

2008

Determining if the use of certification goals in Accelerated Reader impacts student selection of books

Randy J. Crawford
University of Northern Iowa

Let us know how access to this document benefits you

Copyright ©2008 Randy J. Crawford

Follow this and additional works at: <https://scholarworks.uni.edu/grp>

Recommended Citation

Crawford, Randy J., "Determining if the use of certification goals in Accelerated Reader impacts student selection of books" (2008). *Graduate Research Papers*. 1947.

<https://scholarworks.uni.edu/grp/1947>

This Open Access Graduate Research Paper is brought to you for free and open access by the Student Work at UNI ScholarWorks. It has been accepted for inclusion in Graduate Research Papers by an authorized administrator of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

Offensive Materials Statement: Materials located in UNI ScholarWorks come from a broad range of sources and time periods. Some of these materials may contain offensive stereotypes, ideas, visuals, or language.

Determining if the use of certification goals in Accelerated Reader impacts student selection of books

Find Additional Related Research in UNI ScholarWorks

To find related research in UNI ScholarWorks, go to the collection of [School Library Studies Graduate Research Papers](#) written by students in the [Division of School Library Studies](#), Department of Curriculum and Instruction, College of Education, at the University of Northern Iowa.

Abstract

Current research on Accelerated Reader seems to indicate that the way AR is implemented strongly impacts the success of the program. This study set out to determine how one component of Accelerated Reader – certification goals - affected student's reading scores. Accelerated Reader data from 425 elementary students in Independence, Iowa were examined to determine if certification goals impacted the amount of reading students did as well as the difficulty of the text they selected. Approximately half the students had certification goals assigned while the other half did not. The findings for this study were mixed. Of the four grade levels examined, only the data from grade two rejected both null hypotheses at the .05 level of significance. Second graders who had certification goals assigned read books at a significantly higher reading level and read significantly more books than students in the control group. For grades three, four and five, the null hypotheses were accepted at the .05 level of significance. Students who had certification goals assigned did not select books at a higher reading level nor did they read significantly more AR books than students not assigned certification goals.

Determining if the Use of Certification Goals in Accelerated Reader
Impacts Student Selection of Books

This Graduate Research Paper
Submitted to the
Department of Curriculum and Instruction
Division of School Library Media Studies
in Partial fulfillment of the Requirements for the Degree
Master of Arts

University of Northern Iowa

by

Randy J. Crawford

May 2008

Titled: Determining if the Use of Certification Goals in Accelerated Reader Impacts Student Selection of Books

5-20-2008
Date Approved

5-20-08
Date Approved

6-6-2008
Date Approved

Mary C. Herring

Head, Department of
Curriculum and Instruction

Abstract

Current research on Accelerated Reader seems to indicate that the way AR is implemented strongly impacts the success of the program. This study set out to determine how one component of Accelerated Reader -- certification goals -- affected student's reading scores. Accelerated Reader data from 425 elementary students in Independence, Iowa were examined to determine if certification goals impacted the amount of reading students did as well as the difficulty of the text they selected. Approximately half the students had certification goals assigned while the other half did not. The findings for this study were mixed. Of the four grade levels examined, only the data from grade two rejected both null hypotheses at the .05 level of significance. Second graders who had certification goals assigned read books at a significantly higher reading level and read significantly more books than students in the control group. For grades three, four and five, the null hypotheses were accepted at the .05 level of significance. Students who had certification goals assigned did not select books at a higher reading level nor did they read significantly more AR books than students not assigned certification goals.

Table of Contents

Chapter	Page
1. Introduction.....	1
Hypotheses.....	9
Purpose.....	9
Assumptions.....	9
Limitations.....	10
Definitions.....	10
Significance.....	12
2. Literature Review.....	13
3. Methodology.....	29
4. Data Analysis.....	32
5. Summary, Conclusions, Recommendations	38
Reference List.....	41

Chapter One

Introduction

“The effect of the Accelerated Reader program on the reading comprehension scores of third graders, did provide statistically significant differences that could be attributed to AR”

(Facemire, p. 37)

“The use of the AR program in the control classroom did not make a significant difference in the reading comprehension levels of the students” (Toro, p. 25).

The two quotations above provide a snapshot on the current state of research regarding Accelerated Reader. Early studies touted the program’s ability to motivate students to read and, in turn, to accelerate their reading growth. More recent studies have questioned whether Accelerated Reader (AR) is worthy of such credit. What is clear is that AR, which is installed in over 50,000 schools (Renaissance Learning, 2004, <http://www.renlearn.com/aboutus.htm>) is having an impact on reading education all across the United States. For this reason alone, continued research on Accelerated Reader is warranted.

An initial review of the literature regarding Accelerated Reader has produced a wide range of thoughts and opinions about the program. It seems that for every teacher, librarian and principal who love AR, there are an equal number of critics. Proponents of the program cite increased library circulation, improved test scores and positive feedback from students

and parents as examples of the program's success (Poock, 1998; Librarians, 1999; Howard, 1999; Greer, 2003; Rogers, 2003). Opponents question whether AR is truly responsible for improved test scores and offer concerns that reading for points may actually be decreasing some students love of reading for pleasure (Howard, 2001; Pavonetti, Brimmer & Cipielewski, 2002; Krashen, 2003). Krashen, who is a critic of Accelerated Reader, notes that the program as a whole does show some positive effects, but he argues that two components of AR implementation – increased access to quality literature and increased time for reading practice – are responsible for the gains shown by students (2002). He further argues that no independent research has shown conclusively that taking tests and receiving rewards improves student reading over time. Rogers (2003, p. 34), in response to Krashen, argues that computerized reading management programs, such as AR, are naturally motivating, provide immediate feedback to the user, and offer teachers valuable, accessible data about their students. She further argues that because learning to read is such a complex endeavor, scientifically proving the impact of one educational program on learning is very difficult to do. Further complicating the matter, according to Krashen (2002), is his belief that much of the current research surrounding AR is not independently produced and that it suffers from poor research design. He notes that many studies which claim AR is effective in improving reading were sponsored by Renaissance Learning, the company that publishes AR. He further notes that in almost every study he reviewed, AR was looked at as a whole, with no consideration on what aspects of the program, if any, may have impacted student learning. Krashen is not alone in his criticisms. Poock (1998), Howard (2001) and Everhart (2002) have all identified instances where poor program implementation – using AR for purposes for which it wasn't designed -- may have caused AR to be ineffective. Clearly, the

research into AR is still in its infancy and no clear conclusions about the program's impact on reading have emerged. For school districts considering implementing AR, the evidence does not yet exist that the program will have a significant impact on reading scores or motivation. Conversely, for districts that have already made a significant investment in the program, the evidence does not exist that AR doesn't have an impact on student reading. For this reason, districts that are currently using AR may need to ask different questions than those that are not using the program. For example, can staff training and teacher practice determine if AR is used to its full potential? Facemire (2000), Holmes (2003) and others have shown that AR implementation can differ from school to school and classroom to classroom and that these differences can impact the program's effectiveness. For districts that have AR, it is now less a question of if AR is used but more a question of how it is used.

Renaissance Learning, the company that publishes AR, has developed a series of strategies – Reading Renaissance – to make the program more effective (Getting started, 1999). The company offers extensive training on Reading Renaissance strategies, from one and two-day seminars to week-long onsite staff development (Renaissance Learning, 2004, [http://www.renlearn.com/professional development/default.htm](http://www.renlearn.com/professional%20development/default.htm)). While this training comes with a substantial cost, both the Idaho study (School Renaissance Institute, 1999) and Topping and Fisher (2001) showed that in schools which trained their staffs on Reading Renaissance strategies, students showed more reading growth than those without the training. The results of these studies also indicated that schools that employed even some of the Reading Renaissance techniques scored higher than those which used none. This leads to the question, if schools can use even one Renaissance strategy with their existing AR program, without the added expense of additional staff development, will this positively impact student

reading? This study will look at one such Renaissance strategy – certification goals – to see if employing this technique has any impact on how students perform in AR.

Computerized Reading Management Programs.

Computerized reading management programs are, according to Nancy Everhart, “today’s hi-tech answer to the book report” (1999, p. 18). The most notable programs on the market today are Renaissance Learning’s Accelerated Reader, Scholastic’s Reading Counts (formerly Electronic Bookshelf) and Sylvan’s Book Adventure (Engvail, 1999). The programs all follow the same general premise: a student selects a book to read from a recommended list. Each book is assigned an approximate reading level based on its difficulty and a point value based on its length. The student reads the book then goes to the computer to take a multiple-choice quiz about important facts in the book. The software scores the test, awards the student points based on his or her performance and keeps a record of the results (Everhart, 1999). Each of these programs claims to increase reading motivation yet there is little empirical evidence to support this (Krashen, 2003).

Accelerated Reader.

Accelerated Reader is a computerized reading management system. The program is based on a three-step process. First, a student selects a book to read from the AR reading list. Each book on the list has a point value and a numerical reading level. Students are free to select any book they choose, though Renaissance Learning recommends that students select books in their individual Zone of Proximal Development (ZPD) (Getting started, p. 6-9). This ZPD is an estimated reading range that is designed to challenge students without frustrating them. The student then reads the book he or she has chosen. Finally, the student takes a multiple choice quiz on the computer which is designed to test his or her knowledge

of the book that was read. The software automatically scores the test, calculates how many points the student earned and prints out a summary report. The number of points a student earns is determined by the percentage correct on that quiz. A score of eighty percent on a quiz, for example, would result in the student earning eighty percent of the possible points for that quiz. A student must score at least sixty percent correct to earn any points (Accelerated Reader, 2004).

The estimated reading level for each book is determined by Renaissance Learning using a technique called ATOS, which stands for Advantage TASA Open Standard (Renaissance Learning, <http://www.renlearn.com/uk/ar/atosfaqs.htm>). With this method, the entire text from a given book is electronically scanned into a computer and compared with a database of leveled words. The software then assigns a numerical value to represent that book's level of difficulty. A reading level of 3.5 for example, would be given to a book with a vocabulary that a typical third grader in the fifth month of the school year would be able to read.

The number of points assigned to a book is based on the number of words found in the text. A very short book would be worth as little as one-half point while a very long book such as *Little Women* (Alcott) is worth thirty-four points. A typical beginning chapter book at the first and second-grade level, such as *The Boxcar Children* series (Albert Whitman), is worth one or two points, while a typical chapter book at the upper elementary level, such as *Hatchet* (Paulsen) is worth four to ten points (Accelerated Reader, 2004).

Reading Renaissance.

Reading Renaissance is a set of strategies developed by Renaissance Learning to make AR more effective. Renaissance strategies can be divided into four general categories: extended reading practice, teacher-student interaction, immediate access to relevant data, and reading motivation techniques (Getting started, p. 1).

Renaissance Learning recommends that extensive time be set aside in the school day for reading practice, ranging from thirty minutes in kindergarten to sixty minutes in grades three and up. Students may read independently, with an adult or peer tutor, or in small groups (Getting started, p. 5). Krashen (2003, p. 9) has reported a direct correlation between time spent reading and improved reading scores.

The second strategy involves regular teacher-student interaction. The teacher meets with each student to monitor progress, offer encouragement and intervene when necessary (Getting started, p. 11). To aid in this technique, the AR software can be used to generate a number of reports to summarize the progress of each student.

The third strategy involves immediate data collection and feedback. When a student takes an AR quiz, the software generates a printed report which details how the student performed on that particular test and summarizes how he or she has done over the current grading period as well as the entire school year. At the same time, the program automatically updates the student's reading record, tracking quizzes taken, average reading level, total points, and progress toward goals (Getting started, p. 18). This information can be easily accessed by the teacher.

The final Renaissance strategy involves employing motivational techniques to get students excited about reading (Getting started, p. 27). The AR program has two

motivational components built into the software: point goals and certification goals (Accelerated Reader, 2004). Students accumulate points as they read books and pass quizzes. Teachers may assign point goals, as well as minimum reading level goals for each grade period or for the entire school year. The software automatically tracks and reports how each student is progressing toward his or her individual goals. Point goals generally reflect how much reading a student is doing (Getting started, p. 3).

The teacher may also assign certification goals for each student. These goals are based on very specific reading level and quiz scoring criteria. Certification goals are the focus of this study and are described in detail in the next section.

Certification goals.

The AR program includes an optional set of certification goals which are designed to encourage students to read progressively longer and more difficult books (Getting started, p. 16). The teacher assigns the certification goal for each student and the program tracks each reader's progress. Students must score at least eighty percent correct on a quiz in order for that quiz to apply toward his or her certification goal (Accelerated Reader, 2004). In 2004, Renaissance Learning revised their certification levels, eliminating one and adding two new (Accelerated Reader, 2004). The criteria for the six current certification levels are as follows:

- Ready Reader - reader accumulates five points on books that were read to them or that they read with someone else.
- Rising Reader - reader independently reads three books at the 1.6 reading level or higher and accumulates ten points.
- Super Reader - reader independently reads three books at the 2.0 reading level or higher and that is worth at least one point each.

- Advanced Reader - reader independently reads three books at the 3.0 reading level or higher and that is worth at least two points each.
- Star Reader – reader independently reads three books at the 4.0 reading level or higher and that is worth four or more points each.
- Classic Reader – reader independently reads three books at the 6.0 reading level or higher and that is worth seven or more points each

Once a student has met the criteria for his or her certification goal, the teacher may print out a certificate of achievement for that student. The teacher then sets the next certification goal, either repeating the current goal (Super Reader 2...3...4) or moving the student up to the next level (Advanced Reader). In 2004, approximately one-half of the elementary teachers in the Independence Community School District used certification goals with their students while the other half did not.

Demographics.

The Independence Community School District is located in northeast Iowa. During the 2003-2004 school year the district had 1,504 students in kindergarten through twelfth grade. This population included twenty-nine percent on free/reduced lunch, three percent minority, and thirteen percent special education (Independence Community Schools, 2004, <http://www.independence.k12.ia.us/schoolimprovement/CSIP.html>).

Problem Statement

Assigning certification goals as part of the Accelerated Reader program is designed to increase a student's motivation to read incrementally more difficult and more lengthy books; yet because some teachers do not assign these goals, their student's reading scores may suffer.

Hypotheses

Hypothesis One: There is no difference between elementary students assigned certification goals in Accelerated Reader and elementary students not assigned certification goals in Accelerated Reader in the average reading level of books they read during one school year in a school district in northeast Iowa.

Hypothesis Two: There is no difference between elementary students assigned certification goals in Accelerated Reader and elementary students not assigned certification goals in Accelerated Reader in the amount of reading they do as determined by the number of AR points they earn during one school year in a school district in northeast Iowa.

Purpose Statement

The purpose of this study is to determine whether incorporating one Reading Renaissance strategy -- certification goals -- has any significant impact on student reading. Students who wish to advance through the certification levels must read longer and more challenging books to meet these goals. Students who do not have certification goals assigned do not have this external motivation present and may not choose to read more challenging material. To determine if certification goals do impact student reading, this study will compare the average grade level of books read by students with certification goals and those without.

It will also compare the average points earned between the two groups to see if certification goals motivate students to read more than students without those goals.

Assumptions

- All students in grades two through five in the Independence Community School District participated in the AR program.

- Reading instruction times were consistent throughout each grade level so it was assumed that all students in each grade had similar amounts of time set aside for reading practice.

Limitations

- Because the students were grouped into classes by the building principal, the author had no control over grouping the populations in regard to SES, gender or other variables.
- The author had no control over the amount of reading practice done by each student outside the school setting.
- These were only “Accelerated Reading books” and will not reflect other reading the children may have done.
- The goal of this research was to look at one aspect of implementing AR and Reading Renaissance strategies. No conclusions on the overall effectiveness of AR to motivate students to read or to increase overall reading scores was intended.

Definitions

Achievement tests – Tests used to measure how much a student has learned in various key subjects. Most students take several standardized achievement tests, such as the California Achievement Tests and Iowa Test of Basic Skills. These norm-referenced multiple choice tests are intended to measure students’ achievement in the basic subjects taught in most school districts. (McBrien & Brandt, p. 2)

California Achievement Test (CAT) – see Achievement tests.

Certification goals – a motivational tool built in to AR to encourage a student to read progressively longer and more difficult books. Students must meet specified criteria in order to successfully meet the assigned goal. (Getting Started, p. 6)

Computer-assisted Instruction (CAI) – Refers to educational programs delivered through the use of computers and educational software. (McBrien & Brandt, p. 23)

Grade Equivalent (GE) – A measurement system that converts raw test scores into a numerical school-grade achievement level. Thus, if the average score of students beginning the sixth grade on a test of 100 questions was 70, any score of 70 would be recorded as 6.0 (sixth grade, zero months). (Unger, p. 475)

Iowa Test of Basic Skills (ITBS) – see Achievement tests.

Motivation – Those collective needs and desires that drive an individual to act and, in education, to learn. Intrinsic motivation refers to a student's inner drive to learn while extrinsic motivation is derived from external forces such as rewards and punishments. (Unger, p. 1005)

Reading Level – A broad-based measure of individual reading achievement, valid only when related to the reader's age and the level of difficulty of the material. (Unger, p. 886.) see also Grade Equivalent

Stanford Achievement Test – see Achievement tests.

STAR Reading Test – A 25 question computer-adaptive reading test and database that allows teachers to quickly assess students' reading abilities. The test can be administered up to five times per year and provides an approximation of each students reading ability by grade equivalent, instructional reading level, percentile rank and zone of proximal development. (Plake, Impara & Spies, p 868.).

Zone of Proximal Development (ZPD) – A constructivist learning theory developed by Len Vygotsky which theorizes that children learn through both independent experiences with their environment and social experiences with the culture around them. At the low end of the zone, children are able to think and solve problems independently, while at the upper end of their zone, they collaborate with adults who are more expert in the culture in order to solve problems (Learning Theories A to Z, p. 205). Renaissance Learning has adapted this theory and applied it to Accelerated Reader by stating that all students have a range of reading levels in which they can successfully read independently. At the low end of their zone, students should have very little difficulty with the text, while at the upper end of their zone, students should be challenged without becoming frustrated. Renaissance Learning represents each students ZPD in a numerical format based on the reading level of the text in their zone. For example, a ZPD of 2.5-3.5 would theorize that this student should be able to independently read texts written from a second-grade level, fifth month to a third-grade level, fifth month. (Getting Started, p. 6-7).

Significance

This study will be of importance to schools that use the Accelerated Reader program and those that are considering it. Schools that currently use AR have already made a considerable investment in the program. Software fees, additional quizzes and books and staff training all come at a cost. The early research has shown that mere exposure to AR will not significantly improve students' reading abilities or their motivation to read. The way AR is implemented is critical to the program's overall success. With this in mind, the goal of this study is to broaden the knowledge base concerning effective implementation of the Accelerated Reader program. If it can be shown that assigning certification levels – which is one component of the Renaissance strategies -- improves student reading, school systems will have an inexpensive, easy-to-implement method for increasing the effectiveness of their AR programs.

Chapter 2

Literature Review

“Whatever its advantages, Accelerated Reader is not a substitute for balanced reading instruction. Rather, it is intended as a supplementary and complementary resource – albeit a powerful one under the right circumstances -- that can help the teacher deliver the curriculum effectively. Placing intelligent software in classrooms is not a guarantee it will be used intelligently.”

-- Keith Topping (1999)

Rogers (2003, Computerized) has noted that many complaints about AR stem from poor program administration rather than weaknesses in the software. “A [software program] can be easily misused as can any other reading instructional tool” (p. 13). Krashen (2003) has noted several examples where poor program implementation may have led to faulty research findings. Literature regarding Accelerated Reading to date has focused primarily on reading motivation and scores on standardized tests. Very little research could be found which examines how differing implementations of AR may affect the program’s impact on students. This researcher has observed in his own schools that the administration of AR can vary from teacher to teacher. For example, a major criticism of AR is that when students read exclusively for points, they are likely to select short, easy books in order to take more tests and quickly accumulate points (Lamme, 2003). To combat this, the AR software has certification goals built in which require students to read longer and more difficult material in

order to advance through the various levels (Accelerated Reader). This researcher has observed that in his schools, nearly half of the classroom teachers have chosen not to use the certification component of the program. It has been hypothesized by the researcher that these differing levels of program implementation may impact the selection of books students choose to read.

Assigning certification goals as part of the Accelerated Reader program is designed to increase a student's motivation to read incrementally more difficult and more lengthy books; yet because some teachers do not assign these goals, their student's reading scores may suffer.

The purpose of this study is to determine if incorporating one Reading Renaissance strategy -- certification goals -- has any significant impact on student reading. Students who wish to advance through the certification levels must read longer and more challenging books to meet these goals. Students who do not have certification goals assigned do not have this external motivation present and may not choose to read more challenging titles.

This literature review will examine three areas of research. Part one will describe studies in which Accelerated Reader was shown to have a positive impact on student reading. Part two will include a review of studies in which Accelerated Reader was not shown to have a positive impact on student reading. These two sections will be followed with an analysis on how research design and program implementation can impact research findings. Part three will include an analysis of the research on reading incentive programs; including an examination of the effects computer reading management programs, such as AR, can have on students' motivation to read.

Research about Accelerated Reader

Renaissance Learning, the company that publishes Accelerated Reader lists an impressive number of research reports on their web site that purportedly support the program's effectiveness in increasing students motivation to read and in improving their academic achievement (Renaissance Learning, 2004, <http://research.renlearn.com/readingresearch.asp>). What the company fails to mention is that the majority of these reports were either sponsored by Renaissance Learning or were conducted by individuals with ties to the company (Krashen, 2003). Removing all of these citations from this literature review would severely limit the body of knowledge in this area. Consequently, a number of studies conducted by Renaissance Learning will be included.

Howard (1999) wanted to determine if the level of participation in AR made any difference in the program's effectiveness. She studied upper elementary at-risk students to determine Accelerated Reader's effect on vocabulary, comprehension and student attitude toward recreational reading. Howard sampled 755 third, fourth, and fifth-grade students in seven Title I schools in urban Virginia. She applied a pretest-posttest administration of the Gates-MacGinitie Tests to determine reading vocabulary and comprehension gain scores. She also used the Elementary Reading Attitude Survey to determine student's attitudes toward reading. Howard divided the level of participation with AR into three groups based on the number of points they earned: low participation equaling zero to twenty points; average participation equaling twenty-one to seventy-four points and high participation from seventy-five points or higher. Howard found that while the low-participating students made only .73 years growth in reading comprehension, the average users made 1.52 years growth and the high users made 2.24 years growth (p. 43). Similar results were produced for

vocabulary gains. Low-participating students in all three grades made less than one year's growth in vocabulary, .90 (3rd grade), .73 (4th grade), and .31 (5th grade), while the high-participating students in each grade made gains of .98, 1.21 and 1.08 respectively (p. 45). These results indicate that students who participate more in AR show more growth in reading comprehension and reading vocabulary than students who participate less frequently. Howard also found that student's attitudes toward recreational reading were more positive as their participation in AR increased. The findings from this study indicate again that mere exposure to AR will not produce better readers. Significant reading gains were only apparent in those students who actively and regularly participated in the AR program. A more recent study by Vantuyl (2002) produced similar results.

School Renaissance Institute, which is part of the company that publishes Accelerated Reader, conducted a two-year study with a large number of schools in Idaho to determine if implementing Reading Renaissance strategies along with AR would impact the program's effectiveness (Idaho, 1999; Second-Year, 2000). The company compiled AR and STAR data from over 7,800 students in grade one through nine during year one and from nearly 13,000 students during year two. Fifty schools participated in the study during year one and thirty-seven schools during year two. The level of Reading Renaissance implementation for each school was determined by the number of teachers who had been trained in Renaissance techniques and by the number that had been certified as practicing these techniques with their students. The company found that in schools that implemented Reading Renaissance techniques, students scored higher on the STAR reading test than students in schools using AR without full implementation of Renaissance techniques. In addition, the company found that as the level of implementation increased, so too did the student's reading growth.

Facemire (2000) wanted to determine if Accelerated Reader would affect students' reading comprehension when other reading incentive activities were also in place. Using the STAR Reading test as a measure, she compared the reading growth of 38 third grade students over a nine-week period. Her experimental group of 17 students participated in AR while her control group of 21 students did not. Students in the control group did have access to the same books as the experimental group and participated in the same school-wide reading incentive programs, but did not take AR quizzes. After the nine-week period, all students were administered the STAR test again and the scores were analyzed. Facemire found that students who participated in AR showed significantly more growth than those students who did not participate. Her control group of non-AR users scored at a mean reading level of 3.11 on the STAR pretest and 3.40 on the posttest, a gain of 9 percent (p. 37). The experimental group of AR users scored 2.96 on the pretest and 3.49 on the posttest, a gain of 17 percent (p. 37). Using a t test at the ninety-five percent confidence level, Facemire determined that this difference in gains was statistically significant. It should be noted that the STAR test is published by Renaissance Learning, the same company that publishes AR. Facemire did note that the experimental group's classroom teacher was trained in using AR and that very specific criteria were followed as to the program's implementation (p. 33). She determined that while experience with AR does effect student's reading comprehension, the way the program is administered is critically important to the program's success.

Early research into AR has produced mixed results as to the program's effectiveness in improving students' reading abilities and motivation to read. We have learned that mere exposure to the program will not lead to better readers. Proper training and implementation can have a significant impact on how effective AR can be. Renaissance Learning has

produced a series of strategies and techniques called Reading Renaissance that it recommends all users of AR follow (Getting Started, 1999). Many recent studies have begun to investigate whether these strategies do indeed impact AR's effectiveness in improving student's reading.

Research Which Does Not Support Accelerated Reader.

Mathis (1996) wanted to determine if using AR would impact student's reading comprehension scores on a standardized test. Using the Stanford Achievement Test (SAT) as a measure, he analyzed the reading scores of thirty rural Illinois students from their fourth, fifth and sixth-grade tests. He then compared the reading growth of these students from fourth to fifth-grade, before they were exposed to AR, with their growth from fifth to sixth grade, after one year of experience with AR. The average gain between tests when the students were not exposed to AR was .27, while the average gain for students after exposure to AR was .53. Mathis employed a t test at the .05 level of confidence to determine if this gain was significant. He found no significant difference between the two samples and determined that simple exposure to AR does not have an impact on student's reading comprehension.

Toro (2001) wanted to determine if the receiving of points or rewards had any impact in student reading levels. She hypothesized that there would be no significant difference in the reading levels of students who experienced Accelerated Reader and those who experienced independent reading without AR. Toro compared two groups of second grade students over a six-week period. Group A consisted of 20 students, while group B contained 16 (p. 20). The students were all from middle to upper class backgrounds attending a private, Christian school. The population was 97 percent white (p. 20). Students in group A

participated in AR by reading books off the AR program list, taking tests on each book, and accumulating points. Students in group B were required to read for thirty minutes per night but were allowed to read any book they wished. These students did not take quizzes over the books they read. At the conclusion of the six weeks, each student was given the Stanford Achievement Test (SAT) in order to measure reading growth over time. The researcher used an independent t-test at the .05 level of confidence to determine if there was any difference in the average reading scores for each group on the SAT. The mean for the AR group was 77.9, while the mean for the non-AR group was 75.375 (p. 23). The researcher determined that this slight difference was not significant at the .05 level of confidence. Toro concluded that the use of Accelerated Reader did not affect reading levels any more than independent reading alone. This researcher has a number of criticisms with the Toro study. First, the six-week time frame was a very short period to see results. Rogers (2003) has argued that any reading program needs to be in place for at least one school year in order to measure effectiveness. Second, the number of participants in this study -- 36 -- was very small. A larger sample size may have produced different results. Finally, Toro determined that AR produced no difference in reading growth by comparing the two group's SAT scores at the end of the study. Toro failed, however, to pretest the students with the SAT to get a baseline for the two groups. A pretest may have shown that there was a significant difference in the reading levels between the groups before the study began.

One of the few studies that investigated Accelerated Reader's long term effect on students was conducted by researchers at Michigan's Oakland University (Pavonetti, Brimmer & Ciplewski, 2002). Pavonetti and her colleagues questioned Renaissance Learning promotional material which promises that Accelerated Reader will produce life-

long love of reading in students (Renaissance Learning, 2004, <http://www.renlearn.com/ar/default.htm>). The researchers surveyed 1,536 seventh grade students from three suburban and exurban school districts to determine if students who used AR in elementary school read more in middle school than students who did not use AR in their elementary years (p. 303). The students were first divided into two groups, the AR group (n = 836) and the non-AR group (n = 700) (p. 310). A t-test was then used to determine that there was no significant difference between the two groups average reading levels. The researchers then conducted a 25-item Title Recognition Test (TRT) with each student to gauge how much independent reading that student does (p. 304). Each TRT questionnaire contained a list of phrases. Some of the phrases were actual book titles while some were foils – phrases that were not book titles. Students were asked to put a check beside each title that they recognized. Guessing was discouraged. The actual titles included on the list were books that the researchers felt were likely to be independently read by most middle school students and young adults. Following the survey, the number of target items checked was recorded as well as the number of foils selected. Scoring was done by subtracting the proportion of foils selected from the proportion of target items selected. A t-test was administered at the .001 level of confidence to determine if there was a significant difference between the two groups. Pavonetti and her colleagues concluded that there was no significant difference in the amount of independent reading between students who had used AR in elementary and those that did not.

Sandusky and Brem (2002) conducted a longitudinal study to determine if implementing Reading Renaissance along with AR would influence student's reading scores on the SAT9 standardized test. This study reviewed AR reading scores, STAR test scores

and SAT9 reading test scores from 1997 to 2001 at two urban Title I schools in Arizona. The researchers also surveyed students, teachers and parents to gauge their attitudes and impressions of AR and Reading Renaissance. To determine the level of program implementation, reading specialists and librarians were interviewed (p. 4). School A, the experimental group in this study, adopted Reading Renaissance as a school-wide reading program to complement AR while School B, the control group, used AR without the Renaissance training. Both schools had used AR for at least three years (p. 5).

The two schools selected for this study were both Title I schools in urban settings. School A had an enrollment of 625 students, with 36% qualifying for free or reduced lunch (p. 4). School B had an enrollment of 617 students, with 18% qualifying for free or reduced lunch (p. 5). Sandusky and Brem found that although both schools were similar in demographics and curriculum, the school that implemented Reading Renaissance strategies showed significantly more growth on the SAT9 tests than the school that did not use Reading Renaissance.

Reading Incentive Programs

Reading incentives, or reading for pay, are programs which are put in place to encourage students to read more (Fawson & Moore, 1999). These programs are often based on extrinsic rewards such as food, money or points (p. 326). In recent years, researchers have begun to ask if external rewards can indeed increase intrinsic motivation (Kohn, 1999). This section of the literature review will first examine the research regarding extrinsic rewards on intrinsic motivation in general. It will then look at how extrinsic rewards can impact students motivation to read in particular. A discussion of computerized reading incentive programs, such as Accelerated Reader will follow.

Extrinsic rewards on intrinsic motivation.

In 1999, Deci and his colleagues conducted a meta-analysis of research on extrinsic motivation (Deci, Koestner & Ryan). These researchers examined 128 studies that were conducted between 1971 and 1997 as well as four previous meta-analyses (p. 632). The researchers used a hierarchical approach, based on current issues in the field, to divide the studies into two groups. The first group consisted of well-controlled experiments that used free-choice as the dependent measure of intrinsic motivation. The second group consisted of well-controlled experiments that used self-reported interest as the dependent variable. The team then looked at types of reward systems that were used in each study, such as verbal versus tangible, expected versus unexpected, and completion-contingent versus performance-contingent (p. 634). Only studies in which the task to be completed was considered “interesting” by the researchers were included in the meta-analysis. The primary meta-analyses showed that 100 studies included a free-choice measure while 84 studies included a self-report measure (p. 638). The researchers then looked at how different reward systems affected each of the two groups. The study showed that verbal rewards did enhance intrinsic motivation for both free-choice behavior and self-reported interest, but only with college-age students, not with children. Conversely, the researchers found that tangible rewards actually decreased intrinsic motivation in both the free-choice and self-reported interest groups. This was especially true when the reward was expected (p. 640). Deci and his colleagues concluded that tangible rewards do not increase -- and can often decrease -- intrinsic motivation for engaging in interesting tasks.

Extrinsic rewards on reading motivation.

McQuillan (1997) conducted an analysis of the available empirical research on the effectiveness of reading incentives in school and library programs. McQuillan examined ten studies on reading incentives for elementary or secondary students that were designed to promote one or more of the following areas: reading proficiency, reading habits, and attitudes toward reading. A statistical meta-analysis of the results was not possible due to insufficient information from each study. McQuillan divided the studies into two groups: those with positive findings (n=5) and those with negative findings (n=5). In each of the five studies that seemed to support reading incentives, the author found “confounding factors which provide plausible alternative explanations for their results” (p. 115). In one study, McQuillan argued that incorrect statistical procedures were used which would provide inaccurate results. In the four other studies, the researchers all failed to isolate factors which are known to increase student reading: access to books, modeling by adults, allotting time for reading (p. 116). McQuillan argued that failure to isolate these variables made it unclear which factors actually impacted the results, the incentives or the other treatments. McQuillan concluded that none of the studies he examined showed any clearly positive effect on reading comprehension, vocabulary or reading habits that could be attributed solely to the use of rewards or incentives (p. 118). These findings, while focused specifically on reading, are not surprising in light of Deci, Koestner & Ryan’s conclusions about extrinsic rewards on intrinsic motivation. The act of reading is considered an enjoyable act in and of itself (Lamme, 2003), so the use of extrinsic rewards to increase reading motivation is likely to fail. So why do so many schools continue to use them?

Fawson and Moore (1999) surveyed principals and teachers in five large metropolitan schools in the southwestern United States to determine how reading incentive programs were being administered in their schools. The study focused on four main concerns: the degree to which reading incentives are used; reasons for using reading incentives; criteria employed to determine successful completion of the reading goals; and perceptions of long-term and short-term effects. Questionnaires were distributed to all building principals and all elementary classroom teachers in 10 percent of the schools in the five districts (p. 329). Additional questionnaires were distributed to a random sample of parents. No mention is made as to the total number of participants in this study. The authors found that 100 percent of the principals and ninety-five percent of the teachers responded that reading incentive programs are used in their schools and classrooms. The primary reasons given for using incentives were to encourage students to read more and to encourage positive attitudes toward reading. The most-used criteria for determining successful completion of the goals were number of minutes read, number of books read and number of pages read. Finally, the authors found that only four percent of teachers and six percent of administrators admitted concerns about long-term efficacy of incentive programs on students, yet 20 percent of the parents showed concerns. This study is important because it highlights the wide-spread use of a practice which is not supported by empirical research.

Edmunds & Tancock (2003) wanted to determine if the reading motivation of fourth graders would be affected by the following incentives: no tangible incentives; tangible incentives that were not reading related such as pencils, folders and food; and tangible incentives that were reading related, such as books. The study was conducted over 19 weeks (p. 23) at an elementary school in a mid-sized city in the southern United States. Ninety-one

fourth grade students from six different classes participated in the study (p. 17). The students were first divided into three groups: a control group which received no incentives and two treatment groups. The control group consisted of 28 students, 10 male and 18 female (p. 21). The first treatment group received non-reading related tangible objects as incentives. This group consisted of 36 students, 18 male and 18 female (p. 20). The second treatment group received books as incentives. This group consisted of 26 students, 18 male and 8 female (p. 21). Both treatment groups used a tiered point system to earn progressively more valuable rewards. Reading motivation was measured by the number of books read, parent perceptions on a parent survey, and student's responses on the Reading Survey from the Motivation to Read Profile. Both the parent and the student surveys were administered at the beginning and the end of the study. All students maintained a reading log to keep track of the number of books they read. The researchers used a Multiple Analysis of Variance (MANOVA) to analyze both the student and parent surveys. The analyses showed that there were no significant differences between treatment groups on either survey. The researchers concluded that tangible incentives, whether reading related or not, had no effect on the student's value of reading, self-concept as readers or total reading motivation. A one-way analysis of variance (ANOVA) was used to determine if there were any significant differences between groups in the number of books read. The analysis of this data showed that again, tangible incentives had no significant impact on the amount of reading done by students as measured by the number of books read. The researchers concluded that while reading incentives seemed to have no positive impact on students' intrinsic motivation to read, these incentives seemed to have no negative impact as well.

Summary

The purpose of this literature review was to investigate trends in research on Accelerated Reader and to highlight issues that can impact the program's success or failure. At this time, there is no clear picture on how Accelerated Reader can affect a school's overall reading program. The literature does, however, provide some clues on AR's strengths and weaknesses and how it can best be used to help students.

The first conclusion that can be drawn from reviewing the literature is that mere exposure to Accelerated Reader will not lead to better readers. Mathis (1996) and Toro (2001) both found that exposing students to AR did not increase reading comprehension or vocabulary scores on standardized tests. Pavonetti, Brimmer and Cipielewski (2002) showed that exposing students to AR in elementary grades did not lead to better readers in middle school.

The second conclusion that can be drawn from the literature is that Accelerated Reader seems to be more effective when it is implemented properly. Howard (1999), School Renaissance Institute (1999, 2000), and Facemire (2000) each found that when recommended practices were followed, Accelerated Reader produced positive results in student reading. Specific components of the AR program, such as increased time for reading practice, exposure to quality literature, and immediate feedback of results, have all been shown to increase student reading (Krashen, 2002; Rogers, 2003).

The final conclusions that can be drawn from the literature is that extrinsic motivators seem to have little or no long-term positive effects on student reading (Kohn, 1999; Deci, 1999). External rewards, such as the points used in AR may motivate some students to read more as long as the rewards are in place; but once the rewards are removed, students are

likely to revert to old habits (Kohn, 1999; Pavonetti, Brimmer, Cipielewski, 2002). A second concern with rewards is that students who read for points may select short, easy books in order to accumulate a lot of points with no regard to the book's quality or reading level (Lamme, 2003).

With these conclusions in mind, a number of questions become apparent. First, for the thousands of schools that currently use Accelerated Reader (Renaissance Learning, 2004, <http://www.renlearn.com/aboutus.htm>), the question is not whether to use the program, but how to use AR most effectively. This literature review has shown that implementation of AR can vary greatly from school to school and classroom to classroom. Those customers that follow recommended procedures for implementing AR are much more successful with the program than those that do not (Howard, 1999; School Renaissance Institute, 1999, 2000; and Facemire, 2000). Yet which of these recommended practices is most important? Do they all need to be followed or are some more crucial than others? This researcher was unable to locate any studies which isolated the recommended procedures to see which were most effective. Second, the use of extrinsic motivators (points) in AR may lead some readers to read more books than they otherwise would (Lamme, 2003), yet points alone do not detail the difficulty of the text being read. Can the use of certification levels in AR motivate students to read more challenging material than they would on their own? This researcher was again unable to locate any studies that isolated the use of this recommended practice. In this researcher's own schools, approximately fifty percent of the teachers who used AR implemented certification goals with their students while the other fifty percent did not. As this literature review has shown, proper implementation is key to a successful Accelerated Reader program. Will the students who have certification goals assigned read at a higher

level than their peers who do not have these goals assigned? This study will attempt to address these questions.

Chapter 3

Methodology

Assigning certification goals as part of the Accelerated Reader program is designed to increase a student's motivation to read incrementally more difficult and lengthier books; yet because some teachers do not assign these goals, their students' reading scores may suffer.

The purpose of this study was to determine if incorporating one Reading Renaissance strategy -- certification goals -- had any significant impact on student reading. Students who wish to advance through the certification levels must read longer and more challenging books to meet these goals. Students who do not have certification goals assigned do not have this external motivation present and may not choose to read more challenging titles.

Research Design

This research utilized a quasi-experimental design. Like a true experimental design, this study compared two groups -- a control group and an experimental group -- it conducted one intervention, and it tested a dependent variable (Creswell, p. 330). Unlike, a true experimental design, the researcher in this study could not randomly assign participants. Students were assigned to their respective classes by the school principal and individual teachers determined whether or not to assign certification goals with their students.

Population

The population for this research included approximately 440 students in grades two through five in the Independence Community School District, which is located in northeast Iowa. This population included approximately 100 second grade student at East Elementary

in Independence, 300 third, fourth and fifth grade students at West Elementary in Independence, and 40 second, third, fourth and fifth grade students at South Elementary in Rowley.

Students were selected for this research based on their participation in Accelerated Reader during the 2003-2004 school year. Nearly every student in grades two through five was enrolled in AR for the entire academic year. To control for students moving into and out of the district, only those students who were enrolled in AR for 120 days or more (two grading periods) were selected for this study.

Students in each grade were divided into a control group and an experimental group. Students in the experimental group were those who participated in AR and had certification goals assigned during the school year while those in the control group were students who participated in AR but did not have certification goals assigned. An initial investigation by the author to determine the need for this study found that approximately half of the 17 teachers in grades two through five assigned certification goals with their students.

Findings for this study came from data that were collected in the Accelerated Reader and STAR Reader programs throughout the 2003-2004 school year. Students took an initial STAR test in August during the first week of school, and began taking AR quizzes on the first day of school. Students must have participated in AR for at least 120 days of the school year for their data to be included in this study.

Data Gathering Instruments

- Accelerated Reader data. Student Record reports were gathered for all students to determine their participation in the AR program for the 2003-2004 school year. These reports showed the number of books read and the average reading level for all books read.

Certification reports showed which certification levels each student was assigned. This report was used to divide the students into control and experimental groups.

- STAR data. In order to compare the beginning reading levels of the control and experimental groups, STAR pretest scores were used. The Student Summary report listed the approximate Grade Equivalent (GE) for each student. A t-test was used to determine if the average GE for each grade's control and experimental groups were significantly different.

Procedures

Before collecting data, the author completed a Human Participants Protection course and filed the required documentation with the university. The author then determined which students fit into the control and experimental groups for each participating grade by printing out the Certification Records report in the Accelerated Reader program. A print out of the Student Summary report from STAR was used to determine the average beginning Grade Equivalent (GE) for each second grade student in the control group and each second grade student in the experimental group at the beginning of the school year. This was repeated for each student in grades three, four and five. The author then compiled this data and compared the means of the two groups in each grade using a t-test.

At the end of the school year, a print out of the Student Diagnostic report from AR was run for each control group and each experimental group. Data from these reports showed the number of points students earned as well as the average reading level of the books that were read. The author then compiled and analyzed data from the above reports to determine if there was a significant difference in the reading level and points earned between the control group and experimental group in each grade.

Chapter 4

Data Analysis

Assigning certification goals as part of the Accelerated Reader program is designed to increase a student's motivation to read incrementally more difficult and lengthier books; yet because some teachers do not assign these goals, their student's reading scores may suffer.

The purpose of this study was to determine if incorporating one Reading Renaissance strategy -- certification goals -- had any significant impact on student reading. Students who wish to advance through the certification levels must read longer and more challenging books to meet these goals. Students who do not have certification goals assigned do not have this external motivation present and may not choose to read more challenging titles.

The first hypothesis stated that there would be no difference between elementary students assigned certification goals in Accelerated Reader and elementary students not assigned certification goals in Accelerated Reader in the average reading level of books they read during one school year in a school district in northeast Iowa. To determine if this were true, the students in each grade were divided into two groups, a control group that did not have certification levels assigned and a test group that did have certification levels assigned. To insure that each groups' reading levels were not significantly different at the beginning of the study, STAR test data were compiled and analyzed. Using a t-test at the .05 level, the author found no significant difference between the beginning reading level of the control group and the test group at each of the four grade levels included in this study. Results of this analysis are shown in Tables 1 – 4.

Table 1: Comparison of STAR tests for the control and test groups for grade 5.

	Mean RL	SD	N
Control	5.551	1.639	37
Test	5.417	2.216	66

$t = .336$, $df = 101$

table value: $t = 1.984$ at $.05$, $df = 101$

Table 2: Comparison of STAR tests for the control and test groups for grade 4.

	Mean RL	SD	N
Control	4.345	1.71	71
Test	4.575	1.53	28

$t = .620$, $df = 97$

table value: $t = 1.985$ at $.05$, $df = 97$

Table 3: Comparison of STAR tests for the control and test groups for grade 3.

	Mean RL	SD	N
Control	3.294	1.998	16
Test	3.065	1.204	79

$t = .613$, $df = 93$

table value: $t = 1.986$ at $.05$, $df = 93$

Table 4: Comparison of STAR tests for the control and test groups for grade 2.

	Mean RL	SD	N
Control	2.232	1.207	47
Test	2.377	1.131	30

$t = .526$, $df = 75$

table value: $t = 1.992$ at $.05$, $df = 75$

At the end of the school year, a Diagnostic Report was run in Accelerated Reader for each class. These reports summarized the number of points each student earned during the school year as well as the average reading level of the books that were read. To determine whether there was any significant difference between the reading levels of the control group and the test group, the data were analyzed using a t-test at the $.05$ level. For grades four and

five, the author found no significant difference between the control and test groups. Results of this analysis are shown in Table 5 and Table 6.

Table 5: Comparison of average reading levels of book read for the control and test groups for grade 5.

	Mean	SD	N	
Control		5.03	0.676	37
Test		4.79	0.632	66

$t = 1.828$, $df = 101$

table value: $t = 1.984$ at $.05$, $df = 101$

Table 6: Comparison of average reading levels of book read for the control and test groups for grade 4.

	Mean	SD	N	
Control		4.64	0.380	71
Test		4.79	0.437	28

$t = 1.718$, $df = 97$

table value: $t = 1.985$ at $.05$, $df = 97$

These tests showed that for grades four and five the null hypothesis was accepted.

There was no significant difference in the average reading level between those students assigned certification goals and those student not assigned certification goals.

For grade three, the author found that there was a significant difference between the control group and the test group. However, the students in the control group scored significantly higher at the $.05$ level than students in the test group. The results of this analysis are shown in Table 7.

Table 7: Comparison of average reading levels of book read for the control and test groups for grade 3.

	Mean	SD	N	
Control		4.36	0.664	16
Test		3.85	0.527	79

$t = 3.395$, $df = 93$

table value: $t = 1.986$ at $.05$, $df = 93$

The results of this test showed that for grade three, the null hypothesis was again accepted. The students assigned certification goals did not read at a higher level than students not assigned certification levels. In fact, those students assigned certification goals actually scored significantly lower at the $.05$ level than students not assigned certification goals.

For grade two, the author found that there was a significant difference between the control group and the test group at the $.05$ level. The results of this test are shown in Table 8.

Table 8: Comparison of average reading levels of book read for the control and test groups for grade 2.

	Mean	SD	N	
Control		2.60	0.748	47
Test		3.22	0.718	30

$t = 3.576$, $df = 75$

table value: $t = 1.992$ at $.05$, $df = 75$

The results of this test showed that for grade two, the null hypothesis was rejected. Students assigned certification goals did read books at a significantly higher level than students who were not assigned certification goals.

The second hypothesis stated that there would be no difference between elementary students assigned certification goals in Accelerated Reader and elementary students not assigned certification goals in Accelerated Reader in the amount of reading they do as

determined by the number of AR points they earn during one school year in a school district in northeast Iowa. Again using the data from the Student Diagnostic Report in AR, the author compiled the number of points students earned in Accelerated Reader during the school year. Using a t-test at the .05 level, the author compared whether students assigned certification levels earned significantly more points than students not assigned certification goals. For grade four and grade three, the author found that there was no significant difference between the control and test groups. The results of these test are shown in Table 9 and Table 10.

Table 9: Comparison of AR points earned for the control and test groups for grade 4.

	Mean	SD	N	
Control		126.8	88.076	71
Test		123.9	79.758	28

$t = .149$, $df = 97$

table value: $t = 1.985$ at .05, $df = 97$

Table 10: Comparison of AR points earned for the control and test groups for grade 3.

	Mean	SD	N	
Control		87.0	71.599	16
Test		68.1	48.599	79

$t = 1.299$, $df = 93$

table value: $t = 1.986$ at .05, $df = 93$

The results of this test showed that the null hypothesis was accepted. Students assigned certification goals did not read more books – as reflected in points earned – than students who were not assigned certification goals.

For grade five, the author found that there was a significant difference at the .05 level between the control and test groups. The results of this test are shown in Table 11.

Table 11: Comparison of AR points earned for the control and test groups for grade 5.

	Mean	SD	N	
Control		126.2	77.100	37
Test		90.5	2.216	66

$t = 2.457$, $df = 101$

table value: $t = 1.984$ at $.05$, $df = 101$

The results of this test showed that the null hypothesis was again accepted. Students assigned certification goals did not earn significantly more points than students not assigned certification goals. In fact, those students who were not assigned certification goals actually earned significantly more points at the $.05$ level.

For grade two, the author found that there was a significant difference at the $.05$ level between the control and test groups. Results of this analysis are shown in Table 12.

Table 12: Comparison of AR points earned for the control and test groups for grade 2.

	Mean	SD	N	
Control		16.8	11.174	47
Test		55.9	56.872	30

$t = 4.600$, $df = 75$

table value: $t = 1.992$ at $.05$, $df = 75$

The results of this test showed that the null hypothesis was rejected. Students assigned certification goals did earn significantly more points in AR than students not assigned certification goals.

Chapter 5

Summary, Conclusions, Recommendations

Summary

While there is no question that Accelerated Reader has gained acceptance in schools throughout the world, the jury is still out on the program's overall effectiveness. Current research on Accelerated Reader seems to indicate that the way AR is implemented strongly impacts the success of the program. This study set out to determine how one component of Accelerated Reader -- certification goals -- affected student's reading scores. Accelerated Reader data from 425 elementary students (grades two through five) were examined to determine if certification goals impacted the amount of reading students did as well as the difficulty of the text they selected. Approximately half the students had certification goals assigned while the other half did not. The findings for this study were mixed. Of the four grade levels examined, only the data from grade two rejected both null hypotheses at the .05 level of significance. Second graders who had certification goals assigned read books at a significantly higher reading level and read significantly more books than students in the control group. For grades three, four and five, the null hypotheses were accepted at the .05 level of significance. Students who had certification goals assigned did not select books at a higher reading level nor did they read significantly more AR books than students not assigned certification goals.

Conclusions

Assigning certification goals in Accelerated Reader did not seem to impact the amount of reading students chose to do or the type of books they selected. Second graders who were assigned certification goals did read significantly more books and at a significantly

higher reading level than students not assigned certification goals, but these findings did not carry through to the other grades. Given the small sample size (77 students) and the fact that the third, fourth and fifth graders did not produce similar results, one must conclude that factors other than certification goals were probably at work. To further support this thought, it is interesting to note that in this study, there are two examples where students who were not assigned certification goals actually scored statistically higher than students who were assigned these goals. For example, the third graders who were not assigned certification goals actually read at a significantly higher reading level than students who were assigned certification goals. In addition, the fifth grade students who were not assigned certification goals read significantly more books than those students who were assigned certification goals. Given that the populations for the control and experimental groups in each grade were statistically the same at the beginning of the study, some factor or factors had to cause these changes.

As was noted in the literature review, increased time for reading practice and immediate feedback from teachers has been shown to increase student reading scores (Krashen, 2002 and Rogers, 2003). In this study, it was not determined how much time each teacher allowed for free reading practice or how often they met with students to discuss their reading performance. It is possible that students who did read significantly more books or read at a significantly higher reading level than their peers had more time to read during the school day. It is also possible that these students received more feedback from their teachers regarding their performance with AR.

While this study did not reveal a clear relationship between certification goals in Accelerated Reader and the type of books students selected, it did reveal that there are factors in the classroom that can significantly influence students' free reading.

Recommendations for Further Study

Several groups in this study showed significant differences compared to their peers. While certification goals alone did not seem to produce these outcomes, it would be interesting to determine which factor(s) did.

One study could measure the amount of free reading time students have in the classroom and how this affects their performance in AR. Another study could measure the type and regularity of teacher feedback with students and how this affects their performance in AR. For example, does meeting regularly with students one-on-one have a greater impact on their performance in AR than meeting intermittently or not at all? Other studies could look at teacher attitudes toward AR, including their emphasis on the program through grades or the use of other external motivators.

Accelerated Reader is a widely used program and it is likely that it will continue to be for years to come. Given the popularity of this application, it is important to learn as much as we can about AR in order to use it most effectively with our students.

Reference List

- Accelerated Reader (Version 6.31) [Computer software]. Madison, WI: Renaissance Learning.
- Chenoweth, K. (2001). Keeping Score: Accelerated Reader and Reading Counts programs. *School Library Journal* 47(9), p. 48-51.
- Creswell, J. (2002). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Columbus, OH: Merrill Prentice Hall.
- Deci, E., Koestner, R., Ryan, R. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627-668.
- Deci, E., Koestner, R., Ryan, R. (2001, Spring). Extrinsic rewards and intrinsic motivation in education: reconsidered once again. *Review of Educational Research*, 71(1), 1-27.
- Edmunds, K. & Tancock, S. (2003, Winter). Incentives: the effects on the reading motivation of fourth-grade students. *Reading Research and Instruction*, 42(2), 17-38.
- Engvail, B. (1999, Nov/Dec). The carrot to read: computerized reading incentive programs. *Library Talk*, 28-31.
- Everhart, N. (1999, Mar/Apr). Reading motivation: an analysis of the research as it relates to computerized reading management programs. *Knowledge Quest*, 27(4), 18-24.
- Everhart, N. (2002, Mar/Apr). Research into practice: Accelerated Reader. *Knowledge Quest*, 30(4), 53-55.
- Facemire, N.. (2000). The effect of the Accelerated Reader on the reading comprehension of third graders (Report No. CS-014-020). Salem, WV: Salem-Teikyo University. (ERIC Document Reproduction Service No. ED442097)
- Fawson, P. & Moore, S. (1999). Reading incentive programs: beliefs and practices. *Reading Psychology*, 20, 325-340.
- Getting started with Accelerated Reader and Reading Renaissance*. (1999). Madison, WI: Institute for Academic Excellence.
- Goodman, G. (1999). The Reading Renaissance/Accelerated Reader program. Pinal County school-to-work evaluation report (Report No. CD-013-424). Tucson, AZ: Creative Research Associates, Inc. (ERIC Document Reproduction Service No. ED427299)

- Greer, J. (2003, April). Point: A positive experience with Accelerated Reader. *Teacher Librarian*, 30(4), 32.
- Holmes, C. & Brown, C. (2003, February). A controlled evaluation of a total school improvement process, School Renaissance. Paper presented at the National Renaissance Conference, Nashville, TN.
- Howard, C. (1999). An evaluation of the Accelerated Reader program in grades 3-5 on reading vocabulary, comprehension, and attitudes in an urban southeastern school district in Virginia (Report No. CS-511-184). Norfolk, VA: Old Dominion University. (ERIC Document Reproduction Service No. ED465987)
- Independence Community Schools. (2004). Independence, IA. Retrieved on March 18, 2004, from <http://www.independence.k12.ia.us>.
- Kohn, A. (1999). *Punished by rewards: the trouble with gold stars, incentive plans, A's, praise, and other bribes*. Boston: Houghton Mifflin.
- Krashen, S. (2002). Accelerated Reader: Does it work? If so, why? *School Libraries in Canada*, 22(2), 24-26, 44.
- Krashen, S. (2003, Fall). The (lack of) experimental evidence supporting the use of Accelerated Reader. *Journal of Children's Literature*, 29(2), 9, 16-30.
- Lamme, L. (2003, Fall). A literature perspective on Accelerated Reader. *Journal of Children's Literature*, 29(1), 37-45.
- Leonard, D. (2002). *Learning Theories, A to Z*. Westport, CT: Greenwood Publishing.
- Librarians' Reading Renaissance survey (1999). (Report CS-014-225). Madison, WI: School Renaissance Institute. (ERIC Document ED449469)
- Mathis, D. (1996). The effect of the Accelerated Reader program on reading comprehension (Report No. CS-012-573). (ERIC Document Reproduction Service No. ED398555)
- McBrien, L. & Brandt, R. (1997) *The Language of Learning: a guide to education terms*. Danvers, MA: Association for Supervision and Curriculum Development.
- McQuillan, J. (1997, Winter). The effects of incentives on reading. *Reading Research and Instruction*, 36, 111-125.
- Pavonetti, L., Brimmer, K., Ciplewski, J. (2002). Accelerated Reader: what are the lasting effects on the reading habits of middle school students exposed to Accelerated Reader in elementary grades? *Journal of Adolescent & Adult Literacy*, 46(4), 300-311.

- Plake, B., Impara, J., Spies, R., editors (2003). *The fifteenth mental measurements yearbook*. Lincoln, NE: Buros Institute of Mental Measurements, The University of Nebraska-Lincoln.
- Poock, M. (1998, May) The Accelerated Reader: an analysis of the software's strengths and weaknesses and how it can be used to its best potential. *School Library Media Activities Monthly*, 14(9), 32-35.
- Renaissance Learning. (2003). Wisconsin Rapids, WI. Retrieved on February 20, 2004, from <http://www.renlearn.com>.
- Rogers, L. (2003, Fall). Computerized reading management software: an effective component of a successful reading program. *Journal of Children's Literature*, 29(2), 9-15.
- Rogers, L. (2003, Fall). Comments on Krashen. *Journal of Children's Literature*, 29(2), 31-34.
- Sandusky, L. & Brem, S. (2002). *The integration of Reading Renaissance programs into an urban Title I elementary school, and its effect on school-wide improvement*. Tempe, AZ: Arizona State University. 2001-2002 Annual Report to Renaissance Learning, Inc.
- School Renaissance Institute. (1999). Idaho statewide implementation of Reading Renaissance: Summary of first year's results (Report No. CS-014-229). Madison, WI. (ERIC Documents Reproduction Service No. ED449472)
- School Renaissance Institute. (2000). Second-year (1999-2000) implementation of Reading Renaissance in Idaho: summary of second year's results (Report No. CS-014-228). Madison, WI. (ERIC Documents Reproduction Service No. ED449471)
- Topping, K. & Fisher, A. (2001). Accelerated Reader: U.K. Pilot (Report No. CS-511-430). Edinburgh, Scotland: Paper presented at the Biennial Meeting of the International Reading Association World Congress on Reading. (ERIC Document Reproduction Service No. ED468244)
- Toro, A. (2001). A comparison of reading achievement in second grade students using the Accelerated Reading program and independent reading (Report No. CS-014-457). Knoxville, TN: Johnson Bible College. (ERIC Document Reproduction Service No. ED455510)
- Unger, Harlow G. (2001), *Encyclopedia of American Education*, 2nd Ed. New York: Facts on File.
- Vantuyl, Vicoria. (2002). *The most effective use of Accelerated Reader for upper elementary students*. Warrensburg, MO: Central Missouri State University