The effects of the Accelerated Reader program on the reading habits and reading frequencies of fourth grade students

Kathleen Wendt
Rowan University

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THE EFFECTS OF THE ACCELERATED READER PROGRAM ON THE READING HABITS AND READING FREQUENCIES OF FOURTH GRADE STUDENTS

by
Kathleen Wendt

A Thesis
Submitted in partial fulfillment of the requirements of the Master of Arts Degree of The Graduate School at Rowan University May 2, 2005

Approved by
Professor

Date Approved May 9, 2005

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ABSTRACT

Kathleen Wendt
THE EFFECTS OF THE ACCELERATED READER PROGRAM ON THE READING HABITS AND READING FREQUENCIES OF FOURTH GRADE STUDENTS
2004/05
Dr. Marilyn Shontz
Master of Arts in School and Public Librarianship

The purpose of this study was to determine if participation in the Accelerated Reader program affected the reading habits and reading frequency of fourth grade students. This study focused on two fourth grade classes at Folsom School. The two fourth grade classes had used the Accelerated Reader (AR), as part of their reading program in the library, since the beginning of the 2002-2003 school year.

A total of 38 students participated in this survey. The students were encouraged by the researcher to read and take quizzes on books supported by the Accelerated Reader program. All 38 students took both the pre-test and post-test survey. The results of the pre-test and post-test were used to ascertain if the use of the Accelerated Reader program did in fact have an impact on reading habits and reading frequency of fourth grade students. The results did show a positive difference in reading habits and reading frequency that could be attributed to the Accelerated Reader program.
ACKNOWLEDGEMENTS

“"I can do all things through Christ who strengthens me”
~ Philippians 4:13

I would like to dedicate this thesis project to my wonderful husband, Rich and to my loving parents, Joseph and Joann Gatto, and my sister, Christine. I would also like to thank my family and friends for their time and patience as I completed this project.

I would like to thank Dr. Shontz for all of her wonderful guidance and patience in guiding and assisting me through this masters program.
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CHAPTER I

STATEMENT OF THE PROBLEM

Significance of the Topic

It is generally accepted that reading skills are an essential key to learning. The National Reading Panel (2000) noted that reading comprehension was critically important to the development of children's reading skills and therefore to the ability to obtain an education.

Slavin, Karweit, Wasik, Madden, and Dolanz (1994) noted that students who completed the third grade and lacked reading skills were not likely to graduate from high school. Furthermore, American school children without high levels of reading comprehension faced a difficult and uncertain economic future. Since it was estimated that America’s K-12 students spend an average of only seven minutes per day reading, there was obviously room for improvement (Paul, T., et al., 1997).

Bronfenbrenner, McClelland, Wethington, Moen, and Ceci (1996) noted that in a technological society, the demands for higher literacy were constantly increasing, creating even more grievous consequences for those who fall short and contributing to the widening economic disparities of our society.

As technology has become increasingly infused into the educational landscape, a wide range of educational software is being developed and marketed. With an increase in the variety of technological tools from which to choose, educators need to know which
reading software programs can be expected to have a significant impact upon student reading. With an increasing emphasis on accountability and performance, administrators and teachers want to employ proven methods and tools to produce the greatest possible gains in student reading achievement.

In an effort to systematize reading instruction and practice, many schools have implemented computer-based reading programs to determine students' reading level, test their comprehension, and track their reading progress. The most widely used computer reading management program in the United States in 1993 was the Accelerated Reader (AR) program. The program is a system utilized for managing and encouraging literature-based, developmentally appropriate reading practice for students, promulgated by Advantage Learning Systems (1993).

According to some researchers, the AR program (Paul, VanderZee, Rue & Swanson, 1996) was the most commonly used recreational/motivational reading program. According to the Education Commission of the States (1999), one in three schools or approximately 50,000 schools throughout the country are using the AR program.

Purpose of the Study

The purpose of this study was to determine if participation in the AR program affected the reading habits and reading frequency in fourth grade students. The effectiveness of the AR program in terms of reading frequency was measured and reported to help justify the continuation of investing time and resources into the AR reading program at the Folsom School in Folsom, New Jersey.
Objectives of the Proposed Study

The objectives of this study were:

1. To determine if participation in the AR program effected the reading frequency of 4th grade students.
2. To examine in a library setting students’ reading choices and habits while using the AR program.
3. To compare changes in reading frequency using the variables of gender and reading level.

Definition of Terms


Diagnostic Report - A summary of student performances on reading quizzes that show progress and problem areas. This is an Accelerated Reader reporting system (Advantage Learning Systems, Inc., 1993).

Institute for Academic Excellence – Established in 1993, Judith and Terrance Paul created the AR program under the ownership of Advantage Learning Systems. As part of the Advantage Learning Systems organization, the Institute for Academic Excellence researches, develops, and assesses learning systems for K through 12th grade schools (Paul, et al., 1996).
Media center – A facility within an educational institution responsible for providing a full-range of media sources, equipment, and services, staffed to assist students and instructors in utilizing its collections (Reitz, 2004).

Media specialist – A librarian or other individual with specialized training in the creation, selection, organization, maintenance, and provisions of access to media of all kinds, who may also be responsible for supervising a media center or the media department of a library, including collections, equipment, and facilities for listening and/or viewing, any service personnel (Reitz, 2004).

Reading comprehension – The ability to understand what is read (Webster Dictionary).

SSR – Sustained Silent Reading, drop everything and read (Renaissance Learning, Inc., 2003).

Students – One who attends a school (Webster Dictionary).

Teachers – One whose occupation is to instruct (Webster Dictionary).

TOPS Report – The Opportunity to Praise a Student: this report provides immediate feedback to students, and provides the educator with an opportunity to praise and encourage students. This is part of the Accelerated Reader reporting system (Advantage Learning Systems, Inc., 1993).

Assumptions and Limitations

Several assumptions were made for this research project. These included: all students who participated were exposed to the AR program in the third grade; student participants were honest with their responses when surveyed; students selected had some
prior knowledge of how the AR quiz questions were presented; and the majority of students read each book completely before taking an AR quiz.

This study was limited to fourth grade students in the library program at Folsom School (approximately 45 students). The study was completed at the Folsom School in Folsom, New Jersey in Atlantic County. The results were limited to the Folsom School.
References


The No Child Left Behind Act of 2001 was unequivocal in its insistence that educational programs be grounded in scientifically based research. In fact, the phrase "research based" was mentioned in the legislation 111 times (Renaissance Learning, Inc., 2003). Clearly, teachers, principals, superintendents, and state program directors need to be sure the academic improvement programs they select or approve are effective and supported by scientific research (Renaissance Learning, Inc., 2003).

Research has shown that students who read more, especially recreationally, perform better on measures of reading comprehension and vocabulary (Anderson, et al., 1988). This same research provided evidence that the act of reading itself improves reading performance. Therefore, it is important that teachers develop in their students a reading habit that will endure and help to produce lifelong readers. Accelerated Reader promises to help motivate these students (Anderson, et al., 1988).

Bronfenbrenner, McClelland, Wethington, Moen, and Ceci (1996) noted that in a technological society, the demands for higher literacy were constantly changing, creating ever more grievous consequences for all those who fall short and contributing to the widening economic disparities in our society.

Giddings (1991) stated that recreational reading programs, like the AR, were designed to encourage the development of the "reading habit." Reading is a skill that requires continued practice to perfect. Activities to practice reading should bring both
success and enjoyment to all children in order to foster an ongoing interest in reading (Giddings, 1991).

Good readers generally have been read to from earliest childhood (Giddings, 1991). These readers have a sense of story structure, and find listening to stories both informative and enjoyable. Good readers often reread their favorite books and in doing so become fluent readers. Behaviors common to good readers are those of interest, purpose and choice (Giddings, 1991). The AR program provides interest, purpose and choice to all of its readers. The AR program lists more than 65,000 titles covering a variety of subjects, cultures, and grade levels (Renaissance Learning, Inc., 2003). These book lists provide reading choices for students from first grade to the twelfth grade.

Accelerated Reader and the Frequency of Reading

Ediger, (1998) ascertained that technology provided new avenues for students to engage in exciting reading curriculum and provided more efficiency in the process. The overall goal in reading instruction is to guide students into personal enjoyment of books, while providing them with the skills to read for utilitarian purposes (i.e. information reading). Students need to do much reading, with guidance, to achieve these objectives. Identifying words and reading fluency is important so that comprehension can be obtained (Ediger, 1998).

Topping and Paul (1999) explored the relationship between reading practice (time spent on task at reading), students’ reading performance, and organizational features of
the school system. Information gathered through AR was utilized as a measure of reading practice for more than 659,000 students in grades K-12 in thirty-nine states throughout the nation; students and states were compared. Student reading ability was found to have a strong positive relationship with the amount of reading practice performed in school. In states where test results indicated higher than average reading performance, students also had greater amounts of in-school reading practice. Schools using the AR program for longer periods of time showed higher rates of reading practice. This was the key component with most programs; longer use usually yielded a more positive response. Schools in the study used the AR program as a supplement to the regular reading curriculum; only a very few schools had attempted to implement the AR program recommendations of 60 minutes of sustained silent reading (SSR) per day, in class. Increases in time students spent reading occurred outside of class.

McKnight (1992) conducted a study of fifth grade students aimed at using the AR program and other strategies to improve reading attitudes. The 17 students in the study were not interested or motivated to read, and television occupied a great deal of their out-of-class time. Interventions involved encouraging parents, teachers, and media specialists to provide interesting reading material, and modeling a love for reading and reading aloud to the students. The AR program was introduced to provide motivation for reading books. Points earned, after reading and correctly answering test questions, were traded for prizes. Additional activities included a student daily reading log, read-aloud sessions, poster contests, and daily, sustained silent reading periods. Results were measured by comparing a pre-and post-television survey of the students, reviewing students' reading logs, library circulation records, reading goals, observation survey of
the sustained silent reading periods, and student questionnaires. At the conclusion of this
study, results showed no significant reduction in students’ television viewing time, but
their attitudes toward reading improved and students did read more.

Increasing the amount of time students engage in SSR is a goal of the AR
program, which applies to the findings of Patterns of Reading Practice. Author Terrance
D. Paul (1996) asserted that schools were not providing enough time each day for
students to practice reading. Paul conducted a large-scale study with 659,214 students in
grades K-12. He found the average reading practice per day, for these students, was 7.1
minutes. Paul’s data indicated that students who had greater amounts of reading practice
experienced higher achievement in all subject areas. His study also contained
information that indicated students in schools using AR one year or less averaged less
than 10 minutes per day reading practice, while students in schools using AR for 4 years
or more, averaged more than 28 minutes per day in reading practice.

Paul’s (1996) research found that the difference in practice time was the major
factor in explaining the difference in student achievement in reading. While this is hardly
surprising, it is worth considering as parents plan the role reading will play in their child’s
academic schedule. This information suggests that AR is an effective tool in stimulating
more time spent on independent reading.

Paul’s (1996) data also indicated that the AR program showed a greater success
rate in urban schools, and in areas of low socio-economic environments. Schools using
AR also showed significantly higher attendance rates than the schools without the AR
program. Students in schools using AR performed better in all subject areas, including
reading, writing, mathematics and science, when compared to their peers in socio-
economically comparable schools (Paul, Swanson, Zhang, & Hehenberger, 1997).
Academic performance improved with the length of time the schools used AR, and academic performance was not affected by the availability of computers within the school. The study provided compelling data to support the use of the AR, and concluded that AR had a positive effect on student achievement.

Accelerated Reader and Motivation to Read

The AR program has proved to be an effective tool for motivating and positively enhancing reading achievement in severe socio-economically disadvantaged areas (Vollands, Topping, & Evans, 1999). The research suggested AR yielded significant gains in reading achievement among at-risk readers. Reading attitudes were also positively influenced, especially among girls. Teachers in this study were given one 6-hour day of training before implementing the AR program. The use of the AR improved over time, but less time was devoted to SSR in the experimental classes than in other classes. Vollands's (1999) study concluded that AR improved the quality of students' contact with literature and was effective without extrinsic rewards.

Educators often chose to use extrinsic rewards as an incentive for some or all of their students to earn points on the AR quizzes. Research suggested that for reading intrinsic motivation was more powerful than extrinsic motivation, however, extrinsic incentives might sometimes be helpful with those students whom motivation to read was not inherent (Lepper, 1983). Intrinsic incentives can take many forms. A desire to receive high grades was an extrinsic incentive that leads to the creation of intrinsic motivation, as were social or material rewards (Ryan & Stiller, 1991). Social rewards,
including such things as notes to parents about a student’s success, increased prestige among peers, reduction of homework, or increased time for social activities, have been found to be more valuable for some students than material rewards, such as those sometimes used in the AR program. If rewards of any kind were used in an AR program, it was crucial that students have a reasonable expectation of success (Ryan & Stiller, 1991).

The implementation of the AR program is a crucial factor in the success and motivational approach in which this program will succeed. Educators in all capacities play a major role in the effectiveness of the AR program. In two separate reports, Topping and Paul (1999) and Sanders and Topping (1999), the researchers suggested several characteristics of good AR implementation including:

- Have students read as much as possible, guiding them to appropriate books in the classroom or library.
- Monitor student progress daily.
- Ensure students’ percentages of correct answers at 85% or higher.
- Generate and study at-risk reports.
- Intervene when goals are not being met – especially with low ability students.
- Increase the challenge level gradually.
- Monitor book selection to ensure challenge is appropriate.
- Teachers should be trained in implementation.
- Participation must be voluntary for students.
- A large selection of AR books should be available for students to choose from.
• Books should be coded for readability to enable students to manage challenges on their own.

• Extra opportunities for reading practice should be provided at school and encouraged at home and in the community.

• Student access to computers for the purpose of AR test taking should be easy, frequent, and immediate.

• Students should be encouraged to reflect on the implications for action provided by the feedback they receive, with self-management encouraged.

• Less able readers should be permitted to test on books read to them, as should their peer helpers.

• Parents should be aware of the program, regularly receive AR reports from the school and respond to them, and be encouraged to ensure that their children have the opportunities to read at home.

• Peer tutoring should be incorporated, in support of reading, testing, or both.

• Extrinsic rewards should be used only if necessary, effective, and culturally appropriate, and then the rewards offered should be books or reading related items.

• Re-testing should be allowed only in exceptional circumstances.
Accelerated Reader and Life Long Learning

Not all studies agreed that AR makes a significant difference in reading achievement. Prince and Barron (1998) identified several issues related to the discussion of computerized reading management systems. They noted that the current trend to supplement reading instruction with programs such as the AR program was propelled by the educational community's search for innovative methods to improve students' reading comprehension on standardized tests. Educators were also interested in creating lifelong learners and readers, as well as fostering a genuine love for reading. For Prince and Barron (1998) success in reading was a primary objective for all educators, and especially for elementary school teachers.

Research in reading prior to the 1980s was mainly directed toward word recognition and skill acquisition. The whole language philosophy altered the focus from skill development and precise text meaning to comprehending passages and understanding words in context while relating students' personal experiences to reading. Reading should develop naturally and functionally (Giddings, 1991) and involve the language processes of listening and speaking (Gonzalez, 1994). Literature-based reading instruction using the whole language approach teaches children to read in context using a variety of materials such as songs, poems and stories. Good instruction builds on the language, knowledge, and strategies children have been developing since birth (Yatvin, 1991). The use of children's literature in the teaching of reading had a positive effect on students' achievement towards reading (Giddings, 1991). Students not only learned to read, but they also developed a love for reading and became life-long readers through the process of using a literature-based reading method (Rosenheck, 1996).
Instead of focusing resources on remedial programs, which have been initiated well after a reading program has been documented, professionals could examine other options (Shapiro, 1990) such as recreational reading. The voluntary reading of books was found to be positively correlated to reading achievement (Giddings, 1991).

The use of computers, in urban populations, as a teaching tool has been found to be valuable when used in the appropriate context (Kinnaman, 1993). Technology allowed children to experience success in learning (Bruder, Buchsbaum, Hill, & Orlando, 1992) and helped students to reach their potential (Blevins, 1993). Instruction which involved computers benefited students because of their enthusiasm and because academic motivation usually improved (Rosenheck, 1996).

However, Prince and Barron (1998) pointed out that educators cannot rely on computerized programs alone to guide book selection and determine reading achievement levels. Students must be exposed to literature from many genres and must experience meaningful reading and writing across the curriculum. Teachers must demonstrate to students their own high values of reading for pleasure and information, and set a good example for students to follow. Parents and the community must also be avid supporters of reading as well.

Scott (1996) noted that the AR program, in order to be effective, must be used in the correct manner. Students are expected to move from easy reading on to more challenging reading. Research has indicated that if students do not move on to more difficult reading within the AR program, then their reading comprehension will not increase (Scott, 1996). One would expect that in order for learning to develop one must challenge the mind. Increasingly in research students must learn more difficult and
challenging concepts to stay on top of their learning. Reading comprehension and fluency increase with every year of study. Therefore, adding to the emphasis of reading as a lifelong learning process.

Summary

This review of the literature did not locate a great deal of peer-reviewed or referred research on the AR program. This was attributed partly to the fact that commercial products have a difficult time getting evaluated in academic journals. Considering the fact that the AR program was used in schools throughout the country for more than twelve years it was hard to believe that professional journals like Reading Research Quarterly, The Reading Teacher, and The Journal of Adolescents and Adult Literacy published almost nothing in the way of research. Large portions of articles that are available on the AR program emphasize achievement scores, test results and attitudes about reading. While studies have examined the AR and its effects on the reading habits of students this study added to the topic of reading habits and reading frequency of the AR program.
References


CHAPTER III

METHODOLOGY

Introduction

This study investigated the Advanced Learning Systems' Accelerated Reader (AR) technology-based reading program concerning the reading habits and reading frequency of fourth grades students as measured by a pre-test and post-test survey.

Data for this study were gathered through a pre-test and post-test experimental design. The experimental research design consists of one group of participants who were pre-tested on the dependent variable and then post-tested after the treatment condition was administered. The design was used in this study to indicate the reading levels, frequency, habits, and choices prior to the administration of the pre-test. The post-test re-examined similar indicators in addition to students' perception of their reading ability.

The one-group pre-test post-test is a better design than the one-group post-test-only design because it at least includes a pre-test that indicates how the participants did prior to administration of the treatment condition. It does not control for potentially confounding extraneous variables such as history, maturation, testing, instrumentation, and statistical regression (Powell, 1997).

The systematic method allowed the selected sample to be tested, scored, and analyzed to detect changes in reading habits and reading frequency that may have occurred with the use of the AR program. A questionnaire was administered at the beginning of the 12-week assessment period. Students completed the questionnaire
during the first week of this study and a second questionnaire was administered during
the final segment of the research period.

Description of the Accelerated Reader Program

Accelerated Reader is a computer reading and management program developed by Advantage Learning Systems and was first made available to schools in 1986. It is currently used in more than half the schools in the United States (Renaissance Learning, Inc., 2003). The program helps educators monitor literature-based individualized reading for students in grades K-12 (Keller, 1998).

The AR program is a sophisticated computerized program that provides pertinent information on student reading materials and readability levels. It reduces teachers’ paperwork while providing the information needed to guide and monitor student reading practice (Renaissance Learning, Inc., 2003).

The AR program uses a database of thousands of books ranging in reading levels from grades K-12. The AR program claimed to increase reading skills and motivate all students’ regardless of reading ability (Accelerated Reader, 1998).

One of the goals of the AR program is to increase literature-based reading practice. This goal dovetails the findings of Patterns of Reading Practices (Paul, 1996) that the more students read, the better they perform academically in both reading and mathematics.

The AR program includes a list of more than 65,000 practice quizzes. However, there are approximately 2,000 practice quizzes available in the AR school library. The AR program provides immediate feedback of results to both the student and the teacher.
The performance information provided from the AR program guides further reading and helps students to select appropriate level books based on their interests.

Using the AR program to guide independent reading requires students to read a book and then take an AR quiz on the computer. The quizzes consist of 5, 10 or 20 multiple choice questions on important facts or events in the book. These quizzes are based on the appropriate reading levels with the expectation that students should be able to get 90% to 100% of the questions correct, on average (Renaissance Learning, Inc., 2003).

Proficiency on a quiz is determined to be a score of at least 70%. Each book is assigned points by Advantage Learning Systems. The number of points a student can earn ranges from two to twenty, depending on the complexity of the story. The AR program uses the following formula to assign these points (Renaissance Learning, Inc., 2003):

\[
\text{AR Points} = \left(10 + \text{Readability Level}\right) \times \frac{(\text{Words in Book})}{100,000}
\]

The AR program maintains a complete computer record for each student of percent correct on each quiz taken, the average percent correct, points earned, words read, book titles, book readability levels, and the book category as fiction or non-fiction. Detailed reports are available at the student, class, grade, and school level. Educators can also create reports by gender, race, and program type, such as Title I, or gifted and talented for any period of time, including day, week, month, marking period or year.

The AR program also allows tracking of individual student records including percent correct, points earned, and their book level goals. The program then tracks how well students are performing with respect to their goals. Currently there are more than 50
different types of reports available with the AR program. Two of the most commonly used reports are the TOPS Report, which is printed out immediately after a student finishes a quiz to provide the student and the teacher with immediate feedback and the Diagnostic Report, which is printed weekly to identify students needing intervention and further instruction.

A strong argument in favor of AR program is focused on students having the freedom to select their own literature. Educators are always looking for new and innovative methods to motivate students to read and share the same concern that some students are not motivated to read and are not developing lifelong reading skills. Motivation to read is the key to learning these lifelong skills. Achieving this objective begins with the task of making reading a pleasurable experience.

Statement of the Purpose

The purpose of this study was to determine if participation in the AR program effected the reading habits and reading frequency of fourth grade students. The effectiveness of the AR program in terms of reading frequency was measured and reported to help justify the continuation of investing time and resources into the AR reading program at the Folsom School in Folsom, New Jersey.

Objectives of the Proposed Study

The objectives of this study were:

1. To determine if participation in the AR program effected the reading frequency of fourth grade students.
2. To verify in a library setting students’ reading choices and habits while using the AR program.

3. To compare changes in reading frequency using the variables of gender and reading level.

The importance of this study was to determine if the AR program improved the reading habits and reading frequency of students. The findings of this research were reported to the Folsom School administration and Board of Education.

Population and Sample

The population observed was two fourth grades library classes at the Folsom School, in Folsom, New Jersey. The population consisted of 45 students who had library classes once a week for a 12 week period.

On October 28, 2004, 38 student participants were asked to complete a questionnaire about their reading frequency and reading habits. This process was repeated on March 7, 2004 at the end of the 12-week period. The subjects consisted of a nonrandom sample since those involved were students in pre-selected fourth grade library classes. This non-probability sampling was unyielding and judgmental and easily became the sample for the study.

Variables

The dependent variables in this study were the individual reading frequencies of students and the reading habits as determined by changes reported in the pre-test and
post-test questionnaire results. The independent variables were the gender and reading level of the students.

Questionnaire/Instrument Design

Prior to administering the pre-test questionnaire, the researcher had students return signed parental consent forms (see Appendix A). The form described the study, the research questions, and the request to administer the questionnaire.

The questionnaire used in this study was adapted from the Rhody Secondary Reading Attitude Assessment (Tullock-Rhody & Alexander, 1980). A copy of the adaptations used is found in Appendix B and C. To maintain reliable and valid results a version of the same type of instrument was used in the pre-test and post-test survey. The post-test, contained two questions which were modified to determine any changes in students' reading frequencies or reading choices.

The questionnaire contained a variety of questions as they related to the reading habits and reading frequency of the students being surveyed. All of the questions were worded in a positive manner. Answers to the responses allowed students to express their opinions for each question.

Methods of Data Collection

The pre-test questionnaire (see Appendix B) was administered on October 28, 2004 the first week of the 12-week period. The questionnaire focused on the reading habits and reading frequency of students in order to gather data about the subjects' individual reading composition.
Students were provided with a brief overview of the AR program before beginning the research process of evaluation. The reading of AR books and quiz taking was completed in the library during each fourth grades library class. Each library session was approximately 45 minutes long. The two fourth grade classes met once a week with 19 student participants in each class. During this time students were encouraged by the researcher to select and read an AR book. Once the student read the book he/she would log onto the AR computer program and take the AR quiz that corresponded to the AR book that was read. When the student completed the quiz a TOPS, The Opportunity to Praise a Student (TOPS) report was printed out for review. The researcher collected the quizzes, however, student scores on the quizzes were not being measured for evaluation purposes. Table 1 outlines the timeline used during this 12-week study for the administration of the pre-test and post-test and students’ completion of the AR quizzes. At the end of the study, students were asked to complete the post-test (see Appendix C) questionnaire. The post-test contained two modified questions that were necessary for analyzing the reading frequency and reading choices of students in this study. The results of the pre-test and post-test were then compared and analyzed.

Reliability and Validity

To ensure reliability and validity of the questionnaires, the pre-test and post-test were reviewed by the researcher and the instructor of the graduate thesis. Both the pre-test and post-test questionnaires were read aloud to students, by the researcher, to ensure that the questions could be answered with accuracy and that the reliability of this research
would be ensured. Students were given sufficient time to ask any clarifying questions and to answer each question.

Table 1

Timeline of the Pre-Test and Post-Test Administration and Completion of AR Quizzes

<table>
<thead>
<tr>
<th>Date of the activity</th>
<th>Activity</th>
</tr>
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<tbody>
<tr>
<td>October 28, 2004</td>
<td>Pre-test administered</td>
</tr>
<tr>
<td>Week 1: November 4 &amp; 5, 2004</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 2: November 18 &amp; 19, 2004</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 3: December 2 &amp; 3, 2004</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 4: December 9 &amp; 10, 2004</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 5: January 6 &amp; 7, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 6: January 13 &amp; 14, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 7: January 20 &amp; 21, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 8: January 27 &amp; 28, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 9: February 3 &amp; 4, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 10: February 10 &amp; 11, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 11: February 17 &amp; 18, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>Week 12: February 24 &amp; 25, 2005</td>
<td>AR quizzes completed</td>
</tr>
<tr>
<td>March 7, 2005</td>
<td>Post-test administered</td>
</tr>
</tbody>
</table>
References


CHAPTER IV
ANALYSIS OF DATA

Procedures/Methods Used

This 12-week study examined the effects of the Accelerated Reader (AR) program on the reading habits and reading frequency of fourth grade students. Students were encouraged to read and take quizzes as part of the AR program. The 38 students in this study participated in the AR program on a voluntary basis. Of the 45 students who were issued a consent form, 38 (84%) returned the consent form and agreed to be part of the study. They chose to read AR books, take computerized quizzes and complete a pre-test and post-test questionnaire.

Variables Studied

The students' reading of AR books and quiz taking was completed in the library during each fourth grade regularly scheduled library class. Each library session was approximately 45 minutes in length. There were two classes, which met once a week with 19 student participants in each class. During this time students were encouraged to select and read an AR book. Once the student read the book he/she would log onto the AR computer program and take the AR quiz that corresponded to the AR book that was read. When the student completed the quiz, The Opportunity to Praise a Student (TOPS) report was printed out for review by the researcher. The researcher collected the quizzes; however, student achievement on the quizzes was not being measured for academic
evaluation purposes. During all 12 weeks, the researcher or a trained research assistant observed students progress and collected and recorded the quiz performance data.

The AR books in the Folsom school library were marked with bright orange colored dots so that students could easily identify them. Students were able to locate book/grade levels of each book by logging onto the library's On-line Public Access Catalog (OPAC) system and typing in the book title. The OPAC system was familiar as it was used by students' on a daily basis to locate books in the library.

Presentation of Results

Table 2 presents the study objectives as they coincided with the questions on the reading survey questionnaire. The first study objective related to three of the reading survey questions (Questions 3, 5, 8). These questions were to determine if participation in the AR program affected the reading frequency of fourth-grade students. There were five items used to evaluate Objective 2 (Questions 2, 6, 7, 9, 10) on the reading survey that related to the reading choices and habits while using the AR program. The comparison of the changes in reading frequency using the variables of gender and reading levels required an analysis of all the responses to the pre-test and post-test surveys as well as the AR Diagnostic Reports.

Table 3 presents the number of responses and gender of the fourth-grade pre-test reading survey results. Table 4 presents the number of responses and gender of the fourth-grade post-test reading survey results. There were differences in the questions for the pre-test and post-test responses for questions 1 and 4. These questions were addressed in the evaluation of Objective 3.
### Table 2

Study Objectives as they Coincided with the Reading Survey Questionnaire Items

<table>
<thead>
<tr>
<th>Study Objectives</th>
<th>Reading Survey Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective #1</strong></td>
<td></td>
</tr>
<tr>
<td>To determine if participation in the AR program affected the reading frequency of 4th grade students.</td>
<td>Pre Test: 3, 5, 8</td>
</tr>
<tr>
<td></td>
<td>Post Test: 3, 5, 8</td>
</tr>
<tr>
<td><strong>Objective #2</strong></td>
<td></td>
</tr>
<tr>
<td>To examine in a library setting students’ reading choices and habits while using the AR program.</td>
<td>Pre Test: 2, 6, 7, 9, 10</td>
</tr>
<tr>
<td></td>
<td>Post Test: 2, 6, 7, 9, 10</td>
</tr>
<tr>
<td><strong>Objective #3</strong></td>
<td></td>
</tr>
<tr>
<td>To compare changes in reading frequency using the variables of gender and reading levels.</td>
<td>Pre Test: All responses from the Pre Tests</td>
</tr>
<tr>
<td></td>
<td>Post Tests: All responses from the AR Diagnostic Reports</td>
</tr>
</tbody>
</table>

**Objective One**

Objective 1 of this study was to determine if participation in the AR program affected the reading frequency of fourth-grade students. The responses to questions 3, 5 and 8 from the reading survey were used to evaluate Objective 1. The responses of questions 3, 5 and 8 of the pre-test and post-test reading survey results are presented in Table 5.
Table 3

Number of Responses and Gender of Pre-Test Reading Survey Results

<table>
<thead>
<tr>
<th>Survey Question</th>
<th># Responses</th>
<th>B</th>
<th>G</th>
<th># Responses</th>
<th>B</th>
<th>G</th>
<th># Responses</th>
<th>B</th>
<th>G</th>
<th># Responses</th>
<th>B</th>
<th>G</th>
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<td>(10) Sometimes</td>
<td>4</td>
<td>6</td>
<td>(2) Never</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(12) Always</td>
<td>7</td>
<td>5</td>
<td>(21) Sometimes</td>
<td>10</td>
<td>11</td>
<td>(5) Never</td>
<td>3</td>
<td>2</td>
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<td></td>
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<tr>
<td>3</td>
<td>(2) None</td>
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<td>1</td>
<td>(3) Sometimes</td>
<td>1</td>
<td>2</td>
<td>(12) 2</td>
<td>6</td>
<td>6</td>
<td>(21) 3</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>(9) Always</td>
<td>5</td>
<td>4</td>
<td>(27) Sometimes</td>
<td>14</td>
<td>13</td>
<td>(2) Never</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>(28) Always</td>
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<td>13</td>
<td>(10) Sometimes</td>
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<td></td>
<td></td>
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<td>6</td>
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<td>1</td>
<td>(30) Sometimes</td>
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<td>15</td>
<td>(5) Never</td>
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<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>(10) Always</td>
<td>5</td>
<td>5</td>
<td>(25) Sometimes</td>
<td>13</td>
<td>12</td>
<td>(3) Never</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(3) None</td>
<td>0</td>
<td>3</td>
<td>(4) Sometimes</td>
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<td>1</td>
<td>(12) 2</td>
<td>8</td>
<td>4</td>
<td>(19) 3</td>
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<td>10</td>
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<td>(14) Always</td>
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<td>7</td>
<td>(18) Sometimes</td>
<td>9</td>
<td>9</td>
<td>(6) Never</td>
<td>4</td>
<td>2</td>
<td></td>
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<tr>
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<td>14</td>
<td>(8) Sometimes</td>
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Table 4
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<th>G</th>
<th># Responses</th>
<th>B</th>
<th>G</th>
<th># Responses</th>
<th>B</th>
<th>G</th>
<th># Responses</th>
<th>B</th>
<th>G</th>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>1</td>
<td>(29) Sometimes</td>
<td>13</td>
<td>16</td>
<td>(2) Never</td>
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<td>0</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>0</td>
<td>(4)</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>(15)</td>
<td>2</td>
<td>5</td>
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<td>15</td>
<td>13</td>
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<td>(26) Sometimes</td>
<td>14</td>
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<td>(3) Never</td>
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<td>2</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>0</td>
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<td>5</td>
<td>(21)</td>
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<td>10</td>
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<td>9</td>
<td>(14) Always</td>
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<td>5</td>
<td>(23) Sometimes</td>
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<td>12</td>
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</tr>
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<td>(7) Sometimes</td>
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<td></td>
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</table>
Table 5

Number of Responses of Pre-Test and Post-Test Reading Survey Results as they Coincide with Study Objective 1

<table>
<thead>
<tr>
<th>Study Obj</th>
<th>Survey Question</th>
<th># Responses</th>
<th>Pre</th>
<th>Post</th>
<th>Net Gain/Loss</th>
<th># Responses</th>
<th>Pre</th>
<th>Post</th>
<th>Net Gain/Loss</th>
<th># Responses</th>
<th>Pre</th>
<th>Post</th>
<th>Net Gain/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
<td>2, 1</td>
<td>-1</td>
<td>1</td>
<td></td>
<td>3, 4</td>
<td>+1</td>
<td>2</td>
<td></td>
<td>12</td>
<td>15</td>
<td>+3</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Never</td>
<td>0, 0</td>
<td>0</td>
<td>Sometimes</td>
<td>10, 14</td>
<td>+4</td>
<td>Always</td>
<td>28</td>
<td>24</td>
<td>-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
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<td>-3</td>
<td>1</td>
<td></td>
<td>4, 6</td>
<td>+2</td>
<td>2</td>
<td></td>
<td>12</td>
<td>11</td>
<td>-1</td>
<td>3</td>
</tr>
</tbody>
</table>
The results of responses to Question 3 (referencing the number of books students checked out from the library on a weekly basis) had a slight increase as indicated in the number of post-test responses as compared to the number of pre-test responses. For example, students who took out one book per week went from 3 students on the pre-test to 4 students on the post-test and students who checked out 2 books per week went from 12 students on the pre-test to 15 students on the post-test.

The comparison of the pre-test and post-test responses for Question 5 regarding students frequency of checking out a book when they visited the library were fairly consistent in the “always” with a difference of four responses and “sometimes” with an increase of four responses for both the pre-test and post-test and zero responses for “never”.

The responses of students on Question 8 (the number of books read in a two-week period) showed an increase in the post-test response. For example, reading one book in a two-week period went from 4 students on the pre-test to 6 students on the post-test and the responses of reading 3 books in a two-week period went from 19 responses on the pre-test to 21 responses on the post-test. Therefore, after the 12-week period students' frequency of reading tended to increase based on the overall responses of the post-test survey results.

Objective Two

Objective 2 of this study was to examine in a library setting students' reading choices and reading habits while using the AR program. The responses from Questions 2, 6, 7, 9 and 10 in (see Table 6) of the pre-test and post-test reading responses survey were used to evaluate results for objective 2.
Table 6

Number of Responses of Pre-Test and Post-Test Reading Survey Results as they Coincided with Study Objective 2

<table>
<thead>
<tr>
<th>Study Obj</th>
<th>Survey Question</th>
<th># Responses</th>
<th>Pre</th>
<th>Post</th>
<th>Net Gain/Loss</th>
<th># Responses</th>
<th>Pre</th>
<th>Post</th>
<th>Net Gain/Loss</th>
<th># Responses</th>
<th>Pre</th>
<th>Post</th>
<th>Net Gain/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Always</td>
<td>12</td>
<td>7</td>
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<td>-5</td>
<td>Sometimes</td>
<td>21</td>
<td>29</td>
<td>+8</td>
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<td>5</td>
<td>2</td>
<td>-3</td>
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<td>6</td>
<td>Always</td>
<td>3</td>
<td>10</td>
<td></td>
<td>+7</td>
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<td>30</td>
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<td>Never</td>
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<td>Never</td>
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<td>0</td>
<td>-4</td>
</tr>
</tbody>
</table>
An overall analysis of students’ responses to their reading choices and reading habits while using the AR program were more favorable in the post-test responses as compared with the pre-test responses. For example, Question 10 asked students to respond to whether they liked the AR program. Responses for this question went from 4 “never” responses in the pre-test to zero “never” responses in the post-test and 26 “always” responses in the pre-test to 31 “always” responses in the post-test. In comparing the pre-test and post-test responses, students’ reading choices and reading habits were more positively influenced by using the AR program.

Objective Three

Objective 3 of this study was to evaluate changes in reading frequency using the variable of gender and reading levels. The responses for Questions 1 of the pre-test elicited responses for students’ frequency to acquire books while the responses for Question 4 elicited students’ frequency to share books.

The responses for question 1 of the pre-test (see Table 7) reflected a combined score of 19 boys who responded to having purchased books at the book fair either “always” or “sometimes”, while 17 girls responded as having “always” or “sometimes” purchased books at the book fair. One boy and one girl responded to “never” having purchased a book at the book fair. Gender did not play a decided role in students’ choice to buy books as both girls and boys favored purchasing books to read from the book fair.

The responses to Question 4 (see Table 7) (referencing how frequently students shared books with their friends) resulted in similar numbers of boys (14) and girls (13)
“sometimes” sharing books with their friends. Again gender did not play a role in determining whether students share books.

Table 7

Number of Responses and Gender of Pre-Test Reading Survey Results as they Coincided with Study Objective 3

<table>
<thead>
<tr>
<th>Study Obj.</th>
<th>Survey Question</th>
<th>Number of Responses and Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>Sometimes</td>
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</tr>
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<td></td>
<td>Nervous</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Always</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 8

Number of Responses and Gender of Post-Test Reading Survey Results as they Coincided with Study Objective 3

<table>
<thead>
<tr>
<th>Study Obj.</th>
<th>Survey Question</th>
<th>Number of Responses and Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>(38) Yes</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>(37) Yes</td>
<td>21</td>
</tr>
</tbody>
</table>

In evaluating the results of reading frequency using the variable of gender, boys tended to buy and share only slightly more books as compared with female results. This higher number of responses for boys maybe attributed to the larger number of boys in both fourth-grade classes.
In Question 1 (see Table 8) of the post-test, 21 boys and 17 girls responded that their reading ability at the time of the post-test was better than their reading ability at the beginning of the year. In Question 4 (see Table 8) of the post-test, the 21 boys and 16 girls responded overwhelmingly that the AR program helped them to be better readers. Of the 38 students in this study only one girl felt that the AR program did not help her to be a better reader. In general students’ responses reflected a positive influence to using the AR program and in increasing their reading frequency.

The reading level scores for fourth-grade students as provided by their classroom teachers at the time of the pre-test and post-test administration are presented in Table 9. The mean reading level of the 38 students at the time of the pre-test was 3.67, which equates to a reading level of a third grade student in their sixth month of the school year. At the time of the post-test administration, the reading level had increased to a mean score of 3.97, which equates to the reading level of a third grade student in almost the tenth month of the school year. There was an increase of .3 in the mean or 3 months of reading level growth following the post-test administration.

The book level average for the 38 fourth-graders was also documented at the time of the administration of the pre-test and post-test surveys by the AR Diagnostic Report. The AR Diagnostic Reports display the number of students at each of the respective book level averages as shown in Table 10. The mean score of the book level average of 3.44 (third grade at the fourth month) at the time of the pre-test increased by .28 months to a mean score of 3.72 or third grade in the seventh month. As represented in Tables 9 and
10, students reading levels and book levels showed increases after the 12-week period of study having used the AR program.

Table 9
Pre-Test and Post-Test Reading Levels for Fourth-Grade Students as Determined by Fourth-Grade Teachers

<table>
<thead>
<tr>
<th>No. of Students</th>
<th>Reading Level</th>
<th>No. of Students</th>
<th>Reading Level</th>
</tr>
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<tbody>
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<td>2.0</td>
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<td>3.5</td>
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<tr>
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<td></td>
<td>2</td>
<td>5.0</td>
</tr>
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<td>Mean= 3.67</td>
<td>Total = 38</td>
<td>Mean= 3.97</td>
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Table 10
Pre-Test and Post-Test AR Diagnostic Report of
Book Level Average for Fourth-Grade Students

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<th>No. of Students</th>
<th>Book Level Aver.</th>
<th>No. of Students</th>
<th>Book Level Aver.</th>
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<td>3.3</td>
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<td>Mean = 3.44</td>
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<td>Mean = 3.72</td>
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</table>
CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The purpose of this research study was to determine if participation in the Accelerated Reader (AR) program affected the reading habits and reading frequency of fourth grade students. The effectiveness of this program in terms of reading frequency was measured and reported to help justify the continuation of investing time and resources into the AR program at the Folsom School in Folsom, NJ.

This study involved two classes of fourth grade students over a period of 12 weeks and used a pre-test-post-test survey to measure reading frequency and reading habits. A total of 45 students were given consent forms. There were 38 students who responded and participated in the study. The seven remaining students did not return the consent form and were therefore not included in the study.

The researcher in this study felt that the students answered the questionnaires truthfully and this was reflected throughout the survey. The fourth-grade classes seemed to have an overall positive attitude about reading and the AR program as evidenced by the comparisons of the pre-test and post-test results.

Results of the pre-test and post-test indicated that the AR program increased the reading frequencies of students in the fourth grade. In addition, the reading habits and choices increase was slightly higher for boys than for girls.
A review of the AR Diagnostic Reports of the fourth-grade students’ reading level averages and reading levels assessed by classroom teachers indicated increases on both measures. Responses to the reading survey also indicated increased frequency in reading habits following the 12-week study. Students’ perceptions of their reading ability were positively effected by the AR program as reported by the post-test survey responses.

Conclusions

This research focused on a small group of fourth-grade students. Few researchers have looked at early elementary students’ use of the Accelerated Reader. Consequently, very little data exists in other studies to support the implementation of the AR program with young students. Most studies have looked at middle school students, perhaps because it is during the middle school years that reading for pleasure has been shown to decline (Facemire, 2000). This study has contributed to the knowledge and database for elementary students using the AR program and it is hoped that this research can be extended to even younger readers in a wider study of the effects of the AR on reading habits and reading frequency.

The original problem of determining the effects of the AR program on the reading habits and reading frequency of fourth graders prompts researchers to conduct further research with the AR program. This study involved a small number (38) of students. It would be recommended to conduct a similar study with a larger population of students.
Recommendations for Further Study

It is recommended that further research address reading habits and reading frequency in groups of students who use the AR program as compared with the reading habits and reading frequency of students who do not use the AR program. Student population could be used in multiple school districts that use or do not use the AR program.

Further study is also needed to address the importance of how the AR program is used with students of all grade levels. There is some evidence that how the AR program is implemented is more important than if it is implemented (Topping, 1999), but research is lacking in this area.

The researcher would like to follow up on this research by randomly choosing students who participated in the survey and interview them further on how they feel their reading has changed with the use of the AR program.
REFERENCE LIST


Dear Parents/Guardian:

As the Media Specialist at Folsom School I am pursuing a Master’s degree in School and Public Librarianship at Rowan University. I would like to conduct research with students in the 4th grade library class.

I am requesting your permission to allow your child to participate in a study of behaviors toward reading. Each child in the study will be asked to complete a reading behavior questionnaire at the beginning and end of the study. The time required for the pretest and posttest combined would be approximately 20 minutes.

The data collected will be kept confidential and will not be reported in a manner that personally identifies the participants. Any specific information concerning your child will be destroyed within 30 days of the completion of this study.

You may choose to not allow your child to participate in this study or you may decide to withdraw your child at a later date. No child will be penalized for not participating or withdrawing from the study. Please sign and return the form below for permission to be given or denied for your child to participate in this study.

Please feel free to contact me with any and all questions regarding this study. You may contact me at (609) 561-8666, extension 123.

Thank you in advance for your cooperation in this matter.

Sincerely,

Mrs. Wendt
Media Specialist

I have read and understood the above information and agree/do not agree to allow my child to participate in this study. My child has also read the consent form and agrees/does not agree to participate in this study.

Date Signature of Parent/Guardian Signature of Student
Reading Survey

Directions: This is a survey to find out about your reading habits. The scores will not affect your grade in any way. Read each question below and circle one response for each question. (Pretest)

1. You like to buy books at the Book Fair.
   a. always      b. sometimes      c. never

2. You like to read books by your favorite authors.
   a. always      b. sometimes      c. never

3. How many books have you checked out from the library this week?
   a. none b. 1 c. 2 d. 3

4. You like to share books with your friends.
   a. always      b. sometimes      c. never

5. You usually checkout a book when you go to the library.
   a. always      b. sometimes      c. never

6. When you have free time, you use it to read.
   a. always      b. sometimes      c. never

7. You read books that your friends enjoy.
   a. always      b. sometimes      c. never

8. How many books do you read in a two-week period?
   a. none b. 1 c. 2 d. 3

9. I like someone to read to me.
   a. always      b. sometimes      c. never

10. I like the Accelerated Reader program.
    a. always      b. sometimes      c. never
Reading Survey

Directions: This is a survey to find out about your reading habits. The scores will not affect your grade in any way. Read each question below and circle one response for each question. (Posttest)

1. I am a better reader now that I was at the beginning of the year.
   a. yes b. no

2. You like to read books by your favorite authors.
   a. always b. sometimes c. never

3. How many books have you checked out from the library this week?
   a. none b. 1 c. 2 d. 3

4. The Accelerated Reader program has helped me to be a better reader.
   a. yes b. no

5. You usually checkout a book when you go to the library.
   a. always b. sometimes c. never

6. When you have free time, you use it to read.
   a. always b. sometimes c. never

7. You read books that your friends enjoy.
   a. always b. sometimes c. never

8. How many books do you read in a two-week period?
   a. none b. 1 c. 2 d. 3

9. I like someone to read to me.
   a. always b. sometimes c. never

10. I like the Accelerated Reader program.
    a. always b. sometimes c. never