

The Relationship between Student's AR Scores and TN Ready Test Scores in a Third Grade

Elementary Class

Master Thesis

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Abstract

The purpose of this study was to examine the relationship between students' AR scores and TN Ready test scores in a 3rd grade class. A secondary purpose was to examine the gender differences based on their TN Ready test scores. The sample consisted of 79 now 4th grade students who were in the 3rd grade the year before. The students' TN Ready test scores and AR scores were obtained and studied. The data were analyzed using a simple linear regression to predict TN Ready test scores based on AR scores. The results revealed a significant relationship. The students who scored high in AR scored high on TN Ready test. The independent- samples t-test comparing the mean scores of males and females on their TN Ready test scores was conducted. The results revealed that there is no significant difference between gender. The results suggest that the Accelerated Reader Program is a good tool for improving students' achievement.

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Chapter 1

Introduction

The accelerated reader program has been used in school systems for many years now. There has been a debate over whether the program has any correlation with higher test scores or a negative correlation with test scores. There are some that say there is absolutely no correlation at all between the AR program and academic achievement. There have been a variety of studies that have experimented with this idea. School systems use a variety of standardized tests at the end of the school year to test the student's knowledge. The TN Ready is the standardized test being used in school systems in the state of Tennessee. The goal of the study being conducted throughout this thesis is to see if there is any correlation between the AR program and the student's academic achievement on the TN Ready standardized test.

The Accelerated Reader program is a program that is used in school systems to complement the reading and literacy programs. It is a tool that is used to enhance student's motivation and excitement to read. According to Renaissance Learning Inc (2014), "The Common Core standards emphasize that students must be able to comprehend literary and informational texts of increasing complexity as they progress through the grades so that by the time they leave high school, they will be ready to tackle the literacy demands of higher education and the workplace" (p.13). It goes on to state the importance of teachers knowing what their students are reading and how well they are reading those texts. This helps teachers to prepare

their students to reach their literacy goals. A few important aspects of the AR program are knowing what your students are reading, measuring student comprehension, and giving students ways to navigate through more difficult texts.

The Accelerated Reader program was designed to be a useful tool in promoting student's literacy development. There have been many studies conducted that have proved that the AR program is truly useful in academic achievement. According to Rodriguez (2007), there was one study conducted in California that showed how well the accelerated reader program helped the students on their standardized test at the end of the year. This study examined the relationship between the Accelerated Reader program and the English-Language Arts California Standards Test (CST) given to 8th grade students. These students were placed into five groups depending on their AR scores and participation in the AR program. It was found that the students who had a high level of participation scored the highest on the CST and were found to have a higher level of motivation to read. This showed that the student's AR scores did not necessarily correlate with their test scores, but their participation in the program correlated with the test scores on the CST.

However, there have been studies that have shown that there is a negative correlation between the AR program and academic achievement. According to Anderson, Melton, & Smothers (2004), one study was conducted to see the effects of the AR program on student's test scores. The participants were a group of 5th grade students at two schools in the Mississippi area. One school, Eastside, participated in the AR program, while the other school, Gary Road, did not participate in the program. Both schools were given the Terra Nova standardized test, and it was found that the students at Eastside showed little growth in their reading development. The students at Gary Road who did not participate in the program were found to have a significant growth in their reading achievement.

Standardized tests are a great way to test student academic achievement because it is a test given at the end of each year to test student's knowledge. In the past two studies that were discussed, the English-Language Arts California Standards Test (CST) and the Terra Nova standardized test are very similar to the TN Ready standardized test. According to TN Department of Education (2019), "TN Ready is a part of the Tennessee Comprehensive Assessment Program (TCAP) and is designed to assess true student understanding, not just basic memorization and test-taking skills. It is a way to assess what our students know and what we can do to help them succeed in the future" (para 1). It is stated that the TN Ready prepares students for college and the real world, provides better information to parents and teachers, and promotes real-world problem solving.

Overall, the AR program seems to have wonderful intent, but the question is whether its intent is truly useful in real-world classrooms. The related literature reviews made me even more curious about the effects of the Accelerated Reader program on student's academic achievement because the results were so scattered. There were few studies on the correlation between the two factors in elementary children, so it will be interesting to see what will be found on a third-grade elementary class. Would there be a direct correlation between their AR scores and TN Ready test scores? Will that correlation be negative or positive? Will there be any correlation at all? This will be discussed in much greater length in Chapter 2.

Problem Statement

The goal of this study is to examine the relationship between student's AR scores and their scores on the standardized TN Ready test in a third-grade elementary classroom. There has been

great controversy over the usefulness of the Accelerated Reader program. Some studies have shown that the AR program truly helps student's academic achievement, while other studies show that the program negatively correlates with academic achievement. Therefore, the problem of the study is finding a correlation between the Accelerated Reader program and TN Ready test scores and if this correlation is negative or positive.

Purpose Statement

The purpose of this research study is to examine the relationship between students' AR scores and their TN Ready test scores at selected elementary school.

Significance

This research study is significant for teachers, principals, and school boards because this will help to determine the importance of the Accelerated Reader program which is put into place in many school systems. This study will help to determine the importance of this program and whether it truly helps children to do better in their academic achievement. The TN Ready test is used in many elementary schools, so this will be a useful tool to examine the student's scores and to observe the subsections on their reading scores. Children's AR scores will be investigated for those who do well on the reading subsections and those who do not do good. The correlation between the two factors will be a helpful in determining the importance of the Accelerated Reader program in school systems.

Limitations

The only limitations that I can foresee in this research study is only being able to have one school and one classroom to use as my participants. This could potentially limit my findings since there is such a small group of student's scores to examine. Another potential limitation would be the books that the children choose to read for their Accelerated Reader tests. I have no control over the difficulty of books chosen by each student.

Definitions

- Academic Achievement- the extent to which a student meets their short-term or longterm goals; based on student's accelerated reader test scores and their TN Ready test scores
- AR- Accelerated Reader; a computer-based program that schools use to monitor student's reading practice and progress
- TN Ready- part of the Tennessee Comprehensive Assessment Program (TCAP) and is designed to assess student understanding and not just basic memorization and test-taking skills

Overview of Study

This thesis is comprised of five chapters. Chapter One is an overview of the study containing the Introduction, Problem Statement, Purpose of Study, Significance of Study, Limitations, Definitions of Terms, and Overview of Study. A review of the literature is presented in Chapter

Two. The research methods used in the study are described in Chapter Three. The findings of the study are described in Chapter Four. Chapter Five contains a Review of the Study, Summary of the Findings, Discussion of the Findings, Recommendations for Future Study, and Recommendations for the Field.

Chapter 2

Related Literature Review

Introduction

Reading is a foundational skill that is needed to improve any skill or advance learning in any subject area. However, much of the world's population is illiterate. "Only 14% of the world population, in 2016, remained illiterate. Over the last 65 years the global literacy rate increased

by 4% every 5 years – from 42% in 1960 to 86% in 2015” (Roser & Ortiz-Ospina, 2016). Over the past several decades, the world’s literacy rate has increased drastically because of the increase in the understanding of the importance of literacy. According to Cullinan & Bagert (2013), “Reading books aloud to children stimulates their imagination and expands their understanding of the world. It helps them develop language and listening skills and prepares them to understand the written world” (p.g. 1). After many years of promoting reading in school systems and integrating literacy into all subject areas, students have begun to improve their scores on standardized reading assessments. There have been a variety of programs that have been formed to increase student’s desire to read. One of these programs is known as the accelerated reader program (AR). This program has proven to increase reading quantity, reading quality, and student growth (Renaissance, 2019).

This chapter focuses on the literature related to the purpose of this study which was to examine the relationship between student’s accelerated reader scores and their TN Ready test scores in a third-grade elementary class. The chapter will be divided into the following sections: a.) Introduction, b.) description of the accelerated reader program, c.) teacher’s opinion on the accelerated reader program, d.) description of the TN Ready test, e.) positive correlation between AR and academic success, f.) negative correlation between AR and academic success, g.) research questions and related hypotheses, and h.) conclusion.

Description of the Accelerated Reader Program

The accelerated reader program was designed to increase children’s desire to read and increase their understanding of literacy materials. This program is student-driven and teacher-guided. There are four areas of AR and these include: guide, engage, practice, and grow. Each

student has personalized goals to help them stay on track and helps the teacher to guide their learning and provide feedback throughout the process. Individual book recommendations are given to students depending on their reading level and interests to find the perfect books for every student. Reading quizzes are given to students to monitor their comprehension and literacy skills and vocabulary quizzes extend the student's learning. Reports are provided to easily see student's progress.

“Accelerated Reader™ is a computerized supplementary reading program that provides guided reading instruction to students in grades K-12. It aims to improve students' reading skills through reading practice and by providing frequent feedback on students' progress to teachers. The Accelerated Reader™ program requires students to select and read a book based on their area of interest and reading level. Upon completion of a book, students take a computerized quiz based on the book's content and vocabulary. Quiz performance allows teachers to monitor student progress and to identify students who may need additional reading assistance” (What Works Clearinghouse, 2016, pp 23).

There has been much research put into the accelerated reader program since it began in 1998. According to the statistics given on the accelerated reader website, 324 million books are read each year by students because of this program. Twenty-six thousand schools and districts use the AR program, and struggling readers are 2.8 times more likely to be college and career ready when the accelerated reader program is used with best practice. Accelerated Reader claims to be one of the most heavily researched reading programs in the world and has earned high ratings from multiple education organizations. The Promising Practices Network gave Accelerated Reader a “proven program” rating. The National Dropout Prevention Center (NDPC) rates Accelerated Reader a “model program” with “strong evidence”. The Council of

Administrators of Special Education (CASE) endorses Accelerated Reader. (Renaissance, 2019). There has been great research on the effectiveness of setting goals for each student on their accelerated reader program. The process of goal setting can be used in various ways in a classroom. Depending on the teacher's intentions for the class and assessment of student needs, goals may be used to increase student motivation, help students see value in the course material, and give students a personal connection to the content being taught. With this being said, the accelerated reader program is a way to motivate students to reach their reading goals and to reach higher academic success (Schrader, Stuber, & Wedwick, 2012).

Teacher's Opinion on the Accelerated Reader Program

A variety of studies have been conducted to see how teachers feel about the accelerated reader program. This is important because the students who have teachers that believe in the program seem to do better in their academic achievement compared to the teachers who do not believe in the program. One study was conducted on teachers grades 3-8 in an urban, rural, and suburban school settings in both elementary and middle schools. Surveys were sent out to teachers via email to collect data on their opinions of the accelerated reader program. Teachers were asked to respond to items based on a 4 –point scale from strongly disagree to strongly agree including an open-ended response section. It was found that most teachers believe that the program encourages students to read more, but it is mostly used to ensure that students are reading independently. Teachers, also, recognize that AR measures comprehension at knowledge-recall level and is not an overall strong indicator of reading comprehension. Therefore, some teachers have made their own modifications to the program (Smith, Westberg, & Hejny, 2017).

It has been found that the accelerated reader program is only as good as the teacher who teaches in the classroom. According to Gadberry & Pipkin (2003), "As a classroom teacher for years, now as a library media specialist, and always as a children's literature enthusiast and advocate, I have seen new packages, programs, and solutions come in with every new season, and I have seen that while they (almost) all have their fine and valid points, none of them are any better than the teacher in the classroom who is delivering them" (pg 3). Another study identified one teacher who stated that the AR program requires a lot of time and planning just like any other subject that is being taught. Color-coding and banding books, monitoring students' books selections, and following STAR reports for individuals and whole class takes a lot of time and effort (Gorard, Siddiqui, & See, 2015). Overall, teachers must put a lot of time and effort into the program to ensure student success with the accelerated reader program. Not only is the AR program used to test students' knowledge, the TN Ready test is given at the end of each school year to determine what the students' have learned throughout the year.

Description of the TN Ready Test

The TN Ready test is a standardized assessment given in the state of Tennessee to assess children's understanding of materials and is aligned with state standards. It is a part of the Tennessee Comprehensive Assessment Program (TCAP) and is designed to assess true student understanding, not just basic memorization. It is a way to assess what students know and what can be done to help them succeed in the future. The test develops skills that are in line with college and career expectations, allows students to show what they know in new ways, provides better information for parents and teachers, and promotes real-world problem-solving.

The language arts/reading section of the TN Ready covers comprehension, literacy skills, conventional language, writing, listening, and reading fluency. The accelerated reader program is a way of getting students prepared for the TN Ready test and helps students to increase their literacy skills for the standardized test at the end of each year. The rest of this chapter will examine the positive and negative correlations between a variety of standardized tests and the accelerated reader program (TN Ready, 2019).

Positive Correlations between AR and Academic Success

Over the years, there have been a variety of examinations on the effects of the accelerated reader program on academic success of students. Many of these studies have shown a positive impact on student's desire to read and their academic success. One study was conducted at a Title 1 school in San Diego, California, and it was performed on the 8th grade students. All students were required to take part in the accelerated reader program during the 2005-2006 school year. The students were constantly monitored to make sure they were achieving their AR goals. One hundred and eighty 8th grade student's California Standards Test (CST) scores were taken and compared to their AR points. Ninety of them scored "basic" on the CST, while the other 90 scored "proficient". Extremely high-level and low-level readers were avoided. These 180 students were placed into five groups (High reading level-high AR participation, high reading level-low AR participation, low reading level-high AR participation, average reading level- low AR participation, and low reading level-low AR participation). The results found that high AR participation led to higher test scores. Both groups that had a high level of AR participation scored the highest on the CST. These students scored higher in the reading comprehension cluster and the literary analysis cluster. This study suggested that the accelerated reader program did help to increase student's test scores (Rodriguez, 2007).

Another research study was conducted on a group of 349 students from four different secondary schools, and each child was considered at risk for their English/literacy subject areas. The children from two of the schools were expected to carry on as normal in their classes, and the other two schools would begin the new accelerated reader program. The students would be tested with the New Group Reading Test (NGRT). This test contains 20 sentence completions and 4 short passages where questions will follow. Each school followed the guidelines of the accelerated reader program, and the researchers observed the schools closely. The children took the STAR test, and teachers said the children's scores were improving. It was found that the children's scores did improve on the NGRT after being part of the AR program (Gorard & Siddiqui, 2016).

A study conducted by Keyim, H. provided more research on the effect of the accelerated reader program on a predominantly Hispanic Title I school. The participants in this study were 300 elementary students in an urban predominantly Hispanic Title I school during the 2007-2008 and 2008-2009 school years. A correlation design was utilized for this ex-post facto study to determine if a correlation exists between the reading achievement of the students, as measured by the Texas Assessment of Knowledge and Skill (TAKS) reading tests and the implementation of Accelerated Reader Program as measured by Engaged time in reading, AR points, AR average scores, and AR goal. It was found that 100% of the students who did not pass TAKS-Reading also did not reach their AR Goal; 100% of the students who reach their AR goals also passed TAKS reading tests (Keyim, H., 2011).

There is a strong connection between each of these studies that were conducted. The students who participated in the AR program were found to have higher scores on their standardized tests. However, the accelerated reader program claims to not only have an impact

on student's test scores, but also, their attitudes toward reading in general. The program is supposed to guide children toward books that interest them, and the desire to score well on their AR tests is supposed to instill a need for reading into young children. It claims to provide a fun and exciting way for children to test their knowledge and increase their literacy skills.

One study in particular was conducted to assess students' attitudes toward the accelerated reader program. The purpose of this two-part study was to gather students' views about the Accelerated Reader (AR) program. In part one of the study, questionnaires were administered and completed by 1,365 grade 3-8 students in four schools. The results from the questionnaires indicated that most students perceive the AR program as being helpful in motivating them to read and acquiring reading skills. In part two of the study, interviews were conducted at five different schools. The focus group interviews provide findings that are similar to the questionnaire findings, but students had mixed feelings about the rewards used for AR and the amount of work required for the AR program. Some students stated that they would much rather just read books that they like without having to take tests on every book. However, many students expressed a love for the rewards given to students who excel in the point system because it motivates them to read more and motivates those who did not reach their goal to do better next time (Smith & Westberg, 2011).

Another study was conducted to determine whether students enjoy reading more because of the accelerated reader program. The first utilizes data from a 2014 annual literacy survey in which more than 32,000 children and young people aged 8 to 18 participated. Three in ten of participating pupils said that they use AR. Significantly more pupils who use AR enjoy reading either very much or quite a lot than pupils who do not use AR (58.8% vs. 51.9%). Significantly more AR pupils read frequently outside class than their non-AR peers. For example, 83.6% of

AR pupils read outside class at least once a week compared with 76.3% of non-AR pupils. AR pupils are significantly more likely to think positively about reading than their non-AR peers. For example, while 48.5% of AR pupils think that reading is cool, only 37.5% of non-AR pupils think the same. The second source for this study was a longitudinal study where the researchers followed 1,500 pupils who were aged seven to eight in 2011 until they were aged 10 to 11 in 2014. Surveys were given to these pupils every year, and it was found that pupils who used AR in 2011 were significantly more likely to enjoy reading and were significantly more likely to think positively about reading than their non-AR peers (Clark & Cunningham, 2016).

In the Caribbean, a study was conducted for three years from approximately 100 students each year in grades 2 through 8. Data were collected from the number of AR points each student achieved, and their pretest and posttest scores were obtained on their STAR reading test at the beginning and end of each year. It was found that AR points earned over the course of a year were correlated with reading growth scores determined by a standardized test. There was a positive correlation between the amount of independent reading that the students did with their test scores on STAR. It was, also, found that the 8th grade students read four times the amount that the 2nd graders read, which shows that their independent reading is getting better and faster as they get older. This could potentially be correlated with the accelerated reader program (Foster, 2014).

Overall, these findings show that the accelerated reader program has a positive correlation on student's academic achievement in language arts and their attitude toward literacy. Although these findings show a positive relationship between the two, there have been studies that show negative relationships between them and even no relationship at all. The accelerated reader program claims to benefit students greatly, but attitudes toward this program have begun

to change over the years. Some disadvantages have been suggested by Boulhrir. The focus on literal comprehension was listed among the disadvantages even though it was once seen as an advantage to the AR program. In addition to technical challenges and the expensive cost of the training of teachers for effective implementation of the program is a major issue with the program. Not only is it expensive and time-consuming, but it can cause competition between students to gain AR points. This can become so intense that some students read many easy books to outscore their classmates. This leads to the next section of negative correlations between AR and academic success (Boulhrir, 2017).

Negative Correlation between AR and Academic Success

The accelerated reader program has had many people disagree with their program and the methods involved. One article by Cox states, "A broader view suggests that children's ability to comprehend books unfolds and develops over time through their meaningful oral interactions with adults and peers" (Cox, 2012). This means that the accelerated reader program is not necessarily needed since this program is more individualized. It has been found that students need more time reading with adults and peers aloud compared to silent reading.

There have been a variety of research studies conducted that have shown a negative relationship between AR scores and scores on standardized assessments. One study was conducted on a group of 211 6th to 8th grade middle school students in the Southern United States. These participants filled out a survey for quantitative data, and thirty of those students were randomly selected to participate in interviews and observations. Their pretest and posttest AR scores were collected. The STAR reading program test was given to see what each of their reading levels were, and the researcher observed these children once a week for 45 minutes to

see how much the students would read. For the qualitative portion of the research, seventy percent of students said that AR does not help their scores while only thirty percent said that it did help. Overall, it was found that most students do not like the accelerated reader program, and over ninety percent of students recorded on their survey that they actually lose motivation to read because of the AR program.

Another study was conducted in the Jackson, Mississippi area on two elementary schools. This experiment was conducted to study the differences between fifth grade students who participated in the accelerated reader program and those who did not participate in the program. The Terra Nova standardized test was used to prove how effective the accelerated reader program had been. At Eastside Elementary, a total of 322 fifth grade students participated in the accelerated reader program, and at Gary Road Elementary, 270 fifth grade students were not part of the program. In quartile one, there was not a large difference between the experimental and control groups, but there was a drastic difference in the last three quartiles. It was found that over the course of a year, the students at Eastside who were part of the program had little reading growth according to the Terra Nova standardized test. The students at Gary Road who did not participate in the program showed a significant growth in their reading achievement. It was, also, found that African American students within the program scored much lower than the Caucasian students, but the African American students who did not participate in the program scored higher than those that did (Anderson, Melton, & Smothers, 2004).

A study was conducted in Pickens County in South Carolina. This school decided to bring in the accelerated reader program to help with the students' reading. The effectiveness of this program was to be determined by the Measures of Academic Progress (MAP) test. A group of 5th grade students were split into the experimental and control groups. The experimental group

was a group of students who had participated in the AR program during 4th grade, and the control group was the remaining students who had not participated in the AR program the year before. The goal was to see how the students do on the MAP since they had already taken it the year before. After the students took the MAP, it was found that both the control and experimental groups decreased slightly in their test scores from the year before. When comparing the two groups, the control group achieved their reading goals at 65% while the experimental group achieved theirs at 51%. This shows that AR did not completely help or hurt the students on their test scores. According to these studies, there is a negative correlation or no correlation at all between the accelerated reader program and academic success.

Conclusion

Overall, there are conflicting studies and information on the accelerated reader program and its advantages and disadvantages. One study in San Diego, California found that there is a positive correlation between AR scores and the students' scores on the California Standards Test. However, another study at a middle school in the Southern United States found that there was a negative correlation between the students' AR scores and STAR test (There were even some studies that found no correlation between the two at all. At an elementary school in South Carolina, no correlation was found between the students' AR scores and their Measures of Academic Progress test. Based on these studies, the research suggests that there could potentially be a positive correlation, but there have been a variety that show a negative correlation or no correlation between the two factors at all. Therefore, the question continues about whether the accelerated reader program is truly effective in the classroom. We do know for certain that the accelerated reader program is truly based on how well the teacher implements the program. We, also, know that this program has changed the way that classrooms run. Teachers must place a

major focus on this program to ensure student success. The question remains whether the program truly enhances academic success and student's test scores on standardized assessments at the end of each year.

Research Questions and Related Hypotheses

Research Question 1: Is there a relationship between 2nd grade students' AR scores and their TN Ready test scores?

Research Hypothesis 1: There is a relationship between 2nd grade students' AR scores and their TN Ready test scores.

Null Hypothesis 1: There is no significant relationship between 2nd grade students' AR scores and their TN Ready test scores.

Research Question 2: Is there a difference between genders based on AR scores and TN Ready test scores?

Research Hypothesis 2: There is a difference between genders based on AR scores and TN Ready test scores.

Null Hypothesis 2: There is no difference between genders based on AR scores and TN Ready test scores.

Chapter 3

Methodology and Procedures

Introduction

_____The focus of this study was on the relationship between student's Accelerated Reader scores and their TN Ready test scores in a third-grade elementary class. The principal and teachers at an elementary school in upper East Tennessee had been questioning the correlation between the number of AR points that the students receive each year compared to how well the students do on their TN Ready test at the end of the year. The study was conducted to see if there was a direct correlation between AR points and their scores on the subcategories of comprehension and fluency in their reading scores on the TN Ready test. This chapter will be divided into the following sections: a.) introduction b.) population, c.) sample, d.) data collection procedures, and e.) research questions and related hypotheses.

Population

_____The population of the study is comprised of 365 students grades K-4 with a student:teacher ratio of 15:1. Of the 365 students, 80% were caucasian, 9.3% were Asian, 6.6% were multiracial, 1.9% were African American, were 1.9% were Hispanic. 45% of students were female, while 55% were male. This is a public school that typically scores above the Tennessee average on math and reading. On the academic achievement scale, the school is rated a 4 out of 4, and the student growth is rated 3.7 out of 4. Out of the 365 students, 13% receive free or reduced lunch. The families in this area make a median household income of \$39,143 per year.

Sample

The participants of this study were a group of 3rd grade students at an elementary school in Northeast Tennessee during the 2018-2019 school year. The sample for this study consisted of 79 fourth-grade students. Thirty-two of those were female and forty-seven were male. Of the 79

students, 65 of them were Caucasian, 9 were African American, and 5 were other races. This means that 82% were Caucasian, 12% were African American, and 7% were considered other races.

Data Collection Procedures

The data collection instruments for this study are Accelerated Reading scores and TN Ready test scores. These tests were chosen for this study because the goal of this study is to see if there is any correlation between AR scores and TN Ready test scores. The research study was a quantitative plan. The first step in the plan was to receive approval from the IRB, so the study could be conducted. Once approval was received, the sample was chosen for the study. The sample was chosen based on the fact that the students are the ones that are in the classroom that I have done field hours in. Next, a consent form was sent out to the parents of the students in the classroom that was chosen for this study. The consent form outlined the full plan of the research study, potential risks and benefits, and any other information that the parents needed to know. Once the consent forms had been returned, the principal at the elementary school confirmed that the students' AR scores and TN Ready test scores from the previous year (2018-2019) would be emailed confidentially. All scores were recorded and analyzed to determine if the students with higher AR scores performed better on the TN Ready, or if the students who received lower AR scores did better on the TN Ready. A further look was taken into the subcategories of comprehension and fluency on the reading scores of each student. The goal was to determine if there is a positive, negative, or no correlation between AR scores and TN Ready test scores.

Research Questions and Related Hypotheses

Research Question 1: Is there a relationship between 2nd grade students' AR scores and their TN Ready test scores?

Research Hypothesis 1: There is a relationship between 2nd grade students' AR scores and their TN Ready test scores.

Null Hypothesis 1: There is no significant relationship between 2nd grade students' AR scores and their TN Ready test scores.

Research Question 2: Is there a difference between genders based on AR scores and TN Ready test scores?

Research Hypothesis 2: There is a difference between genders based on AR scores and TN Ready test scores.

Null Hypothesis 2: There is no difference between genders based on AR scores and TN Ready test scores.

Chapter 4

Data Analysis

Introduction

The purpose of this study was to examine the relationship between third grade student's Accelerated Reader scores and their TN Ready test scores. Accelerated Reader (AR) is a program used in most elementary schools to get children reading and taking tests on those books to earn AR points. The TN Ready test is a standardized exam that is being used in the state of Tennessee to examine how much students have learned over the school year. This study was conducted in an elementary school in Northeast Tennessee with third grade students. In this study, the scores for AR and TN Ready were compared to determine the importance of the use of the Accelerated Reader program in elementary schools and whether AR is truly increasing academic achievement.

Collection of Data

The population of this study came from an elementary school in Northeast Tennessee. The enrollment for the school was 365 students enrolled during the 2018-2019 school year. The sample for this study consisted of 79 fourth-grade students. Thirty-two of those were female and forty-seven were male. The demographics of this sample is displayed in Table 1. These participants were part of both the control group and experimental group. Their AR scores were the independent variable, while their TN Ready scores were the dependent variable. The data collection instrument used were the students' AR and TN Ready test scores.

Table 1

Demographic Profile of Participants

Gender	Frequency	Percent
--------	-----------	---------

Male	47	59
Female	32	41
Total	79	100
Race		
White	65	82
African American	9	12
Other	5	7

Research Questions and Related Hypotheses

To guide the analysis of the data collection of this study, two research questions were considered. Each question was followed by a research hypothesis. Data were analyzed using a 0.05 level of significance.

Research Question 1: Is there a relationship between 2nd grade students' AR scores and their TN Ready test scores?

In order to answer research question 1, the fourth grade students' scores from their AR were calculated, and their TN Ready test scores were calculated. It was found that students scored anywhere from 11-46 points out of 46 points on their AR scores. The students scored anywhere from 62.07-100.00 out of 100 points on the TN Ready test scores. The scores were then compared to see whether a higher AR score seemed to correlate with a higher TN Ready test score.

Research Hypothesis 1: There is a relationship between 2nd grade students' AR scores and their TN Ready test scores.

Null Hypothesis 1: There is no significant relationship between 2nd grade students' AR scores and their TN Ready test scores.

RESULTS BASED ON ANALYSIS:

A simple linear regression was calculated to predict TN Ready test scores based on AR scores. A significant regression equation was found [$F(70)=113.179$, $p<.01$.] with R^2 of .621. This suggests that 62% of the variance in TN Ready test scores can be explained by the predictor variable (AR scores). Thirty-eight percent could be explained by other variables. To determine the strength of the predictor variable, coefficients were examined, and the Beta score for the predictor variable was .788 with a sig. of $<.01$. This indicates that the TN Ready test score is a strong predictor of AR scores among students. The results are displayed in Table 2.

Table 2

Regression Coefficients for AR Scores and TN Ready Test Scores

Variable	M	R2	Beta	Significance
AR Scores	38.77	.616	.788	.0000
TN Ready Scores	91.76			

Note. $P<.05$

Research Question 2: Is there a difference between genders based on AR scores and TN Ready test scores?

Research Hypothesis 2: There is a difference between genders based on AR scores and TN Ready test scores.

Null Hypothesis 2: There is no difference between genders based on AR scores and TN Ready test scores.

Phrasing the Results of Independent T-Test

In order to answer this question, an independent- samples t-test comparing the mean scores of males and females on their TN Ready test scores was conducted. Levene's test for equality of variances indicated that variances were assumed equal. A significant difference was not found between the two variables, so the null hypothesis was accepted. The results found that ($t(67) = .375, p > .05$). The mean for the males was only slightly higher than females and was not significant. The male results were ($M = 91.90, sd = 8.08$), while females were ($M = 91.20, sd = 7.12$). An effect size of .09 was realized. The results are displayed in Table 3.

Table 3

Independent- Samples T-Test on Gender and the TN Ready Test

Gender	M	SD	<i>df</i>	t	p	ES
Males	91.90	8.08	67	.375	.814	.09
Females	91.20	7.11				

Note. $P > .05$

Chapter 5

Summary

This chapter contains a summary of the findings, conclusions, recommendations, and applications for the research conducted to examine the relationship between 3rd grade student's AR scores and TN Ready test scores. It, also, examines the secondary purpose, which was to examine if there was a difference between genders based on their TN Ready test scores.

Summary of Findings

The purpose of this study was to examine the relationship between student's AR scores and TN Ready test scores in a 3rd grade classroom. The first research question focused on examining the students' scores from their Accelerated Reader program and their scores from their TN Ready test taken at the end of each school year. The results indicated there was a significance, so the null hypothesis was rejected. It was found that there is a significant relationship between AR scores and TN Ready test scores. This data compares to much of the research found in the literature review. Research tends to support the use of the Accelerated Reader program to enhance students' literacy. According to Schrader, Stuber, & Wedwick (2012), the accelerated reader program is a way to motivate students to reach their reading goals and to reach higher academic success. This seems to be the case according to the data and correlations found.

Research question two focused on gender differences based on TN Ready test scores. The results indicate there was no significant difference between males and females on their TN Ready test scores. Therefore, the null hypothesis was accepted. Because the Accelerated Reader program seemed to help the students score better on their tests and achieve more academically, the results could indicate that the AR program helped both the males and females significantly, so there was no major difference found between the two on their TN Ready tests. It was not surprising to see that there was no significant difference between the two because both genders scored better on their TN Ready when they had higher AR scores.

Conclusions

The purpose of this study was to examine the relationship between students' AR scores and TN Ready test scores in a 3rd grade class. A secondary purpose was to examine the gender

differences based on their TN Ready test scores. The results indicated that there was a significant relationship between AR scores and TN Ready test scores. Therefore, students who scored higher on their AR points were more likely to score higher on their TN Ready test. However, there was no significant difference in the genders' scores on their TN Ready tests. The Accelerated Reader program seems to be helpful for both genders.

Recommendations

1. Research needs to be conducted where there are equal numbers of males and females in the sample. In this study, there were much more males than females.
2. Use a true experimental design. This study used a quasi-experimental design.
3. Use a larger sample size. A school district would be a better sample compared to only one school of 3rd graders.

Implications

1. The Accelerated Reader program may not always be helpful for all students. This was a small sample size, so it is important to remember that the program may not help all students. It depends on the school and their needs.
2. The school in Northeast Tennessee where this study was conducted is one of the top schools in Tennessee. The school is in the top 5%. This could have been a major reason why the students scored so well on their AR points and TN Ready tests. This is important to remember when working with schools of lower levels.

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