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AUTHOR Toro, Adrienne
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ABSTRACT

Accelerated Reader is a computer program designed by Advantage Learning Systems to assess students' reading comprehension levels and keep detailed and accurate reports of such findings. This research studied the Accelerated Reader program with a second grade class over a 6-week time frame. One class of 20 students read books picked from the program list then took computer-generated quizzes on the reading. The quizzes consisted of 5 to 20 multiple choice comprehension questions ranging in difficulty. The Accelerated Reader program kept records of each student's reading level as assessed by the quizzes. Another second grade class with 16 students independently read at least 30 minutes a night over the same time frame. This class of students, however, did not take any quizzes on their reading. After the 6-week time frame was up, each student in the study completed a standardized reading comprehension test. These tests were compared to see if any significant difference in the reading comprehension levels of these two groups existed. Findings suggest that the Accelerated Reader program had no significant effect on the reading comprehension levels of second grade students. Therefore the researcher retains the hypothesis that there is no significant difference in the reading comprehension level of those who have experienced independent reading and those who have experienced Accelerated Reading. (Contains 20 references and a table of data. Appendixes contain the research proposal and the consent form.) (RS)

CS

A COMPARISON OF READING ACHIEVEMENT IN SECOND GRADE STUDENTS USING THE ACCELERATED READING PROGRAM AND INDEPENDENT READING

An Action Research Project

Presented to the

Department of Teacher Education

Johnson Bible College

In Fulfillment

of the Requirement for the Degree

Master of Arts in

Holistic Education

by

Adrienne Toro

July 2001

APPROVAL PAGE

This research project by Adrienne Toro is accepted in its present form by the Department of Teacher Education at Johnson Bible College as satisfying the action research project requirements for the degree Master of Arts in Holistic Education.

Chairperson, Examining Committee

Member, Examining Committee

Member, Examining Committee

Member, Examining Committee

Member, Examining Committee

Member, Examining Committee

July 17, 2001
Date

ABSTRACT

The primary outcome of any reading curriculum is to enhance a love of reading within the students and to promote future utilitarian abilities. Technological advances in computer programs have been established to supplement these endeavors. There are a variety of computer reading programs that differ in methods. Some are traditional drill and practice programs related to specific reading texts. Other programs actually aid in the reading process by having the text interactive. Still others allow the student to 'read' the text on the computer screen rather than in book format.

While some are quite useful in their supplication, other computer reading programs have proven themselves to lack any definite learning objectives. Instead of aiding in the learning process, they actually replicate the traditional curriculum example of group reading and question/answer assessments. Their only redeeming features are the colors and sounds created by the multimedia. These programs all have unique features, yet the educator must review each one to establish which would be of best use for the students in order to reach specific reading objectives.

Accelerated Reader is a computer program designed by Advantage Learning Systems to assess students' reading comprehension levels and keep detailed and accurate reports of such findings. This research studied the Accelerated Reader program with a second grade class over a six-week timeframe. One class of twenty students read books picked from the program list then took computer-generated quizzes on the reading. The quizzes consisted of five to twenty multiple choice comprehension questions ranging in difficulty. The Accelerated Reader program kept records of each student's reading level as assessed by the quizzes. Another second grade class with sixteen students

independently read at least thirty minutes a night over the same time frame. This class of students, however, did not take any quizzes on their reading. After the six-week time frame was up, each student in the study completed a standardized reading comprehension test. These tests were compared to see if any significant difference in the reading comprehension levels of these two groups existed.

After the study was taken, the research concluded that the Accelerated Reader program had no significant effect on the reading comprehension levels of second grade students. Therefore the researcher retains the hypothesis that there is no significant difference in the reading comprehension level of those who have experienced independent reading and those who have experienced Accelerated Reading as measured by a standardized reading comprehension test at the .05 level of significance.

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INTRODUCTION

Significance of the Problem

The student who is not given the opportunity to read at a young age tends not to become an avid reader in the future. To combat this trend many programs are set up in the elementary grades to give students the opportunity to experience reading first hand. One such program is the Accelerated Reader produced by Advantage Learning Systems Inc., located in Wisconsin Rapids, Wisconsin. This program allows the student to participate by reading assigned books throughout the school year and by taking computer generated quizzes on those books to receive points. Those points are then submitted to the school for prizes. Many schools across the country participate in Accelerated Reader, yet some school officials question whether or not the program enhances the student's independent reading level.

Statement of the Problem

Educators want to increase students' reading levels in order to encourage independent, lifelong reading. Therefore, this present research will investigate the necessity of receiving points or rewards to enhance the reading level of a class of second grade students in an upper class, Eastern Tennessee private school.

Definition of Terms

Group A and B. Two classes of second grade students from the same school and of similar economic and social status will participate in this study. One class will be named

Group A and the other Group B. Group A will go through the Accelerated Reader program by reading books found on the Accelerated Reader list, taking the program's computer test, and receiving points based on their test answers and the complexity of the book. Group B will independently read any books they wish. They will not take a computer quiz on their reading, nor will they receive any points. Group A will be the control group and Group B the experimental group.

Independent Reading. Group B will be required to read at least thirty minutes a day after school. They may read any books they choose.

Control Group. Group A will be the control group. They will go through the Accelerated Reader program exactly as it is written.

Experimental Group. Group B will be the experimental group. The factors of the experiment will be manipulated so that the students may read anything they choose. They will not take a computerized test on their reading, nor will they receive points.

Institute for Academic Excellence. Established in 1993, Judith and Terrance Paul created the Accelerated Reader program under the ownership of Advantage Learning Systems. As part of the Advantage Learning Systems government, the Institute for Academic Excellence researches, develops, and assesses learning systems for K through 12^{th} grade schools (Paul [b]).

Limitations

The students are assigned to the class by the principal of the school. Therefore, there is a limitation of random selection of the students involved in the experiment.

The students are white Americans with the exception of one African-American girl, and they come from middle to upper class families. These families put a high priority on education. Most students involved in this study are encouraged to read at home. Therefore, the research will only be biased to students who have educational encouragement from home.

The school is a private Christian school that puts a high priority on learning. Therefore, students are pushed harder in academics than they would be in another environment.

There is a time limitation of six weeks for the research. Research data could be different if more time was involved in the study.

Assumptions

Every student will work at their highest level of learning and will participate in this research out of personal desire.

Each student will be truthful in their reading and testing so that accurate records may be kept.

The ability level of the students is evenly distributed among the classes.

The students will understand the test questions in the same manner.

Hypothesis

There is no significant difference in the reading comprehension level of those who have experienced independent reading and those who have experienced Accelerated Reading as measured by a standardized reading comprehension test at the .05 level of significance.

Chapter 2

DESCRIPTION

Accelerated Reader (AR) is a computer reading and management program made by Advantage Learning Systems and introduced to school systems in 1986. The program helps "educators monitor literature-based individualized reading for K-12 students" (Keller, p. 18). The computer program runs either on MAC or PC computers. Students pick books to read from the AR list and take computer quizzes on the books to earn points. The points may be turned in for prizes that are awarded and chosen by the individual school educators (Keller, p. 18). The AR program does not mandate the use of extrinsic rewards. Based on a report from the Institute of Academic Excellence, the motivations of intrinsic verses extrinsic rewards relate so closely together that it is impossible to separate the two. However, it is always under the discretion of the educator who so closely works with the students to decide whether or not extrinsic motivations would enhance the learning (. . . . [5], p. 1).

The AR quizzes are designed to help the teacher in assessing reading comprehension and in diagnosing reading difficulties that could lead to intervention. School librarians recommend books to Advantage Learning Systems. The goal is to produce quizzes on all books that would likely be in a school library. To date there are quizzes for over 27,000 book titles. The quiz questions range from five to twenty depending on the complexity of the reading. Most first and second grade books have five

to ten questions. The quizzes are arranged in multiple-choice questions that follow the same sequence as the reading. The questions focus on key facts and events found in the book, therefore mostly dealing with comprehension (. . . . [4], p. 2).

The student takes a computer quiz on every book he or she reads. They must score at least sixty percent to pass the quiz. Each book is assigned points by Advantage Learning Systems. The number of points a student can gain ranges from two to twenty, depending on the complexity of the story. The AR program uses the following formula to assign these points:

$$\text{AR Points} = (10 + \text{Reading Level}) \times \frac{(\text{Words in Book})}{100{,}000}$$

(Paul [a], p. 14).

The computer program keeps a record of the book, reading level, date, number of questions answered correct, and points earned. There are twenty-one reports of this material included within the computer program to aid teachers, students, and parents. Educators can use these for personal assessment use or for parent conferences (. . . [1], p. 1-3).

Recently, Advantage Learning Systems and McGraw-Hill Companies have teamed together to improve reading in elementary schools. Their program allows teachers to have three different levels of readers within one classroom, and its focus is on the whole language approach to story telling. With AR program quizzes expected to reach over 30,000 in the beginning of the year 2000, teachers may take advantage of the program's instruction and assessment attributes (. . . . [1], p. 1).

RESEARCH

Learning Theory

In a report from the Institute for Academic Excellence, educators have studied the history of critical thinking in accordance to literature-based reading. Traditional views of Piaget's operation theory along with Bloom's taxonomy pale in significance to a more holistic approach to thinking. Psychologists agree that a student's ability to think cannot be divided into separate, compartmentalized skills. On the contrary, each skill works in harmony with the others in order to bring the student to a higher level of learning. Critical thinking is backed by the schema theory of learning, social constructivism, and brain-based learning. It is a "way a learner creates a model, map, or story about the world" (. . . . [6], p. 2). Educators can foster critical thinking by providing stimulated environments of learning where the student may "expand and revise their mental models of the world" (. . . . [6], p. 3). One of these types of environments can be found in literature-based reading. In order to comprehend the reading, students make patterns and maps in their mind of the plot, characters, and setting of the text. These stories are fit together with the personal experiences of the student's life. As the student matures, his or her reading ability becomes increasingly more complex, allowing for the literature-based reading to become more difficult. This type of increased difficulty can create a 'flow experience' in which the student can enter into a consciousness of critical thought that is more evolved. This emphasis of stimulating critical thinking through the use of literature-based reading is the core of the AR program. Students are encouraged to challenge their reading comprehension level with more difficult books. The expected

outcome is that the student will develop a higher ability for critical thinking and will become a better-rounded individual (. . . . [6], p. 3).

Literature-based reading instruction typically adds more enjoyment, which develops an interest and love of reading that the traditional basil readers do not. This idea, accompanied with the use of technology, affirms to the student the excitement of the reading curriculum. It also allows students to be on different reading levels within the same classroom, freeing up valuable time on the educators part for working effectively with each individual student. After all, the goal of reading instruction "is to guide pupils to read for personal enjoyment and utilitarian purposes" (Ediger, p.143). This is coupled with the fact that reading must build upon itself to produce effective usage, or utility, in the future.

Effectiveness of Program

The Institute for Academic Excellence has produced many research studies on the effects of the AR program within the classroom setting. In 1997, a study was written on the effects of the AR program in the various subject areas of Tennessee's K through 5 schools. By testing schools with the AR program and those without it, the research compared student scores from the Tennessee Comprehensive Assessment Program (TCAP). This information of test scores was strictly personal and regulated; therefore the research data was generalized for schools rather than by classroom or student level analyses. Three hypotheses were positively concluded from the research. One was that "reading contributes to growth in higher-order cognitive skills, which leads to better performance in all subject areas. A second hypothesis [was] that if students are better

able to read their textbooks, classroom instruction is more efficient and effective. A third hypothesis [was] that better readers are simply better test-takers" (Paul [a], p. 2). In the conclusion of the study, fifth grade students using the AR program did not fair as high in comprehension as those that did not. The variable in this outcome was that typically there are not enough higher-level reading books in the elementary schools to sustain the students with higher reading levels. Therefore, fifth graders could only go so high in their reading before the books run out. Also, the research could be misleading in that, in the subjects of math and science, students did not necessarily score higher in figuring the problems, but rather could read the problem with better understanding (Paul [a], p. 10).

Another research study done by the Institute of Academic Excellence signified that the use of the AR program had a strong impact on overall academic achievement as well as school attendance. This study took place in Texas in third through tenth grade classes. This particular environment was chosen based on its high percentage of urban schools along with its widely diverse cultural population. Using information obtained from standardized achievement tests as well as school attendance records, the data implies that the AR program did have an effect on academic achievement, especially in schools in a low economic or culturally diverse setting. Perhaps it could be concluded that the need for success was so high in these schools, and the use of the AR program increased the students' chances for success. By using a null hypothesis that stated "AR has no effect on TAAS scores or attendance in Texas schools" (Paul [b], p. 7), researchers calculated a Z value to evaluate possible discrepancies in the data. By using the following formula the research concluded that the higher the Z-value score, the less

likely it was that discrepancies were the result of chance and more likely a result of using the AR program.

$$Z = \frac{(\text{n Above Median} - 0.5) - 0.5\ (\text{N} - \text{n At Median})}{0.5\ \ (\text{N} - \text{n At Median})}$$

The researchers also used chi-square tests as a means to further evaluate the significant differences in the findings. The results of all these tests combined indicated that the more successful a student felt within school, the more likely he or she would attend as well as participate (Paul [b], p. 16).

The Institute of Academic Excellence also surveyed school librarians who use the AR program in their schools. According to the survey, librarians indicated that there was a favorable impact on student reading levels, test scores, and library usage when using the AR program. They reported an increase in library circulation and funding as well. However, one must observe that only forty-four percent of the 112 libraries reported in 1999 responded to the survey. In addition to that, not all of those forty-four percent responded to every question in the survey. Therefore, the data are biased in its reflection of impact (. . . . [2], p. 4).

Attributes

It is expected for the Institute of Academic Excellence to praise its own product. However, they are not the only ones who researched the AR program and found it effective. Briggs and Clark compared reading programs in lower elementary grades. Included in their research, the use of the AR program in schools provided an increase in academic learning in general overall achievement. It also showed an increase in independent reading of students (Briggs, p. 16-17). Some praises about the AR program

include its usefulness with students in ESL, Title 1, learning disabled, and gifted classrooms. Since the tests are multiple-choice, geared toward comprehension, and follow the sequence of the reading, they worked well with students from differing backgrounds or reading abilities. Educators liked the usefulness of the computer-generated reports that helped with assessment and parent conferences. Also, teachers were awarded gifts certificates by Advantage Learning Systems if their class met certain yearly criteria. Though this might seem to cause a possible bias factor, using the AR program does come at a price. Teachers must dedicate an hour a day to student independent reading, and at least one person on staff must go through the Reading Renaissance Training program (Keller, p. 18).

Scott researched the AR program with learning disabled students in middle school. Reading can pose a difficulty to students with learning disabilities because they seem to process information in a different way than others. Connections between letters and sounds can cause confusion. Dyslexia can be a hindrance in comprehension. According to Scott's findings, fifty years of research has been compiled on the development of the love of reading. Out of this research, five key points have consistently been addressed. They are as follows:

1)"Reading is seen as a habit that must be cultivated" (Scott, p. 31)
2) Students [benefit] from reading role models
3) Students need independent reading time in school
4) Individualized reading must focus on reading habits rather than skills
5) The use of response-based curriculum develops life-long readers.

Another avenue in which the AR program has proven itself is in the area of bilingual students. Educators in a K – 6th grade school in El Paso, Texas worked together

with Advantage Learning Systems to create a bilingual AR program. This program followed the same layout of the traditional program. The only exception was that quizzes and reports were available in Spanish and English. The quiz scores could be reported in Spanish, in English, or in a combination. The principal of the school was reported as saying that "improving reading ability in the native language means rapid growth of reading ability in a second language" (. . . . [3], p. 41). This is especially important in this Texas school considering that the majority of their student population speaks primarily Spanish. Before the introduction of the AR program, less than half of the students in the sixth grade class passed the state's standardized reading tests. After using the program, however, that percentage rose to seventy-six percent. It was also helpful to the faculty to have the bilingual AR program because of its ease of use in parent conferences. Most parents did not speak English, but the AR program can print out reports in Spanish as well. Also included in the program was a report entitled T.O.P.S. that gave ideas for giving students praises for their reading achievements (. . . . [3], p. 3).

Based on these key points, Scott researched four classes of disabled students. Two of the classes used the AR program while two did not. The students were given the STAR reading test (a standardized reading appreciation test) before and after the study. The pre-test was given twice in a week's timeframe to ensure its reliability. Students were also given the Estes Reading Attitude Scale at the beginning and ending of the study to assess their attitudes about reading. The study took four months to complete. Data were analyzed using SPSS 8.0 for windows. Using a univariate analysis of variance the mean scores of the pre and posttests were examined with a statistical analysis of .022.

The research indicated that students who experienced the AR program averaged a mean score of 2.81 to 3.50 above the STAR pretest and thirteen percent above the Estes Reading Attitude scale. Those that did not experience the AR program decreased their mean score by 4.75 to 4.25 below on the STAR pretest and increased only by two point six percent on the Estes test. Again, the AR program improved test scores and attitudes about reading in students (Scott, p. 46).

Goodman researched the effectiveness of the AR program on seventh and eighth grade students for one year. These students had previously scored low levels in reading as based on the Gates-MacGinite Reading Test. Two forms of this test were given to 282 students: a pretest before the implementation of the program and a posttest a year after the implementation of the program. The mean scores of both these tests were compared using a t-test. The categories for scoring were on vocabulary, comprehension, and total scores (vocabulary and comprehension combined). The AR program was implemented at the same time of the start-up of the School-to-Work program. Established in 1994, this program seeks to combine education with work-based activities. Both the AR program and the School-to-Work program had positive effects on helping students reach their full potential. This research has indicated that the AR program, coupled with the School-to-Work program, had an increased effect on students' general improvement in vocabulary and total scores. However, the comprehension scores did not fall into the statistically significant category (Goodman, p. 21).

In 1995 a similar study of research (Tillman, p. 27-30) was taken with thirty elementary students in a lower economic area of New York. For nine weeks half of the

subjects used a computer to read and answer comprehension questions over the reading passages. The other group of subjects read passages and answered comprehension questions through worksheets. The computer software used in this study was Reading for Comprehension Level D, a Continental Press Corporation product. Each subject read a passage of text. After the passage were six comprehension questions regarding the text. If the subject did not answer these questions correctly he or she were prompted to read the passage again until a correct answer was given. The control group, those that read text worksheets, was given similar passages to read with six questions to answer. However, only five of the questions were comprehension. The last question was of higher order thinking skills. Feedback was given the following week to these students on whether their answers to the questions were correct. If incorrect answers were given, the subjects had the opportunity to try again. Over the nine-week period, the control group read five passages while the experimental group (the group using the computer) completed an average of twenty-seven passages.

Using the Degrees of Reading Power reading test, Tillman's research indicated that there was no significant difference in the reading comprehension levels of the subject groups. However, it was noted that by using an attitude survey, research indicated that there was a higher level of positive attitude toward reading and computers with the group that used the computer than with the group that did not. Also, as indicated above, the experimental group completed much more passages than did the students reading from worksheets only.

Criticisms

The use of gaining points to win prizes can become the motivation of the student to read. All emphasis is taken off the value of reading as a lifelong enjoyment. The tangible rewards become the motivation, and suddenly reading becomes a chore. Also, there is limited title choice in the program. Although the program claims to strive in having quizzes for all library book titles, almost all of the quizzes are for fiction books. Poetry, informational, and highly visual books are left out. The program's choice of books also leads toward libraries spending their budget on only these titles instead of other good choices. Thus the AR program becomes a business venture in which titles are sold to schools merely because of their inclusion within the program. Finally, the program takes away from allowing students to develop the skills needed to become independent selectors of their reading. They are motivated instead by the promise of higher points for reading books they might not necessarily enjoy. Students are encouraged to choose books that are part of the program instead of those that they might find more interesting. Thus, testing becomes the driving ambition for reading instead of mere enjoyment (Carter, p. 22-25).

It can also be noted that no significant follow-up studies in research have been done to assess whether the AR program, or any other program for that matter, have helped students in reading strategies or skills that could be applied to future tasks (Singhal, p.7). Therefore, the AR program's long-term use is not proven to effectively enhance the learner's reading ability as it applies to future use. It is simply a tool used to supplement the reading curriculum for students in ways other than the traditional

textbook drill and practice. As with other computer reading programs, it cannot be relied upon as the sole learning tool for reading.

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, p. 30). One would expect this to be true, for in order for learning to develop one must challenge the mind. Increasingly in research students must learn more difficult and challenging things to stay on top of their learning. The continuum of learning increases with every year of study.

Another research study in Illinois retained its null hypothesis that stated there was no significant increase in reading comprehension scores after using the AR program. This study involved sixth grade students, primarily of white, middle class origin. These students' scores on the S.A.T. (Stanford Achievement Test) were compared from year to year starting with fourth grade compared to fifth grade and then fifth grade compared to sixth grade. The increase in reading comprehension from grade to grade was then compared. The students used the AR program in the fifth grade year. The comparison at the .05 level of significance showed no change in the scores. One must consider, however, that students read books below their ability level. Also, as the researcher pointed out, the S.A.T. alone should not be the basis for assessing growth. There was no mention in the study about the AR program reports that would indicate a change in the

students' comprehension levels (Mathis, p.11). Again, this is just another example of how not using the AR program correctly could have an effect on the outcome.

Another research study conducted in Lee County, Florida tested three schools of fifth grade students on their attitudes of reading and their frequency of library use. One class had a mandated AR program, one had a voluntary AR program, and the last class did not have the program at all. A two-page survey instrument was used with the students. Out of the 222 surveys completed and returned, the results showed no statistical difference in students' attitudes about reading or on their frequency of library use after using the AR program. The researcher did note, however, that the students in the study did enjoy reading to begin with and had reported that they were more than satisfied with their library (Scott, p. 31).

There are criticisms on using computers at all as an instructional tool in the classroom. It has been noted that instructional designers of technology market their computer programs as 'teacher proof', meaning that neither the educator nor the students have any control over the learning process (Jonassen, p. 24). In the instance of AR, the programmer constructs the questions and possible answers for each quiz. The subjects merely answer the questions with the answers given to them. In this set up neither the educator nor the students have any say in the questions nor the possible answers. Therefore, a complete assessment of the student's learning in non-existent. Jonassen concluded that computers must be used and viewed as 'mindtools', i.e. software applications that represent the knowledge of the student. These 'mindtools' would represent a higher level of critical thinking skills as determined by the user. For instance,

by using such software applications as databases or spreadsheets, students may input their learning about a particular subject. The use of mind maps or micro-worlds would allow students to organize their thoughts. Visualization tools, conversation tools, and hypermedia would allow students full range of their learning capacities. Each of these applications allows the educators and students to be the designers of the learning. By allowing students to use these applications opens us a more perfected assessment of the learning. The use of 'mindtools' represent a constructivist point of view, meaning that the educator is concerned with how knowledge is built rather than whether the student could comprehend meaningless questions (Jonassen, p.30).

SUMMARY

The AR program is "a computerized reading management system that helps educators monitor literature-based individualized reading for K – 12 students" (Keller, p. 18). The program is easy to use by following three easy steps: 1) students pick a book to read from the AR list of books; 2) students read their selected book; and 3) students take a computer generated quiz on the book. This quiz assesses comprehension of the reading. The AR program has a variety of different reports for the student, teacher, and parents on the reading level of the student. The program manages the scores, the reading level, and books read. This program is also available in a Spanish/English version for bilingual classrooms.

A significant number of research studies have been done on the AR program's effectiveness. While different aspects of the program have been studied, (ranging from reading comprehension to library usage), most researchers agree that the program is effective in raising tests scores and the enjoyability of reading in students. The AR program is the most useful in rural, multi-ethnic settings where praise and accomplishment are important. There are some researchers who doubt the program's usefulness in raising test scores. However, in all of these studies, the AR program was not used in its correct form. Students read books below their level of reading. The AR program's reports should have shown this to the educator or researcher. It may be assumed then, that in order for the program to make a significant increase in reading abilities, the students must be encouraged to read on their individual level of comprehension. In this present research, the intention is to encourage students to read on

their level of comprehension. The researcher might accomplish this by checking the readability level reports of the students.

It can also be noted that the AR program is not an end-all in itself as far as the reading process is concerned. Educators must use this program as a supplemental tool in teaching reading. Learners must first have an understanding of reading strategies and skills before using the AR program. Next, the educators must carefully monitor the program in order to ascertain its significance in the learning process (Singhal, p. 9). If the program does not meet the educational goals for the educator or the learner, then different attempts must be made to ensure the learning process is effective. As discussed previously, if students are not reading books on their highest individual reading level, then the effectiveness of the AR program is useless.

Chapter 3

METHODS AND PROCEDURES

Study Subjects

This quantitative research will occur in two second grade classrooms in a private Christian school located in Eastern Tennessee. One classroom, Group A, has twenty students (nine girls and eleven boys). The other classroom, Group B, has sixteen students (eight girls and eight boys). The students are primarily white American of middle to upper class financial status. One student in Group A is African-American. All students are seven to eight years of age. One male student in Group A has a public school background. All the other students in both groups have attended this private school all of their educational years.

Timeline

The research will take place over a period of six consecutive weeks starting in the first week of October through the second week of November 2000. The two classes will be researched independently as two separate groups. Group A will be the control group. They will go through the Accelerated Reader program exactly as it is written: reading books off of the program reading list, taking a program computer quiz on the book, and scoring points for the number of questions they answered correctly and for the complexity of the reading. Group B will be the experimental group. These students will be required to read any book they choose for at least thirty minutes a night. They will not have to take computer generated quizzes on their reading, nor will they receive any

points. The research will end with all of the students taking a standardized reading comprehension test; the Stanford Achievement Test eighth edition Primary 2 Form J Reading Comprehension. The mean difference in each group's score on the test will determine which group of students increased in their reading comprehension ability over the six week time period.

Types of Tests and Procedures

As part of the control group (Group A), students will choose books to read from the Accelerated Reader program list. After the student finishes a book, he or she will take a computer-generated quiz on that book. This quiz is part of the Accelerated Reader program and is included in the program's computer package that is owned by the school. The computer program will score the test, assigning points for questions answered correctly. The questions are primarily comprehension, a low level on Bloom's Taxonomy. The number of questions on each test ranges from five to twenty, and the student must answer at least sixty percent correct in order to pass the test.

Each student will be given the standardized reading comprehension test at the end of the research. This will assess the students' level of reading comprehension. The average comprehension level of each group will be compared to see whether the Accelerated Reader program helps with comprehension or if independent reading does just as well.

Experimental Factor

Group A will be the control group. These students will pick books to read off of the Accelerated Reader program list. They will take the program computer quiz on the

book they have read. They will score points for questions that are answered correctly. Students must score at least sixty percent on each quiz in order to pass.

Group B, during this same timeframe, will be the experimental group. They will be required to read a minimum of thirty minutes each night. They will have a choice of any book they wish to read. There will be no computer quiz given on the books that they read. The students will not receive any points for their reading.

A record will be kept on each student's participation in the study. Group A's record will be kept on computer by the Accelerated Reader program. Group B will have a written record in their classroom.

Statistical Analysis

A comparison of the test scores will be analyzed by a t-test of independent samples. This comparison will show whether or not there is a significant difference at the .05 level of reading comprehension between the two groups. The test scores are the results of a standardized reading comprehension test.

Chapter 4

RESULTS

An independent t-test compared the reading comprehension level of those who experienced independent reading (experimental group B) with those who have experienced Accelerated Reading (control group A) in two second grade classrooms. For six weeks, the control group A experienced the Accelerated Reader computer reading program as described in chapter two. The experimental group B read independently without the use of computer aids. After each group was assessed with the use of a standardized reading test, the researcher found that there was no difference in the reading comprehension levels of the groups at the .05 level of significance. Therefore, the researcher retained the hypothesis.

TABLE 1

COMPARISON OF READING COMPREHENSION LEVELS FOR CONTROL AND EXPERIMENTAL SECOND GRADE CLASSROOMS

Groups	N	Mean	Mean Difference	Std. Error of Means	T ratio	Sig. 2-tailed*
Control (Group A)	20	77.9000	2.5250	4.9220	.513	.611
Experimental (Group B)	16	75.3750				

*Not Significant

As can be seen in table 1, there was no significant increase in reading comprehension levels for the experimental second grade classroom as compared to the control second grade classroom. The researcher retains the hypothesis that there is no

significant difference in the reading comprehension level of those who have experienced independent reading and those who have experienced Accelerated Reading as measured by a standardized reading comprehension test at the .05 level of significance.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Research

Accelerated Reader (AR) is a computer reading and management program made by Advantage Learning Systems. Introduced to school systems in 1986, this software program assists the educator in the assessment of students' reading by providing comprehensive multiple choice tests for a variety of books and reading levels. The program is set up so the student independently reads a book that is part of the AR program. The student then completes a multiple choice computer generated test on that book. Each time the student passes a test the software product adds points to his or her personalized computer record. The educator may use this record to assess reading ability and may award prizes to students as a reward for these points.

In this study, two second grade classes from a private school were tested. One class, the control group, participated in the AR program as described above. The other class, the experimental group, was asked to independently read books but not take any tests or get rewards for their reading. After six weeks, both classes were assessed to determine if there was any significant difference in the reading comprehension levels of the students. A standardized reading comprehension test was used as the assessment tool.

Conclusions

The use of the AR program in the control classroom did not make a significant difference in the reading comprehension levels of the students. There are several reasons

why this conclusion might have come about. The AR program is designed for continual use year after year. This study, however, only had a time frame of six weeks and therefore may have not been enough time for any changes to occur. The use of rewards seemed to have no significant effect on the research outcome. However, it is significant to note that some students in the control group were motivated to read books with a higher point value only to see their overall points displayed on a bulletin board. Three subjects in particular competed against each other to try and get the most points in the class. However, the awards given were less important to these students than the pleasure of having the highest point value in the class. Also, the experimental classroom had unforeseen changes take place throughout the year which caused the records of independent reading to be overlooked for some time. Therefore no conclusive evidence indicated whether or not the students in the experimental classroom actually participated in independent reading as this study required.

At the start of this study some assumptions and limitations were recognized. It was assumed that each student would be on the same reading comprehension level at the beginning of the study. No clear and concise evidence to this assumption existed except for the generalized fact that each student had enough of a reading comprehension level to enter into the second grade. It was also assumed that each class had an evenly distributed number of ability levels. Again, this is not something that could have been assessed at the beginning of the study. Finally, the assumptions that all students fully understood the test questions, were truthful, and worked at their highest level of ability on the AR tests could not have been proven. A limitation that could have affected the outcome of this

study was that the students within the control and experimental classrooms were assigned by the principal of the school and not the researcher. The number of students within the classes was limited. Also, all of the students were from upper class families who value education. If a more generalized population were studied for a longer period of time the conclusion of this study could have been significant.

Recommendations

Although there was no conclusive evidence gained by this study as to whether or not the AR program increases students' comprehension level in reading, there is still much opportunity for further research. By eliminating the limitations that this study had, one could possibly gain significant information through more research. By keeping tighter restrictions on the experimental group in order to maintain sufficient documentation could make a big difference in the outcome. Also, by allowing a longer time period for the study one could see significant changes in the outcome.

Although Advantage Learning Systems, the company who produces AR, has done much research on the program already it is certain that further study would be encouraged. Any significant evidence that either makes the AR program more popular or allows it to become a better product would greatly affect the company.

Changes should be made in order to replicate this study. The standardized achievement test that was used to assess the students contains comprehension as well as association questions. The AR program uses strictly comprehension questions. However, the newer version of the AR program has a feature in which the educator may add questions into the tests. This version was not available at the time of this study.

Using this newer version of AR would greatly enhance the program as an assessment tool to better evaluate students.

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APPENDICES

RESEARCH PROPOSAL

In pursuit of a Masters Degree in Holistic Education from Johnson Bible College, I, Adrienne Toro, would like to conduct research at the Christian Academy of Knoxville. The requested research would study the Accelerated Reader program in which C.A.K. has purchased and implemented into its classrooms. The hypothesis of the research states that there is no difference in the reading comprehension level of those who have experienced independent reading and those who have experienced Accelerated Reading as measured by a standardized reading comprehension test at the .05 level of significance

The subjects of the study would involve two second grade classrooms; that of Mrs. Rheba Akins and that of Ms. Meme Killion. At the beginning of the research the students in both classes will be given a standardized reading comprehension test. Mrs. Akins class (the experimental group) will then proceed on with the Accelerated Reader program as implemented in the classroom. Ms. Killion's class (the control group) will not experience the AR program, but will instead read independently without the use of quizzes or points. The researcher will keep careful records of reading for both classes. After six weeks both classes will take the standardized reading comprehension test again, only with a different form. The mean of these scores will be compared to the previous tests. This comparison will show if reading comprehension levels go up with the use of the Accelerated Reader program.

The timeframe of the study will be six weeks starting in October 2000. The researcher will keep careful records, and any data collected will be treated with confidentiality. The interruptions to classes will be kept at a minimum. No foreseeable harm will come to the students, either mental or physical, by the study of this research. Any significant outcomes in this research will be shared with the school in order to assess their use of the Accelerated Reader program.

RESEARCH APPROVAL PAGE

This research proposal by Adrienne Toro is accepted in its present form by the Christian Academy of Knoxville as satisfying the action research project requirements for the degree Master of Arts in Holistic Education from Johnson Bible College.

Principal, Jane Williams

Librarian, Jackie Niemann

Mentor Teacher, Rheba Akins

Teacher, Meme Killion

September 3, 2000
Date

READING COMPREHENSION
PARENTAL LETTER AND CONSENT FORM

Dear Parent,
I am an intern at Christian Academy of Knoxville's 2nd grade class, and I am pursuing a Masters Degree in Holistic Education at Johnson Bible College. I would like to conduct research with students in two self-contained second grade classrooms. I have received permission from Mrs. Williams to conduct this research as a part of my Masters program.

I am requesting your permission to allow your child to participate in a study of reading comprehension. Each child in the study will be asked to complete a standardized reading comprehension test at the beginning and end of the study. The total time of the study would be eight weeks.

No foreseeable risks or physical discomforts are associated with this study. The research will not directly affect the students. Knowledge gained from the study will contribute to a better understanding of reading comprehension skills.

The data collected will be kept confidential in the reporting of the research, and will not be used in any manner that personally identifies the participants. Any specific information may be shared with C.A.K. personnel to better equip them in educating your child. Also, individual information pertaining to your child is available upon your request.

You may choose not to 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 non-participation or withdrawal from the program.

Please address any questions you have about this project to me, Adrienne Toro at Christian Academy of Knoxville, or to my advisor, Dr. Chris Templar at Johnson Bible College, 251-2348. Thank you very much.

Sincerely,
Adrienne Toro

I have read and understand the above information and agree to allow my child to participate. My child has also read the consent form and agrees to participate in this study.

Name of Parent (Print name)	Signature of Parent	Date
Name of Student (Print name)	Signature of Student	Date

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Organization/Address: Johnson Bible College 7900 Johnson Drive Knoxville TN 37854	Telephone: 865 354-8124	Fax:
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