3. The MAP reading assessment was utilized to measure any student progress resulting from the adoption of the DLL program.
4. Undertaking the present study was subsequently authorized by the MAMS vice-principal in order to obtain data/documentation that might possibly endorse the MASD's decision to adopt the DLL program.
5. Throughout the 2006-2007 school year, the investigator organized seventh grade experimental groups, obtained and analyzed data produced from the MAP reading assessments.
6. From January-May 2007 baseline data from the 2006-2007 school years were analyzed and related conclusions and recommendations were formulated.

Definition of Terms

Significant terms used in the context of the present student have been defined as follows:

Experimental Research. Research in which at least one independent variable is manipulated, other relevant variables are controlled, and the effect on one or more dependent variables is observed.

Qualitative Reading Inventory. A type of literacy assessment called an Informal Reading Inventory that measured accuracy and fluency of reading students and then gave a grade reading placement level.

MAP Reading Assessment. Measure of Academic Progress is a state-aligned adaptive test that accurately reflect the instructional level of each student and measures growth over time.

No Child Left Behind Act 2001. Education Reform Bill signed into law by President George W. Bush on January 8, 2002.

Standard Reading Tests. Test that test for reading comprehension, or vocabulary; examples include WASL and MAP assessments.

STATpak. Statistical software that accompanies Education Research: Competencies for Analysis and Application (Gay, et al, 2003).

T-test. Inferential statistics technique used to determine whether the means of two data groups are significantly different from one another.

T-test for independent samples. A parametric test of significance used to determine whether there is a significant difference between the means of two independent samples at a selected probability level.

Washington Assessment of Student Learning. A Washington State learning assessment test administered yearly to students in the grades 4, 7, and 10.

Acronyms

DLL. Digital Learning Lab in which students have access to electric curriculum, PLATO, software provided through Heritage University; PLATO offers reading/language arts components in addition to a certified teacher/mentor who is available to assist students.

PLC. School-based professional learning community which includes certified staff and teacher assistants

ERIC. Online Education Resource Information Center

MAP. Measure of Academic Progress

MAMS. Mount Adams Middle School, White Swan, WA

MASD. Mount Adams School District, White Swan, WA

NCLB. No Child Left Behind Act 2001

QRI. Qualitative Reading Inventory

WASL. Washington Assessment of Student Learning

CHAPTER 2

Review of Literature

Introduction

The review of selected literature presented in Chapter 2 has been organized to address the following:

1. Speech Communities
2. Standard English Acquisition
3. Reading Instruction
4. Standardized Tests
5. Summary

Research within the last 16 years was identified through an online computer search that utilized Education Resource Information Center (ERIC) and Internet resources. In addition, a hand-search of selected reference materials was conducted.

Speech Communities

Leap (1993) states in American Indian English that the key concept in this discussion is "speech community" according to Joshua Fishman's (1970) classic definition:

> this is a community, "all of whose members share at least a single speech variety and the norms for its appropriate use"; that is, members of a speech community have acquired the grammar (or knowledge of language) of that language variety and regularly use that knowledge to participate in the same, code-specific discourse (p. 25).

A speech community is not predetermined by demographic, geographic, ethnic, racial, or political factors. Instead, it is based on the frequency of the members' social interaction and their joint construction of speaking styles appropriate to that interaction. When some feature within social context prompts changes in interaction patterns or in the linguistic variables associated with them, community boundaries and community membership will also be affected accordingly.

"Under this definition, others can be considered members of a speech community in that community, by their own assessment, or by researchers even when they have social or cultural backgrounds quite different from other members" (Leap et al., 1993. p. 28).

May (1994) in Literacy in a Multicultural, Multiability Classroom in Reading as Communication (4th ed.), found that a large minority of people in the United States do not speak English as their primary language in the home. Many people who do speak English as their primary language don't speak the dialect called Standard English. Standard English (or Academic English) is the language of instruction in American education, and teachers and teacher assistants who want to increase the educational opportunities for all students must do all they can do to strengthen these students' reading, spoken and written English skills.

Standard English Acquisition

Learning to communicate has become one of the most important things we learn to do in early years. Children master the basic structure of their language or languages in natural settings before they come to school. McCarty and Schaffer (1992) stated, "While they differ in their control of more abstract aspects of language, all children bring to

school immense linguistic, social, and intellectual resources" (p. 118). Successful teachers recognize and build on this foundation. They do this by approximating in the classroom the processes by which children naturally learn and acquire a language.

Goodman wrote, "With the language they've already learned, children bring to school their natural tendency to want to make sense of the world. . . .That's why learning language in the real world is easy, and learning language in school should be easy, but is often hard" (May, 1994, p. 8).

The evolution of children's language follows a natural order or sequence that included movement from primarily nonverbal to verbal expressions; from shorter and simpler constructions to longer, more complex ones; from regular to irregular or idiosyncratic cases; and from uses embedded in the immediate here and now to ones that are more abstract and context-reduced. Very early in this sequence, children typically experience a period of delayed oral practice or silence. "Far from a passive stage, this is a time when children are actively taking in and processing language input" (Krashen 1982; Postovsky 1982). "Eventually they are able to analyze, discuss, and write about language itself" (Lindors 1985; cf. Krashen 1982; Cummins 1989).

In Come On People: On the Path From Victims to Victors (2007) Cosby stated: "You can regularly talk to the children in your care and explain how the world around them works. This helps. You can read to them, which is time-honored way of teaching children Standard English. They have to learn it" (p. 104).

Reading Instruction

An important step in teaching reading focused on the body of knowledge educators called Phonics. According to Adams (1990), Phonics refers to an instructional

method for teaching children to read English. Phonics involves teaching children to connect the sounds of spoken English with letters or groups of letters (e.g., that the sound /k/ can be represented by c, k, or ck spellings) and teaching them to blend the sounds of letters together to produce approximate pronunciations of unknown words. As English has been considered an alphabetic semi-phonetic language, children can be taught the 26 letters of the alphabet, the 44 symbols those letters represent, the 70 most common ways to spell and, as a result, they can ready every word in English. This instruction can be provided in a matter of months, and should be introduced in the first grade.

Vygotsky's (1986) promoted the view in Thought and Language that both literacy and learning should be seen as a cooperative venture, or perhaps a collaborative adventure. The learning environment should provide abundant opportunities for practicing respect, trust, and cooperation. To read is to cooperate with a writer, to respect and trust that person, even feel empathy toward the writer, at least for as long that person communicates well and accurately, for as long as he fulfills the reader's purpose for reading. To write is to work toward cooperating with, trusting, and respecting one or more readers. To communicate in any way is to communicate (May, 1994, p.p. 70-71).

Cleary and Peacock (1998) in Collected Wisdom: American Indian Education cautioned that if teachers are to work toward improving the literacy of American students, they must:

1. Understand and help parents understand that reading is acquired when children see its usefulness, the potential fun in it.
2. Find reading materials that will have real meaning for the children, material they can connect with their experience.

3. Engage students in writing that will have real purpose and audience, which will show students the usefulness of writing for themselves in the modern world.
4. Give students the explicit lessons that will help them define their difficulty with Standard English dialect as connected to their early learning of another rich dialect that also had rules (but different rules).
5. Help students to see the difference in the rules of each dialect. Give students explicit lessons, lessons connecting their writing to real purpose and audience, which will show them the need to decontextualize language so that those out of their immediate environment can understand their thoughts.
6. Above all, let students engage in literacy acts that draw on or connect to their strengths, creative strengths or any strength (pp. 198-199).

Standardized Tests

Nelson (2003) reported that shortly after arriving to the White House, President George W. Bush proposed the No Child Left Behind Act of 2001 (NLCB), a law that would authorize a number of federal programs aiming to improve the performance of U.S. primary and secondary schools by increasing the standards of accountability for states, school districts, and schools, as well as providing parents more flexibility in choosing which schools their children will attend. Additionally, it promoted an increased focus on reading and re-authorized the Elementary and Secondary Education Act of 1965. NLCB was signed into law on January 8, 2002.

The NCLB enacted the theories of standards-based education reform that is based on the belief that setting high standards and establishing measurable goals can improve individual outcomes in education. States were required to develop assessments in basic skills to be given to all students in certain grades, if those states were to receive federal funding for school. Standards were set by each individual state, in line with the principle of local control of schools and in order to comply with the Tenth Amendment to the United States Constitution, which specifies that powers not granted to the federal government nor forbidden to state governments are reserved powers of the individual states.

Washington State created the Washington Assessment of Student Learning (WASL), a standardized educational assessment system that is also used as a high school graduation examination. According to the Washington State Commission on Student Learning (1997), the WASL consists of examinations over four subjects (reading, mathematics, science, and writing) with four different types of questions (multiple-choice, short-answer, essay, and problem solving). It is given to students from third to tenth grade, thought it is not required in ninth grade. Third and sixth graders are tested in reading and math; fourth and seventh graders in math, reading, and writing. Fifth and eighth graders were tested in reading, math, and science. The high school assessment, given during a student's tenth year, contains all four subjects.

Standardized Reading Tests (SRT) was valid in the sense they accurately measured what was intended. For example, SRT assessment measured students' ability to recognize individual written words, and to comprehend precise meanings that an author of a test intended to convey. Standardized tests do have greater reliability than

most other tests. They do rank-order students from high to low pretty consistently from one form of the test to another.

On the other hand contended May standardized tests were designed to measure average types of skills. They are administered in the same way to each child or group of children taking the test. Directions are read from a manual, the exact time for each subtest is supposedly the same from group to group, and the same sequence of subtests is followed. Standardized tests are norm referenced, which means that the test publishers first administer the tests to groups of children called "norm groups," who supposedly represent the rest of the population. The average scores for children at different grade levels become the norms. Another common feature of standardized tests is the manner in which raw scores were translated into standardized scores. These scores usually take the form of percentiles, or grade equivalency scores. They left out all the subtle and uncommon accomplishments that occur in each different classroom.

Summary

The review of selected literature and research presenting in Chapter 2 supported the following themes:

1. Reading has been regarded as the most important aspect of education and learning.
2. Language acquisition begins to take place first, in the home. Children must be able to understand and use Standard English.
3. Two major approaches to teaching reading focus on phonemic awareness and helping students find purpose, audience, and connect to their strengths.
4. Standardized Reading Tests endorsed by Washington State Legislation

mandated that student achievement in Washington State must improve.

CHAPTER 3

Methodology and Treatment of Data

Introduction

The purpose for this experimental research project was to determine if the DLL program intervention significantly improved seventh grade students' reading scores as measured by the MAP reading assessment. To accomplish this purpose, a review of selected literature was conducted, related baseline data were obtained and analyzed, and conclusions and recommendations were formulated.

Chapter 3 contains a description of the methodology used in the study. Additionally, included are details concerning participants, instruments, design, procedure, treatment of data, and summary.

Methodology

The researcher used a t-test for non-independent samples for data analysis and to determine whether there was significance between the means of two matched, or non-independent, samples at a selected probability level. The research was conducted during the 2006-2007 school year.

Participants

Participants involved in the study included 25 seventh grade students from MAMS enrolled in seventh grade humanities classrooms. The group was comprised of American Indian students and Hispanic students, including 11 girls.

Instruments

The MAP reading assessment was used to assess student performance over time. This measurement instrument has been designed to measure student growth in reading

and was used to assess students' reading level. The MAP reading assessment helped to measure literacy skills accurately and reliably with diagnosing each student's mastery of phonemic awareness, phonics, and other readiness and literacy skills. The test provides valuable feedback to school district personnel.

Design

Students in the seventh grade at MAMS in White Swan, WA, were pre-tested in the fall of 2006 using the MAP reading assessment. Reading instruction was provided in an uninterrupted, one-hour-per-day setting, where students were instructed by an electronic online curriculum in addition to receiving daily and oral reading activities. A reading specialist designed the instructional scope and sequence for individual students according to their reading strengths and weaknesses. The MAP reading assessment was then used to post-test participants in the spring of 2007. The design involved a pre- and post-test group as follows:

1. Pre-test: 25 seventh grade students whose reading levels were assessed prior to DLL reading intervention.
2. Post-test: same 25 students' reading levels were assessed after receiving the DLL reading intervention.

Procedure

During the 2005-2006 school years, MAMS officials identified low reading scores among middle-level students on the Washington Assessment of Student Learning (WASL) exam as a major district problem in need of correction. At this time, MASD's administrators made the determination to adopt the DLL program in the hope of raising

reading achievement. The MAP reading assessment was utilized to measure any student progress resulting from the adoption of the DLL program.

Implementation of the present study was subsequently authorized by the MAMS vice-principal in order to obtain data/documentation that might endorse the MASD's decision to adopt the DLL program.

Treatment of Data

A t-test for non-independent samples was used in conjunction with the STATpac statistical software program that accompanied the Educational Research: Competencies for Analysis and Applications test (Gay and Airasian, 2003). This helped the researcher to determine if the DLL program intervention significantly improved seventh grade students reading scores as measured by the MAP reading assessment. Significance was determined for p≥ at 0.05, 0.01, and 0.001 levels.

To test the null hypothesis, a t-test for non-independent samples was performed. The following formula was used to test for significance.

$$t = \frac{\bar{X}_T - \bar{X}_C}{\sqrt{\frac{var_T}{n_T} + \frac{var_C}{n_C}}}$$

Figure 1. Formula for T-test

Summary

Chapter 3 provided a description of the research methodology and the treatment of data employed in the study, participants, instruments used, research design, and procedure utilized. Details concerning treatment of the data obtained and analyzed were also presented.

CHAPTER 4

Analysis of the Data

Introduction

The researcher sought to determine whether there was significant improvement in reading level success among participating seventh graders as indicated by the MAP reading assessment and the DLL program intervention. The baseline data utilized in the study were obtained and analyzed from fall of 2006 to spring of 2007.

Chapter 4 was organized to include the following: Description of the environment, hypothesis, and results of the study, findings, and summary.

Description of the Environment

For purposes of the present study, the researcher worked with seventh grade students from MAMS, White Swan, WA. During the 2006-2007 school years, 25 seventh graders were enrolled in the DLL program. A reading specialist met with students after their referrals to the DLL program to conduct an intake assessment. The specialist conducted a MAP assessment and then continued to monitor the work that the DLL teacher accomplished with students for one hour a day, five days a week throughout the school year.

Hypothesis

Reading level scores of students who participated in the DLL program will show significant improvement as measured by the MAP assessment.

Null Hypothesis

There will be no significant improvement in reading levels scores after participation in the DLL program. Significance was determined for $p \geq$ at 0.05, 0.01, and 0.001 levels.

Findings

As shown in Table 1, 25 students were pre-tested in the fall of 2006, and post-tested in the spring of 2007, to determine their reading level before and after DLL program intervention. Significantly, the mean reading level of 22 of 25 students showed improvement, using the MAP reading assessment. Specifically, the mean pre-test reading level was 2.72, as contrasted with the mean post-test reading level of 2.96.

Table 1

Summary of Pre and Post-test reading levels Fall of 2006 and Spring of 2007:

Fall 2006 Pre-Test Reading Levels	Spring 2007 Post-Test Reading Levels	Difference
1. 3.3	3.7	+0.2
2. 3.0	2.9	-0.1
3. 2.4	3.0	+0.6
4. 2.5	3.2	+0.7
5. 2.7	2.6	+0.1
6. 2.6	3.2	+0.6
7. 2.5	3.0	+0.5
8. 2.0	2.5	+0.5
9. 2.2	2.4	+0.2
10. 2.6	2.7	+0.1
11. 2.8	2.7	-0.1
12. 3.2	3.5	+0.3

13. 3.1	3.3	+0.2
14. 2.7	3.3	+0.6
15. 2.7	2.9	+0.2
16. 3.3	3.5	+0.2
17. 2.4	2.5	+0.1
18. 2.7	2.5	-0.2
19. 3.3	3.4	-0.3
20. 2.8	2.5	+0.8
21. 2.2	3.0	+0.5
22. 2.3	2.8	+0.2
23. 2.5	2.7	+0.2
24. 3.1	3.3	+0.2
25. 3.5	3.3	+0.1

- Mean Reading Level, fall of 2006: 2.82
- Mean Reading Level, spring of 2007: 2.99
- 22 of 25 students improved their reading level, or 88 percent of students improved.

Table 2

Table 2 displayed data collected from the seventh grade reading level tests of the study. The t-test for non-independent variables on the Windows STATpak to accompany Educational Research: Competencies for Analysis and Application (2003) was used to calculate data, statistics, and values.

Table 2 displayed distribution of t with 24 degrees of freedom. Significantly, the hypothesis was supported at 9.05, 0.01, and 0.001 levels. Specifically, a t-value of 4.36 was produced for reading scores of subjects with 24 degrees of freedom. The formula for values used to determine significance was published in Gay, et al (p. 561).

Summary

The hypothesis was tested using the t-test for non-independent samples to determine if there was a significant difference between pre- and post-test mean reading levels of DLL program students. The chosen probability levels were 0.05, 0.01, and 0.001 with 24 degrees of freedom. Data analysis supported the hypothesis at all levels of probability. Accordingly, seventh grade students who received treatment using the DLL program intervention showed significant growth as measured by the MAP reading assessment.

Chapter 4 provided an overview of the description of the environment, hypothesis, and results of the study.

CHAPTER 5

Summary, Conclusions and Recommendations

Summary

The purposed of the experimental research project was to determine if the DLL program intervention significantly improved seventh grade students' reading scores as measured by the MAP reading assessment. To accomplish this purpose, a review of selected literature was conducted, related baseline data were obtained and analyzed, and conclusions and recommendations were formulated.

Conclusions

From research findings and analysis of data produced by this experimental study, the following conclusions were reached:

1. Reading has been regarded as the most important aspect of education and learning.
2. Early stimulation by parents for their children's language acquisition has established the groundwork for later achievements in academic areas of school.
3. Three major approaches to teaching reading focused on student mastery of Standard English; phonics as an instructional method for teaching children to read English, and the environment that allows access to digital learning opportunities.
4. Standard reading tests endorsed by state legislation mandated that student achievement in Washington State must improve.
5. The Digital Learning Lab significantly improved seventh grade student reading scores as measured by the MAP reading assessment.

Recommendations

Based on the findings cited above, the following recommendations have been suggested:

1. Educators must continue in cooperation and collaboration to remain actively involved in professional learning communities (PLC) with a strong focus on improving reading mastery at all levels, beginning in early childhood education programs, and pre-kindergarten through high school.
2. Establish groundwork for later achievements in academic areas in school.
3. Enhance early reading skills in young children, early literacy centers established in children's homes with parental guidance to jump-start children's language acquisition.
4. Introduce a vertically-aligned reading program in elementary grades that focuses on phonemic awareness and make learning connect to student's real lives.
5. Continue to participate in state legislative issues surrounding Standard Reading Tests that require improvement.
6. The recommendation was to adopt the Digital Learning Lab program to improve the reading scores of the seventh graders are enrolled in the Mt. Adams Middle School.

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