ACCELERATED READER AND ITS CORRELATION TO ASSESSMENT SCORES

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ABSTRACT

This study consisted of four 5th grade classrooms in four different elementary schools. Two of the four classrooms were traditional classes where paper and pencil methods were those most utilized for instructional purposes. Of these two classrooms, one teacher used Accelerated Reader extensively and with fidelity and the other did not use the program at all. The other two classrooms were part of the district’s FLiP initiative where each student had their own laptop. Of these two classrooms, one teacher extensively used Accelerated Reader and one teacher did not. The purpose was to determine if Accelerated Reader should continue to be funded by the district. This would be determined through how extensively teachers used the program, and how using the program translated to student test scores and reading levels.

The first step conducted within the study was to determine how many teachers were using the program and how often they were using it. After this survey was completed individual teachers were interview based on their usage of the program, addressing how it enhanced instruction and student’s overall achievement in reading. From there, Star Reading assessment data was collected from the four teachers interviewed to determine whether the numbers supported the theories they believed to be true.

The study found that on a scale of 1-5, teachers rank at a 3.36 in terms of how often they use the program. Overall, it is used as a reading comprehension tool to quiz students on how well they understood a text. When analyzing data, those students who were in classrooms where Accelerated Reader was being used scored higher than those students who were not in classrooms using the program. Students who were in FLiP classrooms scored slightly lower than those in a traditional educational setting. The score variances were so minute it is undetermined whether the FLiP classroom has a positive or negative effect on computerized assessments.
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CHAPTER ONE: INTRODUCTION TO THE STUDY

Background

Funding for public education has long been a political topic in the United States. Student achievement and districts serving in public education are in constant comparison to other countries that do not seem to have the same issue in providing equitable funding to all students in all schools. However, the United States struggles with this issue year after year as all stakeholders anxiously await budget approvals and state and federal funding information in April and May. So, with this begs the question of, “How directly does the level of funding affect student achievement?”

A vast array of studies and research has been dedicated to this very topic, and the results are as varied as the students served in public education. In a study conducted by the International Association for the Advancement of Educational Achievement entitled Mathematics Benchmarking Report, data was used from the Third International Mathematics and Science Study (TIMSS) to compare 8th grade mathematics scores with students of other nations to students from specific states, district, and school consortia in the United States. Their findings aligned with the popular notion that the more funding an area receives and the less impoverished students they serve, the higher the achievement scores for those students. Specifically, they found the highest achieving schools in the United States to be Naperville, Illinois Public Schools and “First-in-the-World” Consortium which is composed of school districts from the Chicago North Shore Area. These two districts receive high levels of funding and serve a low number of students living in poverty, comparable to such high-achieving countries as Hong Kong and Japan who are similar in size and demographics. Likewise, the lowest achieving districts were Miami-Dade County Public Schools in Florida and Rochester School District in New York. Both of
these public school districts receive low amounts of funding while serving a high population of students living in poverty. This is comparable to other low-achieving countries such as Turkey, Jordan, and Iran who also closely resemble these school districts in size and demographics (cite). Thus, based on this study, it would be acceptable to insert the proverbial line that runs rampant from the mouths of many in this country believing “the rich get richer, and the poor get poorer.”

The variables playing into this notion are numerous, which include but are not limited to the suburban growth and urban decline in the sixties, the varied beliefs about the causes of poverty, and most importantly the allocations of increased funding in the public school system. For example, many make the argument that funding has increased, but student achievement has not, so why continue pouring money into a broken system? However, if you look more closely at how those dollars are allocated the breakout looks something like this: 33% to special education students, 8% to dropout prevention programs, alternative instruction, and counseling to keep students in schools, 8% to expand school lunch programs, and 28% to increase the salaries for the teaching population. Very little of that has gone into instructional measures, thus resulting in little to no difference made in student achievement (cite). It should also be noted that those school districts who do receive higher levels of funding are able to recruit more highly-qualified teachers as well as reduce class size--two key variables in raising student achievement.

While research can be found to support both sides of this issue it is something that must remain at the forefront of administrative minds in order to wisely spend the dollars allotted to school districts. As Rob Greenwald, Henry Hedges, and Richard Laine concluded from their study, “[Our analysis shows] that school resources are systematically related to student achievement and that those relations are large [and] educationally important.” Should this be the case, it must be ensured that the resources getting these precious dollars are actually improving
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student achievement and being used to their full capacity. Therefore, an efficiency and
effectiveness test needs to be put in place for all programs and resources to which large amounts
of funding are being allocated within schools and districts.

Conceptual Underpinnings

This study is grounded in the efficiency theory (Archer, 2010). More specifically
Education Efficiency is addressed in recognition that,

Education is the foundation of society. As we look across the world, most educated
societies are invariably the most advanced and prosperous societies. We can see this not
only by comparing nations, but by comparing cities and the districts and neighborhoods
within cities. However, it’s important to understand that education comes in many forms
and through many mediums. Most of these mediums are institutions that are not
concerned with efficiency. Instead they seek to instill a belief system, produce academic
statistics that make them look good, or simply make money by focusing on the business
aspect of education.

This is where educators must begin to advocate for themselves to ensure best practices and
resources are in place for their schools and districts.

In a suburban, Midwestern public school district Accelerated Reader (AR) is one of those
resources. When looking that the 1st-5th grade district assessment program all students are
required to take STAR Reading and STAR Math, with 3rd-5th grades additionally taking Acuity
(MAP predictive assessment) and the MAP test in the Spring. Accelerated Reader is a
supplemental resource to the STAR Reading assessment. Therefore, in the past the district has
assumed that this resource is highly used by teachers in order to help students achieve higher
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scores on their STAR Reading test. It has also been assumed that since the resource is provided to all teachers it is being used to a great degree in all areas of the program. Therefore, the problem lies in that while these assumptions would create the ideal situation, they are just that—assumptions. In an era of Common Core State Standards and funding uncertainties assumptions and “gut instincts” are no longer sufficient measures. Data must support, with a great deal of certainty, that the programs and resources being provided are the best possible solutions in relation to dollar amount and student achievement.

The Accelerated Reader program includes many user-friendly tools that teachers could utilize to best serve the needs of students. To give a general program overview, AR is a computer-based resource that provides nearly 150,000 multiple choice fiction and nonfiction book quizzes for students to test their reading comprehension ability. Each book is worth \( x \) amount of points depending on its text complexity. Students self-select books that are based on their Zone of Proximal Development (ZPD) or “reading range” and have AR quizzes available. Once they have read the book they take the computerized quiz and points are assigned to them based on their test performance. Through this program students are able to set goals within the AR system based on the number of points they hope to achieve in a given time, and in turn, the program provides feedback to them upon quiz completion. They then challenge themselves to read and complete books at the level that will allow them to reach their goal. Through this teachers are able to monitor and manage their students’ reading levels and independent reading practice. Teachers also have access to a variety of tools including the reading practice quizzes, vocabulary practice quizzes, literacy skills quizzes, and a management tool that allows them to assign each of these to students at their reading comprehension and vocabulary level. They also have access to a point management tool that allows them to monitor point accumulation in
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relation to the goals students have set for themselves. Students can receive a reading certificate when goals are met; yet another tool this program offers. With each type of quiz they also have access to a report that gives them in-depth, specific information pertaining to that student’s reading level. Finally, teachers have access to management tools that allow for classroom and student enrollment to ensure students get assigned appropriate work for their reading level. There is also a resources tab that provides tutorials for teachers in each of these areas to assist them in setting it up if they are new to the program.

However, a program must also be looked at from beyond the surface level when being tested for efficiency and effectiveness. Logistically, one would look at Accelerated Reader and think it has it all. Yet, a deeper analysis is required to ensure its components are also meeting the needs to students, as well as teachers. Renaissance Learning, the creator and distributor of STAR Reading and Accelerated Reader, addresses these concerns in a report it has released regarding the shifts it has made to align with Common Core and the new expectations around rigor and relevance. One key area that have been modified is the increased number of nonfiction quizzes now available to students to meet the Common Core elementary requirement of a 50/50 split between fiction and nonfiction to obtain balanced literacy in the classroom. Another key component that has been enhanced is its alignment to the Common Core State Standards to ensure that a student’s report of their comprehension level correlates with what is expected during their regular reading instructional block. Finally, AR addresses Shift Three: Text Complexity with the Common Core State Standards. In this shift teachers are being asked to consider three components when matching a child to a text, which includes the qualitative and quantitative measures of a book, as well as reader-to-task considerations which addresses the expected product a child should be able to complete with proficiency once they are finished
Reading the text. Accelerated Reader addresses two of those three components. It provides guidance with a qualitative measure that indicates whether the themes and ideas addressed in the book are best suited for Lower Grades (LG) (K-3), Middle Grades (MG) (4-8), or Upper Grades (UG) (9-12) (cite). It also provides a quantitative measure through an ATOS score. ATOS is similar to a Lexile score in that they are both a readability formula that measures the difficulty level of a text, but ATOS has been deemed a more reliable measure because it includes four factors in its formula, while Lexile only includes two. ATOS factors include average sentence length, average word length, vocabulary grade level, and the number of words in a book, while Lexile only includes sentence length and word frequency (cite).

With what invariably seems like a strong program the next step is to determine if this is in fact a strong program for this suburban school district specifically. Programs tend to be “one size fits all” to ensure high sales on their end. However, districts, schools, teachers, and students do not fit that mold. Several key factors have to be considered when determining if this resource is a best fit for the stakeholders in this district. The first is looking at the usability of this program across the district. Are teachers using it? Are students using it? If so, to what degree? Are those who use it extensively seeing the gains they had hoped? Beyond that, the question becomes, “Is it effective?” Even if teachers are seeing gains in this particular program, is that translating to higher test scores in STAR Reading and overall achievement? Finally, the most unique factor to be addressed is the fact that this district has flipped the 5th grade classrooms with a 1:1 ratio of students to laptops. With AR being a computer-based program, as well as the STAR Reading and Acuity being computer-based assessments, is there a difference in the achievement level of students within those classrooms as opposed to the traditional classrooms?
Statement of the Problem

Therefore, this study will be looked at through two major focal points. Those being, in terms of money is this the product that is giving us the most value for our dollar and in terms of student achievement is the most effective and user-friendly product available on the market for all classrooms? To ensure the quality of this study a survey will first be administered to all 1st-5th grade teachers and media specialists inquiring about the usability of the program itself. Teachers will be asked to rank their level of program implementation and then, more specifically, what features of the program they find most helpful. Based off that information, one-on-one interviews will then be conducted with teachers in order to create a narrative on the varied ways the program in used within the district in a variety of classrooms. Once a clear picture has been established in terms of how widely the program is used, the effectiveness study can then begin and will be based largely on student test scores. A variety of reports will be analyzed including their progress within the AR program, and how those scores correlate to their proficiency measured in STAR Reading. From that information, the final interpretation of the data can take place in answering the question of is this a resource that should continue to be funded, or is there another available option that is a better fit for this district?

The major concerns this study will address include providing actual data to support the student achievement and teacher usability level of this program (or lack thereof). It will also address the issue of funding this program as it correlates to the extent of which it is being used and providing the results desired for students and teachers. Minor concerns include what follow-up support and information need to be provided to teachers to ensure the program is being used in a way to maximize benefits, should the study find this is a program worth keeping. It will also address the angle(s) at which professional development can be delivered to ensure teachers know
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of the changes to the program in regards to Common Core expectations and the new readability measure of ATOS that the district will be moving toward in the coming school year. The implications of this study are critical to the school district in that promoting reflection sets forth a standard of excellence we hope all stakeholders to emulate. Engaging in an intense analysis of all monetary resources, no matter how long they have been a part of the system, communicates to teachers, parents, students, and all stakeholders that student instruction and achievement always remain at the forefront of the decision making process. It also ensures that the district’s monetary resources are being used in a way that maximizes the potential for its students and staff.

Purpose of Study, Research Questions, Null Hypotheses

Variables to be considered in this study include AR usability data from teachers and student test scores in AR, STAR Reading, and Acuity and dependent variables. Independent variables include the teachers, type of classroom, individual students, and grade level. These correlate to the research questions listed below:

- What is the teacher usability of the Accelerated Reader program?
  - Null: The teacher usability of this program is average to high among 1st-5th grade teachers and library media specialists.

- What correlation (if any) exists between students who use Accelerated Reader and their test scores in STAR Reading?
  - Null: There is a strong correlation between the scores students achieve in Accelerated Reader supplemental program to their test scores in STAR Reading.
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- What correlation (if any) exists between student achievement in the Accelerated Reader program for those students in a traditional classroom as opposed to those in a FLiP (Future Learner Project) classroom?
  - Null: Students in the FLiP classroom show higher achievement in the Accelerated Reader program.

Limitations and Delimitations, Benefits of Study

Limitations to the study will be the grade level range that will be a part of the study. For the purpose of this specific study, data will be collected from 5th grade classrooms only as the FLiP classrooms are 5th grade only and the need for this data is higher in the intermediate level. Limitations include data being collected from only 4 classrooms within those grade levels—two FLiP and two non-FLiP classrooms. Benefits of the study include collecting data to support the decisions made around program implementation and the money spent on that. By gathering this information those decisions will no longer be made on a “hunch”, but rather be very intentional decisions based off a large, sound body of evidence.

Summary

Overall, it is vital in this day and age to ensure all resources are those best serving the students and teachers. It is not an option to be frivolous with the funds provided to public education. Therefore, it is the charge of administrators to reflect on resource allocation to determine whether that money is best spent or whether it would be better used somewhere else. When evaluating resources it is additionally critical to look at them through the lens of student
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achievement and teacher usability. Bottom line, if teachers are not using the resource and students are not gaining from it, the responsibility becomes finding a better product or letting it go all together. Perhaps this is a resource no longer needed for that school or district and its clientele. However, until thoughtful research and data collection occurs around these resources administration remains uncertain at which direction to go. That uncertainty must be minimalized. So much uncertainty exists in all other facets of education that districts must take the action necessary to ensure they are certain in what they are doing for their direct stakeholders.
CHAPTER TWO: REVIEW OF LITERATURE

A wide array research and literature has been conducted around the AR program, with many varying ideas, beliefs, and contradictions about it. Most popular in a negative context were that this program took away student reading choice, made reading feel like a chore, and did not foster deep thinking around texts through its multiple-choice quizzes. Additionally, a common criticism is the competitive nature of the program and the reward incentives around it. Many of its stakeholders wish for children to enjoy reading for the sake of reading, not to earn a party or beat out a fellow peer. Among its popular accolades is that it motivates students to read and does show student gains in achievement in relation to reading comprehension.

Renaissance Learning, the creator and distributor of Accelerated Reading site 155 different studies on their site that support the effectiveness of the program. Of these 155 studies, 129 were independent and 20 were published peer-reviewed publications. However, all studies varied in terms of methodology and purpose, so it is difficult to determine their validity. Additionally, the site only provides research that supports their program, but a general internet or database search uncovers much research and many studies that outline the negative components of the program.

Accelerated Reader has been a program used in schools since its founding in the late 1980s. Of the myriad of outside research that has been conducted around the program, most focuses on its effectiveness to motivate students as readers. Two key components that are looked at in terms of student motivators are a) point accumulation and b) goal setting with rewards in place. Overall, the research provided in regards to these areas is weak and biased at best. From informal, opinionated standpoints to formal research done at the university level, results and conclusions are varied in terms of the AR program and its effectiveness to motivate student
readers. One conclusion suggests that the Accelerated Reader program prohibits students from challenging themselves or choosing books outside of those that quizzes are provided for within AR (Fox, 2007). In terms of this concern, the program is putting parameters around student’s choice in the books they read and possibly keeping them from novels they would enjoy because AR quizzes are not available for those texts. Other concerns cited by Fox include the fact that quizzes are only multiple-choice, thus reducing a child’s opportunity to write or show their thinking around the book they have read. Additionally, many incentive programs are established around point accumulation in AR. While Renaissance Learning, the program’s creator, does not condone this many educators have taken this step raising the concern among the general public that kids are only extrinsically motivated to read.

Similarly, Mark Pennington takes these concerns a step further in his blog post entitled, “The 18 Reasons Not to Use Accelerated Reader.” Within this posting he gives a general overview of the program and then moves on to address the 18 strongest criticisms for it. Among those he breaks them out by book selection, reader response, AR being reductive, and research-based concerns pertaining to the program. Concerns cited with book selection include the limitations put on students in terms of their reading level and the number of books provided for them within that level, as well as the discrimination this creates among less popular authors while encouraging some books that are not appropriate in terms of themes and content included in the material. Reader response concerns cited are popular among all studies in that reading is seen as a chore and something to be extrinsically motivated for which consequently breeds competitiveness, the temptation to cheat, and a reduced desire to independently read. AR being reductive is where the majority of criticisms come in. They include, in general, the fact that the AR program takes away from reading instruction while fostering the idea that reading is nothing
more than an accumulation of trivial facts to be regurgitated. It also makes reading an isolated
task that does not allow for differentiated instruction, taking away money that could be used for a
stronger resource (Pennington, 2010). While, many of these concerns could be validated, they
could also be discarded depending on the way the teacher uses this supplemental resource. Each
of his criticisms was only cited through the anecdotal notes of parents and himself, as a reading
specialist. Therefore, more research needs to be considered before taking action around these
concerns.

Many teachers and parents believe the AR program does achieve its promise in
motivating student readers, but outside research indicates otherwise. In fact, many students have
a negative perception of the program claiming it does not increase their achievement or self-
efficacy. In a study investigating students’ motivation conducted by Shmidt (2008), the findings
concluded that while teachers thought AR was instilling a love of reading in their students, the
students of those teachers claimed they were only reading for AR points, not the joy of reading.
He also concluded that AR has a negative effect on students because it emphasizes only the
literal nature of a text in its quizzes. Kelly Gallagher (2009), author of Readicide, expresses this
same sentiment in his book when he states that the “overteaching of academic texts” and the use
of programs such as Accelerated Reader, are responsible for “readicide”, a term he defines as the
“systematic killing of the love of reading, often exacerbated by the inane, mind-numbing
practices found in schools.” (p.2). In another study conducted by Thompson, Mahuri, and Taylor
(2008), high school students in California were found to be negatively impacted by the program
as well. Their study found that students actually read less, not more, after the implementation of
Accelerated Reader.
Stephen Krashen (2007) provides a more sound body of evidence to address the concerns related to the Accelerated Reader program. He has followed this program over a number of years, publishing his reports and findings in 2003, 2005, and most recently in 2007. While his findings also raise concerns with the program, he has analyzed the program for a number of years and still found parts of his own research to remain inconclusive. He analyzes the program from four components in terms of student achievement. They include 1) provides a multitude of titles; 2) allot time to read; 3) includes quizzes based on surface-level facts; and 4) it awards prizes based on point accumulation.

He was able to conclude that components one and two did correlate with higher student achievement, which really came as no surprise. Most research indicates that high-interest titles and time to read will indeed raise student achievement in the area of reading. Therefore, his focus turned to components three and four; quizzes and rewards. It should once again be noted that Renaissance Learning does not promote an incentives program around Accelerated Reader. This is a next step teachers have taken to promote reading in their classrooms and schools.

In his article, Krashen cites a study conducted by Ross, Nunnery, and Goldfeder (2006), where they found that students in grade K-3 using Accelerated outperformed their peers who were not using the program, but differences between the groups of upper elementary students participating in the study were small or non-existent (see table below).
Table 1: Effect sizes: Ross et. al.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
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<tbody>
<tr>
<td>K</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.33</td>
<td>0.36</td>
</tr>
<tr>
<td>4</td>
<td>-0.01</td>
<td>0.16</td>
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<tr>
<td>5</td>
<td>0.11</td>
<td>0.09</td>
</tr>
<tr>
<td>6</td>
<td>0.14</td>
<td>0.09</td>
</tr>
</tbody>
</table>

When drawing conclusions based of this data one must look deeper in terms of what AR looks like in the primary versus intermediate grades. Upon doing that you will find that for the primary grades students are often read to or with, whereas at the intermediate level students are expected to read independently. This data also only supports component three of Krashen’s work (quizzes), as there was no reward system in place for the treatment group that was tested. In conclusion, AR showed positive gains in the primary grades, but not in the upper grades (Krashen, 2007) One reason for this could be the independent requirement expected of the higher grade levels, as well as the quizzes covering only trivial, low-level questions that only required students to recall, thus not fostering a true engagement with the text.
Cuddeback and Ceprano (2007) also conducted a study of the effects of AR on the emergent reader when the program was used in summer school. They were able to conclude that AR did contribute to an improvement in reading comprehension with struggling readers. However, it was also used in conjunction with other materials and teaching procedures. The reality remains that most teachers do not integrate AR into their reading block, but rather make it a separate agenda item to be completed. However, this study also supported growth in the primary grades.

Sherry Windle took her study one step further and decided to collect data at her school to better understand student and teacher perceptions to the Accelerated Reader program in a site-specific context. Her results varied greatly in terms of teacher versus student feedback. Overall, teachers felt they were the motivator for their students to read, but the AR program helped them do that by requiring participation. They also provided access to AR books and helped students to find those in order to participate fully in the program. Students felt that AR did provide a motivator to read, they enjoyed participating, and they felt like it made them better readers (Swindle, 2005). However, teachers had no data to substantiate higher student achievement, or if they did it was not mentioned in this specific study. Therefore, further analysis and research is needed to validate those claims.

In a study conducted at Marquette University entitled, “The Influence of Accelerated Reader on the Affective Literacy Orientations of Intermediate Students”, university personnel studied the factors that children take into account when developing their self-perceptions and motivation as readers, and furthermore, how AR affects those factors. These factors include Progress (how current performance compares with past performance), Observational Comparison (how their performance compares with that of their peers), Social Feedback (verbal and
nonverbal input from teachers, other children, and parents about their reading ability, and Physiological States (how they feel internally when engaged in the act of reading) (Mallette, Henk, Melnick, 2004). The need for this study is grounded in the fact that little is known about the achievement effects of the program, which is daunting enough. However, in conjunction with student achievement, one must also be able to see how it affects student perceptions of themselves as readers. To not do so would mean potentially using a program that has no educational benefit to readers and in turn lowers their self-esteem as a reader. The results to this study were quite enlightening.

Their findings supported Accelerated Reader reflecting positively on students’ attitudes towards academic reading, but not recreational reading. When this information is combined to include gender and ability level, Accelerated Reader had different influences on different subgroups. Overall, females and high-achieving males had positive reactions to the program and high self-perceptions as readers. However, low-achieving males who partook in the program had lower self-perceptions of themselves as readers. Finally, Accelerated Reader prides itself on the notion that it motivates readers of all levels. This study did not find that to be true, however it also did not find that it had any detrimental effects on reading attitudes and self-perceptions for the average to high-achieving reader (Mallette et al, 2004).

When participating in Accelerated Reader a very public nature of student performance exists. It is this main component that must be taken into consideration when thinking about the effects that has on readers who lack confidence and self-esteem. While this study indicated it did not have a strong effect on females in general, and high-achieving males, the low-achieving males did suffer from the publicity of program. Reasons for this could include that females tend to have a stronger sense of themselves as readers, than males. In turn, males are highly
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competitive. Therefore, the high-achieving males perform well within this type of program, whereas the low achieving males tend to suffer because they cannot keep up with their comparative counterparts.

The developers of AR claim that the program will get “all students excited about books”, but Persinger (2001) and Brisco (2003) questioned whether that excitement was really about reading, or rather point accumulation to earn a reward, a common concern amongst almost all research around the program. Teachers often reward students with prizes or parties of some sort after they have met their goal that requires them to obtain a certain number of points. Persinger concluded that these extrinsic motivators actually lessen a student’s internal drive and motivation to read.

In a study conducted by Smith and Westberg (2011), they took the time to sit with students and ask their attitudes towards the program. They conducted this study in three districts, one a middle school that has an AR class meeting daily for 45 minutes, one where the program is organized and supervised in the media center, and one where the students set quarterly goals and occasionally have time to take quizzes in class, but most of the time AR is homework. They generalized the student comments towards AR into the following findings: AR requires too much process (kids just want to read), rewards for reading are undesirable (kids want to read to become better, not to get a prize), point accumulation changes reading behavior (kids read faster and with less attention to content when reading for AR), quizzes need improving (aggravated that it focuses on small facts rather than big ideas), cheating on AR quizzes (students admitted taking quizzes for their friends), and program improvements (more books and quizzes available with no rewards or points).
While few studies have been conducted to measure student achievement in regards to the AR program, those that have produced contradictory results. Peak and Dewalt (1994) investigated the impact of AR on 50 randomly selected 9th grade students in North Carolina who had used the program for five years and found that students made better gains on the standardized test than that of their peers. However, a different result was found by Conrath (2007) when he studied 8th grade students and found that those in non-AR schools had higher reading achievement scores than those students who were in AR schools. These findings also attributed teacher’s usage of the program for reading instruction in general as well as the critical thinking skills taught within those classes. Therefore, the variable of the teacher must be taken into consideration when drawing conclusions from these studies.

Several researchers have gone a step further and measured its effects on student achievement in regards to certain subgroups. For example, Melton et al. (2004) conducted a study on 352 students who have had AR for one year with students from a school who had never been exposed to AR. Between these two subgroups no gains were found in one group over the other. However, the fact that AR had only been used for one year in that test group does not serve as a strong indicator for the conclusions of this study. The implementation phase of any program is bound to improve as one becomes more familiar with it and its components.

A final, major concern that is addressed in research around this program is how teachers use it in their reading instructional block. White (2005) found in his dissertation research that AR is often an isolated event in most classrooms and is not integrated with any other literacy activities. Biggers (2002) makes the claim that programs such as AR are destroying research-based balanced literacy programs that are proven to improve student learning. He argues that AR cannot even be conceived as a literacy instructional program. In conjunction to that idea,
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many researchers have also found that students will often pick books that have movies in order to just watch the movie and take the quiz, or even have a friend take the quiz for them. Therefore, the idea of cheating remains a concern with this program in determining a student’s true reading ability.

It is easy to see there is not one clear direction to go based of this research. Accelerated Reader provides so many components and is used in such a variety of ways, that each person’s study yields different results. Overall, in thinking about implications for institutions the main objective that is to be accomplished must remain the foundation for research. That objective is student learning, and based on this research the program is not achieving that goal. Students have a negative view of the program, while teachers have a positive one, but the positive impact must be felt by the students as well as they are the true stakeholders. Currently, research suggests that is not happening and gains in achievement are not strong enough for it to credit this program. Even where increased achievement is occurring, which are few areas, students are still fed up with the limitations of the program, as well as the focus on point accumulation and rewards.

Another key factor to keep in mind, however, is that all of this research was conducted before Common Core. The program is shifting its content to better align with the new expectations of the standards. They have already expanded their book selection from when these studies were carried out. It would seem a natural next step to improve the quality of the quizzes and reward the students in some other fashion that point accumulation. Much of that has yet to be determined, so new studies will need to take place in the coming years to see if the changes Renaissance Learning has made to the program are valuable and change stakeholder perceptions.
CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

Problem and Purposes Overview

The problem being addressed in this study is the efficiency of which Accelerated is being used and the effectiveness that is having on teacher instruction and student reading achievement. Data must be collected in order to establish a defense to continue funding this program within the district. Currently that data does not exist. Reflective practice is an expectation of the teachers, therefore it must be so for the administrators as well. As budgetary decisions loom near, it must be determined if this is a valuable resource to the teachers and students.

Research Design

The first step in this study was to administer an Accelerated Reader Usability survey that provided data on how often teachers used the program, and if they did which components within it they found most helpful. This test group included 197 participants that ranged from 1st-5th grade teachers and school media specialists (librarians). Of the 197 participants, 132 responded to the survey. With a 67% participation rate a clear vision was established for how the program was used within the district. The next step included one-on-one interviews where anecdotal notes were taken on how the program was used (or not used) in various classrooms. Classroom 1 is a 5th grade FLiP (Future Learner Project) classroom with high usability of Accelerated Reader. Classroom 2 is a traditional 5th grade classroom with high usability of Accelerated Reader. Classroom 3 is a FLiP classroom that does not use Accelerated Reader and Classroom 4 is a traditional classroom that does not use Accelerated Reader. After recording anecdotal notes on how the different classrooms incorporate the program into their day or instructional reading block, assessment scores and AR reading levels were analyzed. Reports were pulled for each classroom to look at trend lines in their reading levels within AR from September through
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March. Additionally, STAR Reading and Acuity assessment scores were analyzed as well. These tests are administered three times per school year. STAR Reading testing windows included August 16-31, December 3-14, and March 18-April 5. With this being the final piece of information needed to determine the effectiveness and efficiency of the program, and a $t$-test was performed with the collected data to determine if the null hypotheses were correct and substantiated.

Variables Used in Study

Dependent Variables in the study were teacher usability, trend lines in student reading levels within AR throughout the year, trend lines in STAR Reading and Acuity test scores throughout the year for those using AR, and the final decision to determine its worth in our district in terms of monetary funding. Independent variables include the schools, teachers, classrooms, and students from which the data was collected. The teacher’s usability of the AR program is an independent variable that was calculated into this study as well. Constants include the Accelerated Reader program, and the STAR Reading and Acuity tests and administration window for each assessment.

Research Questions and Null Hypotheses

- What is the teacher usability of the Accelerated Reader program?
  - Null: The teacher usability of this program is average to high.
- What correlation (if any) exists between students who use Accelerated Reader and their test scores in STAR Reading?
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- Null: There is a strong correlation between the scores students achieve in Accelerated Reader supplemental program to their test scores in STAR Reading.

- What correlation (if any) exists between student achievement in the Accelerated Reader program for those students in a traditional classroom as opposed to those in a FLiP (Future Learner Project) classroom?

  Null: Students in the FLiP classroom show higher achievement in the Accelerated Reader program.

Study Group

The study group for this research will consist of four 5th grade teachers within the school district, but from four separate schools. School A is a school that opened in the 2012-2013 school year. There is currently no standardized test data for this school as it is in its first year of operations. It has 34% of its students qualifying for Free and Reduced Lunch. The overall racial demographics are as follows: Asian 5%, Black 20.5%, Hispanic 11%, Indian 0.6%, White 56%, and Other 7%. The 5th grade team at this school uses Accelerated Reader to monitor students’ reading comprehension and as a communication tool to parents in regards to their child’s ability to comprehend text. Furthermore, a reward system has been set up in the classrooms where students receive a ticket for every 10 AR points they accumulate. These classrooms are not part of the FLiP initiative of the school district, so a majority of their instruction is done in paper and pencil format, with the Accelerated Reader quizzes being taken online.

School B had 89.3% of their students scored Proficient or Advanced on the Communications Arts portion of the state standardized test in 2012. They have 22% of their student body qualifying for Free and Reduced Lunch. Racial demographics are as follows:
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Hispanic 7.5%, White 80.4%, and Other 12%. This school is not a part of the FLiP initiative and does not use Accelerated Reader in their classroom.

School C had 62.9% of its students achieve Proficient or Advanced on the Communication Arts portion of the state standardized test in 2012. They have 38.3% of their student population qualifying for Free and Reduced Lunch and racial demographics break out as follows: Asian 4.4%, Black 15.2%, Hispanic 11.2%, Indian 0.6%, White 61.7%, and Other 6.9%. This school is part of the FLiP initiative in all three 5th grade classrooms, but they use the Accelerated Reader Program at a very minimal level. Fifth grade teachers use Star Reading data to find a student’s ZPD (Zone of Proximal Development) to ensure they are reading books at their level. Students then have the option to take an AR quiz on the books they read, but it is not required or monitored. The library media specialist uses AR data to determine who will go to the Literature Festival in the spring.

School D had 66.4% of its students achieve Proficient or Advanced on the state standardized test in 2012. They have 29.4% of their students qualifying for Free and Reduced and Lunch and racially the student population is broken down as Asian 6.7%, Black 19.9%, Hispanic 8%, Indian 0.5%, White 61.2%, and Other 3.7%. This school is part of the FLiP initiative in each of its 5th grade classrooms and they use Accelerated Reader to in a very extensive way. They use Accelerated Reader to manage and monitor students’ independent reading practice. Students choose books for their reading block or to read at home and take a quiz on AR when they have completed that text. Upon passing the quiz, it is deemed a student has strong comprehension of that text and the quiz can then be used as a communication tool between students, parents, and teachers who all give feedback based on the quiz score. They set
goals within the AR program and receive direct, ongoing reading practice and instruction through the program by trying to reach those goals.

Teachers also manage the points students accumulate throughout the quarter from AR quizzes. Not only are the points monitored, but their progress in completing the quizzes as well. Those who reach their quarterly AR goals are recognized at the school’s quarterly awards assemblies held throughout the year.

Data Collection and Instrumentation Utilized

Data collection for the Accelerated Reader Usability survey was administered through www.surveymonkey.com. Teachers and media specialists were emailed the link and asked to complete the short, 6-question survey when they had time with a deadline given. Upon, expiration of the deadline and review of the data individual teachers and schools were sought out from which to collect achievement data. One-on-one interviews were conducted with those teachers to collect anecdotal records that described their use of the program within their reading block or instructional time throughout the day. Finally, student reading reports were pulled from the Accelerated Reader program to analyze trends in reading levels for those using the program as compared to those who were not using the program. Assessment scores were pulled from the Renaissance Learning and Acuity databases for STAR Reading and Acuity. Reports were pulled from each of the testing windows in order to determine trend lines in achievement throughout the year for those using the program as compared to those not using the program. A comparison was also conducted between traditional classrooms using the program to the FLiP classrooms using the program. Finally, a benefits/cost analysis was done comparing it to similar products on the market.
Data Analysis Strategies

A t-Test analysis was the statistical tool used to identify the dependence of student scores on the use of Accelerated Reader and the potential to which the FLiP program correlated with those scores. The Vassar Stats software was used to calculate the results with an alpha level of .10.

Summary

Upon analysis of this research, these findings will be shared with the administration and the district’s Director of Data and Assessment, as well as the Academic Services team to determine whether funding should be allocated for the program for the 2013-2014 school year. The data gathered will be thoughtfully reflected upon and steps will be taken to ensure that should the Accelerated Reader program continue to be funded, it is used to its maximum capacity at all levels and made a cohesive component of the reading block in the FLiP classrooms.
CHAPTER FOUR: PRESENTATION AND ANALYSIS OF DATA

Review of Research Design

The primary purpose of this study is three-fold. The first inquiry is based on the usability of the Accelerated Reader Program. The next, and most poignant portion of the study, was to determine whether teachers who are using Accelerated Reader had higher scores on their Star Reading and Acuity assessments. Finally, research was conducted to indicate if a correlation existed between computer-based assessments and classrooms whose students used laptops as part of their everyday instruction through the FLiP initiative versus those classrooms that are still primarily paper and pencil.

Findings by Survey Item

RQ1: What is the teacher usability of the Accelerated Reader program?

H1: The teacher usability of this program is average to high among 1st-5th grade teachers and library media specialists.

For this question a survey was conducted through www.suverymonkey.com. Teachers and librarians were asked to rate themselves on how often they use the program, what they measure from using it, and the components within the program they find most helpful. As identified in Figure 1 below, teachers have an average rating of 3.36 on their usability of the program. Figure 2 indicates that 83.8% of teachers and librarians use this as a reading comprehension tool. Finally, Figure 3 shows that the reading practice quizzes (96%), practice
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goals (44%), practice reports (43%), and points management (31%) are the most utilized components of Accelerated Reader for this district.

Therefore, the null hypothesis is rejected and H1 is accepted, as a 3.36 is considered to be in the average to high range in terms of usability.

**Figure 1: Bar Graph of Teacher Usability for Accelerated Reader**

![Bar Graph](image)

**Q1 On a scale of 1-5, how often do you use Accelerated Reader in your classroom?**

<table>
<thead>
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<th></th>
<th>None at all</th>
<th>Minimally</th>
<th>Sometimes</th>
<th>Often</th>
<th>It's a regular part of my reading block</th>
<th>Total</th>
<th>Average Rating</th>
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<tr>
<td></td>
<td>18.94%</td>
<td>9.09%</td>
<td>15.91%</td>
<td>28.79%</td>
<td>27.27%</td>
<td>132</td>
<td>3.36</td>
</tr>
</tbody>
</table>

Answered: 132  Skipped: 0
Figure 2: Bar Graph of How Teachers Use Accelerated Reader in Classroom

Q2 How do you use Accelerated Reader in your classroom?

Answered: 105  Skipped: 27

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
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<tbody>
<tr>
<td>As a reading instructional tool</td>
<td>20%</td>
</tr>
<tr>
<td>As a reading intervention tool</td>
<td>10.48%</td>
</tr>
<tr>
<td>As a reading comprehension assessment tool</td>
<td>83.81%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>26.67%</td>
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</table>

Total Respondents: 105
Figure 3: Bar Graph of Accelerated Reader Components
Accelerated Reader and Its Correlation to Test Scores

RQ2: What correlation (if any) exists between students who use Accelerated Reader and their test scores in STAR Reading?

H2: There is a strong correlation between the scores students achieve in Accelerated Reader supplemental program to their test scores in STAR Reading.

For this question a t-test for correlated samples was conducted to determine if students in a traditional classroom setting using Accelerated Reader had higher scores on Star Reading than those of their peers who were also in traditional classroom, but not using Accelerated Reader. The mean score of the Star Reading assessment for the students not using Accelerated Reader was an ATOS score of 902. The mean score of the Star Reading assessment for the students using Accelerated Reader was an ATOS score of 917, with a mean difference of 15 points in their ATOS score as seen in Table 2 below. It can also be seen that the t-test is -0.52 and the p-value is 0.3047, meaning the null hypothesis is accepted. In a traditional classroom, students who use Accelerated Reader perform at a higher level on Star Reading than those who do not.

Table 2: t-test Correlation of Student ATOS Scores Based on AR Usability of Classroom

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Number of Students</th>
<th>Mean$_a$-Mean$_b$</th>
<th>$t$</th>
<th>$df$</th>
<th>p-value</th>
</tr>
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<tbody>
<tr>
<td>What correlation (if any) exists between students who use Accelerated Reader and their test scores in STAR Reading and Acuity?</td>
<td>19</td>
<td>-15.3158</td>
<td>-0.52</td>
<td>18</td>
<td>0.3047</td>
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</tbody>
</table>
RQ3: What correlation (if any) exists between student achievements in the Accelerated Reader program for those students in a traditional classroom as opposed to those in a FLiP (Future Learner Project) classroom?

H3: Students in the FLiP classroom show higher achievement in the Accelerated Reader program.

For this question a two sample t-test was conducted to determine if students in a traditional classroom setting using Accelerated Reader had higher scores on Star Reading than those of their peers who were also using Accelerated Reader, but were part of the FLiP initiative where each student has their own laptop. The mean score of the Star Reading assessment for the students using Accelerated Reader in a FLiP classroom was an ATOS score or 915. The mean score of the Star Reading assessment for the students using Accelerated Reader in a traditional classroom was an ATOS score of 917, with a mean difference of 2 points in their ATOS score as seen in Table 3 below. It can also be seen that the t-test is -0.07 and the p-value is 0.472387, meaning the null hypothesis is accepted. However, with such a small difference between the mean test scores and the FLiP classroom’s scores actually being slightly lower, it is difficult to determine this with great confidence. As you can see in the table below, the p-value is near 0.5, meaning it could really go either way. Therefore, the analysis of the correlation at this point should be deemed “undetermined.”
Accelerated Reader and Its Correlation to Test Scores

### Table 3: t-test Correlation of Student ATOS Scores Based on Technology Usage of Classroom

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Number of Students</th>
<th>Mean$<em>{a}$-Mean$</em>{b}$</th>
<th>t</th>
<th>df</th>
<th>p-value</th>
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<td>What correlation (if any) exists between student achievement in the Accelerated Reader program for those students in a traditional classroom as opposed to those in a FLiP (Future Learner Project) classroom?</td>
<td>25</td>
<td>-2.88</td>
<td>-0.07</td>
<td>24</td>
<td>0.472387</td>
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**Summary**

Through this study it was determined that the usability of Accelerated Reader is average, but could be higher with more support and professional development. In terms of test scores, the study showed that those teachers who use Accelerated Reader consistently in their classroom have students achieve higher test scores on the Star Reading assessment than those teachers who do not. Finally, there is not a strong correlation for the FLiP program having a positive or negative affect on student test scores in Star Reading. Those students who were in traditional classrooms actually scored slightly higher than those in a FLiP classroom. With the mean scores being less than three points difference between the two types of classrooms, it is hard to determine if the FLiP classroom is having an impact on computerized test scores.
CHAPTER FIVE: OVERVIEW, FINDINGS, AND RECOMMENDATIONS

Overview

In this study, four 5th grade classrooms from four different elementary school buildings were used to collect data around the Accelerated Reader program and its translation into Star Reading scores during the district-wide assessment window. Two of the four classrooms were traditional classrooms where pencil and paper methods were use consistently during instruction. Between these two classrooms one teacher used Accelerated Reader extensively and the other did not use it at all. The other two classrooms were part of the district’s FLiP initiative where each of the students had their own laptop, and instructional methods were focused more around technological, interactive learning. Again, one of the FLiP teachers used Accelerated Reader extensively and the other did allow her students to use it, but did not monitor their work or progress within the program.

After the third and final district benchmarking period came to a close, assessment data was collected in each of the four classrooms to see the affects these two programs had on the test scores of their students.

Restatement of the Purpose

This study held the purpose of determining whether funding should continue for the Accelerated Reader supplemental program. To determine future funding for this resource, the district needed to understand the implications it was having on classroom instruction, student reading levels, and their assessment scores. Based on these findings the district would either discontinue funding (if program did not make impact), continue current funding (it’s a resource teachers use and is helpful), or mandate district-wide implementation and increase funding.
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(assessment scores and student reading levels were greatly elevated by those who were exposed to the program).

Based on this information, professional development and support would also be put into place in the event it became a district-wide mandate to ensure all teachers knew and understood the capabilities of the program.

Discussion of Findings, Conclusions, and Recommendations

From the data collected from Survey Monkey it is clear to see this is a tool teachers and students use and find helpful. There is room to expand the usability of the program and the district intends to do that by offering professional development around the variety of uses this program has to offer. The program will also be expanding in the 2013-2014 school year to meet the needs of the Common Core State Standards in terms of text complexity and nonfiction resources. Therefore, since the correlated assessment, Star Reading, is part of the district assessment plan they want to continue use of Accelerated Reader at least through next year to see if the changes in the program translate into positive change for the district.

In analyzing Star Reading data, those who use AR extensively and with fidelity had students who showed greater gains in their reading levels and on the Star Reading assessment. This was essentially the component of the study that supported the district continuing to fund this product. However, the scores were not high enough to defend the district expanding the program. Therefore, it was decided to offer professional development to extend teachers’ knowledge of the program, but not to buy more licenses at this time. Again, this will be reviewed in the 2013-2014 school year once AR has made shifts in it’s program to see if that helped the scores of this district at all.
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Finally, Star Reading assessment data was analyzed to see if students in FLiP classrooms scored higher on the test that those in traditional classrooms. The findings from this study were that they did not. In fact, students in the FLiP classroom scored slightly lower than those in the traditional classrooms. In an age of constant technology immersion and many computerized programs in classrooms, even students who are not part of the FLiP initiative were capable in understanding the nuances of a computerized test due to outside exposure.

Summary

Therefore, this program will still be available for use in the school district during the 2013-2014 school year, but it will not be expanded from its current existence. After a review of similar data next year, a decision will be made on whether it is fiscally responsible to continue funding this program if a stronger correlation between the AR and Star Reading scores are not established.
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Smith, A.F. and Westberg, K.L. (2011). Student attitudes toward Accelerated Reader:


VITA

MELANIE ANN FUEMMELER

EXPERIENCE

2012-Present    Park Hill School District
                 4th and 5th Grade Instructional Coach

2012-2013    University of Missouri-Kansas City
              Adjunct Professor and Writing Project Teacher Consultant

2005-2012    North Kansas City School District
              Meadowbrook and Briarcliff Elementary: 3rd and 5th grade teacher

2004-2005    Saint Joseph School District
              Hosea Elementary: 6th grade teacher

LEADERSHIP ACTIVITIES

2009-2012    North Kansas City School District
              R3 Curriculum Council Leader

2007-2009    North Kansas City School District
              Science Leadership Team Member

PROFESSIONAL ACCOMPLISHMENTS

2011-2013    National Writing Project
              Greater Kansas City Writing Project

2008-2009    North Kansas City School District
              Teacher Leadership Institute
### EDUCATION

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<td>Mid-America Nazarene University</td>
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