TEACHER PERCEPTIONS OF THE GOALS AND EFFECTIVENESS OF ACCELERATED READER

By

LYNN DEBOLT SCHROEDER

Bachelor of Arts in Special Education
Northeastern State University
Tahlequah, Oklahoma
1988

Master of Arts in Early Childhood Education
Northeastern State University
Tahlequah, Oklahoma
1994

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Dissertation Approved:

Sheri Vasinda, Ed.D.
Dissertation Adviser

Qiuying Wang, Ph.D.

Denna Wheeler, Ph.D.

Jane Vogler, Ph.D.

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Abstract: Educators are faced with increased accountability and decreased funding. This means that school districts must carefully determine how they can best invest their limited resources. Informed decisions that serve the best education interests of the students should be the practice of all schools. One small, rural school district had invested considerable funds in the use of Renaissance Learning's Star Reading assessments and Accelerated Reader. This pragmatic, qualitative study set out to understand how teachers determined the effectiveness of this supplemental curriculum resource.

The findings of this study indicated that the teachers used perceptions and beliefs for determining program effectiveness After participants were shown assessment data that indicated students' reading ability scores showed minimal growth for the students, some of the teachers continued to hold on to their belief that the AR program was beneficial to their students. Findings also indicated that teachers did not have established goals or expected outcomes for use of the program.

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CHAPTER I

Introduction

School districts and teachers regularly make decisions regarding curriculum, resources, and supplemental programs. Decisions regarding curriculum resource selection can be approached in various ways. For example, two neighboring districts have historically differed in their selection methods. In one district, the curriculum director made selection decisions with input from a small committee. Each elementary site in this district sent a representative of each grade level who met and reviewed the curriculum resources available for adoption. They worked together to identify resources that would meet the needs of all grades. For the departmentalized grade levels, each building sent a subject representative to meet with the Curriculum Director for curriculum resource review and adoption. In my current district, each grade level selects its own curriculum resources. As a result, each grade level may end up using a completely different curriculum resource or textbook series. While there are advantages for each method of resource selection, grade levels independently choosing their own resources can also come with its own set of problems. A benefit to having grade levels select their resources is teachers who choose the resource had a vested interest in making the resource successful and would be more likely to implement it with fidelity. As for the drawbacks, in our district, there are only four teachers per grade level, which is only four sets of eyes on the curriculum resources. This gives a very limited view of the resource with so few reviewers. It is also viewed through a grade-level specific lens; first-grade reviews resources for their use, and they are not looking at how it will align with the second-grade

curriculum. An additional concern is the amount of time available to teachers to review the proposed resources.

Teachers typically conduct the curriculum resource review during their planning period over a two-week time frame. If they utilized their entire planning period, that would total just over seven hours. That is not an adequate amount of time to examine and evaluate one resource and impossible to consider all the curriculum resources available that the state has approved for district adoption. As a result, teachers often glance through the samples of the product and concentrate their time on the promotional literature from the publisher. Promotional literature does not give the teachers a true sense of the curriculum resource, its depth, or how well it is written and designed. Following this quick and often shallow review, the curriculum resource is purchased, and there is no money allocated to the schools for this subject's textbook purchase for another six years. During that time, new teachers will come into the district who were not part of the selection process, yet they are harnessed to the purchase. Often new teachers feel the only option they have is to either embrace the curriculum, complain about it, or purchase their own instructional materials.

Statement of the Problem

As a result of increased accountability standards imposed on public schools, districts attempt to provide students with various avenues to improve their reading abilities. One such way of supporting students is through a supplemental reading program known as Accelerated Reader, which is marketed by Renaissance Learning, Inc. In addition to Accelerated Reader, Renaissance Learning developed and markets Star Reading and Star Early Literacy, which are online assessment tools that teachers use to determine the current instructional reading level of their students. Available reports identify the student's grade level, instructional

reading level (the reading level teachers should use when instructing students), and their zone of proximal development (ZPD) which is the range of reading levels that Renaissance has identified challenging, but not frustrating for the student (Renaissance, 2012b). Renaissance suggests that students select books identified as having a reading level within this range as part of their independent reading. Ideally students read books at a "just right" level from their school or public library, classroom library selection, or home library and take short, online comprehension quizzes over the book. Books are assigned a point value based on the difficulty and length of the reading. For example, *Are You My Mother?* written by P.D. Eastman (1960) has a book grade-level of 1.6 (which is equivalent to sixth month of first grade) and an AR point value of 0.5. If a student reads *Are You My Mother*? and scores 100% on the quiz, they are awarded 0.5 points toward their AR goal. A score of 90% would earn 0.45 points, or 90% of the book's point value. A score of 80% would earn 0.41 points, or 80% of the book's point value. Another popular book, *Diary of a Wimpy Kid*, by Jeff Kinney has a book grade-level equivalent of 5.2 and an AR point value of 3.0. Teachers identify an AR goal for each student and points are earned toward their individual goal. It was estimated that during the 2010-11 school year, the Accelerated Reader program was used by over two million students in all 50 states and the District of Columbia (Renaissance, 2012a). Numerous contacts were made with Renaissance Learning to acquire more recent information, but they have been unable to produce more current statistics.

There are many features within the AR program that provide teachers with information regarding the level of books students are reading and the results of their performance on the AR quizzes. If teachers have established goals for what they expect from the program, how do they measure whether it is meeting their needs? Teachers interact with

the AR program on a daily basis, so it is important to know how they make decisions regarding the effectiveness of this program. The decision-making process should be a measure of their established goals to help them evaluate whether the program is meeting their needs.

This supplemental reading program comes at a cost. Financial resources must be committed on an annual basis to cover the subscription. As of the 2020-2021 school year, there is a $1500/district annual support fee and the cost per student was $7.15 for Accelerated Reader and an additional $4.95 per student for the Star Reading Assessment. Therefore, the total cost per student was $12.10. As districts work to determine whether supplemental programs are worth the money they allocate for these expenses, it is important to understand how teachers make decisions about the effectiveness of the programs they are asking the district to invest in.

Research Purpose and Questions

As teachers and administrators continue to look for supplemental materials to help students improve their reading skills, there must be in-depth evaluations of products and their marketing claims. In addition to basal reading programs, school districts look to curriculum, software, and supplemental material to support students and guide their instruction (Ainsworth, 2010). The purpose of this research was to gain an understanding of how teachers in a small, rural district determined the effectiveness of a supplemental reading program: Accelerated Reader. The following research questions guided this study:

- How do teachers determine a supplemental reading program's effectiveness?
    - How do teachers implement the program in their classrooms?
    - How did teachers determine goals [for their students? for the program?]

- What evidence do teachers use to support their determination of effectiveness?
- How does data inform teachers' perception of the AR program's effectiveness?

Overview of Methodology

This study was conducted using a case study design. The boundaries of this case are a small, rural school district and its use of AR. All teachers using the AR program were invited to participate. Five teachers accepted the invitation and those who volunteered participated in a two-part interview that included a review of Star Reading assessment historical data as part of this research project. The interviews were conducted beginning in November of 2020 and analyzed beginning March of 2021. It is important to note that these events were happening during the COVID-19 pandemic. As a result, interviews were conducted using the Zoom platform. The participants also completed a post-interview written reflection. The interviews were semi-structured, which allowed further probing, if needed. The interviews were transcribed, and codes were identified using in vivo coding. In vivo uses the participants' own words, not interpreted coding. Written reflections were coded in the same way. Once the coding was complete, these codes were studied and sorted to identify common categories, which were then combined to create themes. By interviewing teachers who had used the AR program, I was able to uncover how they used the program, how they determined its effectiveness, and what their beliefs were regarding student growth as a result of using the program. Their reflections provided an opportunity for them to look back on the interview and share any additional insights or information that may have occurred to them after the

interview. It also provided them time to look at the Star Reading assessment historical data in more depth and formulate any questions or observations.

The primary purpose of this study was to explore how teachers determine the effectiveness of curriculum resources and supplemental programs. The information gained from this study can help the district identify needs for future professional development as well as opening dialogue between teachers and administrators regarding program effectiveness.

Positionality

Bloomberg and Volpe (2016), defined positionality as "the researcher's relationship with participants and the nature of that involvement" (p. 155). I conducted this research as an inside member with experience as an inside practitioner. As the Director of Federal Programs, my role has been that of a financial manager. Funds from federal programs have supported the use of AR and the Star assessments. My role as an inside practitioner comes from previous experience as a special education teacher who supported students who were using the AR program in their general education classroom. My perceptions of the AR program were formed through the different roles I had over the years as a manager and user.

I have held the position of Director of Federal Programs since 2012, prior to that I worked as a special education teacher in GPS. As the Director of Federal Programs, my responsibilities included managing the budgets and completing the application process for federal funding. This role exposed me to differing stakeholders' perspectives regarding the implementation and use of AR and the Star Reading assessments. The advantage of evaluating as an embedded researcher is that I was knowledgeable of the program use and participants. The disadvantage is that there was the potential for personal bias possibly

interjected in the study. In addition, my position of perceived power may have made the teachers feel obligated to participate, however only five of the twenty teachers invited volunteered to participate. For that reason, I invited all teachers who used AR and only interviewed those who accepted the invitation to participate. I did not reach out to any teachers personally asking them to participate in the research study. Every effort was made to minimize limitations that might have been the result of working within the district being studied and alongside the teachers participating in the study. All transcripts were sent to the participants for a member check. This helped ensure that the teacher's input was truly reflective of their thoughts and experiences regarding the use of AR.

Role of the Researcher

During the 2020-2021 school year, I served as the district's Director of Federal Programs and oversaw the federal budgets, including Title I-A, and worked with teachers at each campus to establish site-level Title I-A plans. In addition, I was also responsible for the planning, implementation, and budgeting of Title II-A funds, which is the professional development piece of the federal programs. I have served in public education for 32 years, 17 of those years have been at GPS. While at GPS, I served as Director of Special Services, special education teacher, and Director of Federal Programs. I held National Board Certification as an Exceptional Needs Specialist from 2010-2020 and have certification as a Reading Specialist. I earned a Bachelor of Arts in Special Education and Master of Education degree in Early Childhood, both from Northeastern State University in Tahlequah, Oklahoma. I attended K-12 public schools in Michigan, where I was born and raised. I moved to Oklahoma in the early 1980s. I do not live within the geographical boundary of

GPS. Although I am not a member of the GPS community, my years of working in the school district gave me an insider view.

Significance of the Study

As districts work in an arena of increased accountability, they must make decisions that are both positive for student outcomes and are fiscally responsible. The teachers at GPS have expressed the desire to continue using the AR program but were unclear regarding evidence that influenced that decision. High-stakes testing has brought student progress into the daily conversation. For school districts to justify expenses, they must be able to defend purchases as being good for student progress. This study was designed to explore how teachers use and determine the effectiveness of the AR program.

Assumptions, Limitations, and Delimitations

Assumptions

As both a researcher and an inside member, I brought assumptions and bias to the study. The first assumption I held was that the teachers each had a well-defined goal for using the program. This assumption led me to believe that the teachers were in a position to evaluate the success of the program. Another assumption I held was that teachers were knowledgeable in the use and various features built into the AR program. I assumed that teachers were using the program as it was designed and fully implemented the extra features of the program. Therefore, I believed that if the program was not improving students' reading, it would be due to the program itself, not the implementation.

My experience supporting students with special needs who were required to use the AR program was not a positive one. As the Director of Federal Programs, I was well aware

of the financial obligation providing this program cost the district. I entered into this research with the hope that I would find that this was money that had been well spent.

Limitations

This study was limited to one district's use of the AR program. This district is a small, rural school that may not have much in common with larger, urban districts. Since this study was specific to this small district, generalization of results is not appropriate although other small districts may find similar results in their district. Applications of findings are on the onus of the reader. At the beginning of the 2020-2021 school year, the district made the decision not to renew the Accelerated Reader subscription due to a decrease in Federal Funding. Since the participants were not actively using the program, all of their perceptions were based on reflections of previous use. In addition to the above-mentioned limitations, this study was conducted during the 2020-2021 school year during a pandemic. This was a very stressful year for teachers as they were returning to face-to-face instruction after a nine-week state-wide pivot to distance learning. The pandemic continued to impact their classrooms with ongoing isolations and quarantines.

Delimitations

I made the decision to limit the scope of this research to teachers within my school district who have personally used the AR program. Consideration was given to widen the scope outside of my district but decided that by limiting the discussion to GPS, I could provide better, more appropriate information to our district administrators. I had originally intended to also use statistical analysis methods to examine the assessment data that is available through the Renaissance site, but after extracting the historical assessment data I found no scores that were appropriate for statistical analysis. At that time, I made the

decision to conduct a qualitative analysis looking through the lens of program evaluation. Additionally, due to social distancing requirements, teachers were not interviewed in person, but rather in a virtual setting using the Zoom platform. This limited the number of observations of the classroom, participant body language, etc.

Definition of Key Terms

Accelerated Reader – Accelerated Reader (AR) is a computer-based program developed and sold through Renaissance Learning, Inc. It is designed to help teachers guide their students to books on their individual reading levels. Upon completion of the book, students take short, five to ten question online quizzes to check for understanding. (Renaissance, 2020a)

Belief – the assumptions teachers "hold on to" related to their students, classrooms, and the academic material to be taught (Kagan, 1992). Fives and Buehl (2012) explained that beliefs are content or domain specific but may be influenced by underlying personal beliefs.

Evidence-Based Practice – high-quality scientific research that indicates programs and practices have meaningful effects on student outcomes (Cook & Odom, 2013).

Frustration Reading Level – Frustration reading level is reached when less than 90 percent of the words are recognized or the reader is only able to comprehend less than 50 percent of the information (Betts, 1946; DeVries, 2004; Walker, 2008).

Independent Reading Level – Independent reading level is the level of reading text that a student can comprehend at least 90% and decode greater than 95% of the text (Betts, 1946; DeVries, 2004; Walker, 2008).

Instructional Reading Level – Instructional reading level defines the level at which a student is able to correctly decode at least 90% of the words in the text and comprehend 75%

of what they have read (Betts, 1946; DeVries, 2004; Walker, 2008). This is the level teachers should use when instructing students in reading.

Perception – being aware of things through the physical senses, especially sight, or an opinion based on how things seem (Cambridge English Dictionary, n.d.)

Psychometric-Based Testing – Psychometric tests are objective measurements of skills and knowledge. Most common in the educational setting are academic/achievement, intellectual/cognitive, and language. (Berk &Winster, 1995)

Supplemental Reading Materials/Program – Supplemental reading materials and programs are those used in addition to the adopted textbook/curriculum (Oregon Department of Education and University of Oregon, 2010).

Zone of Actual Development – The zone of actual development (ZAD) includes all of your background knowledge and tasks you can perform with no assistance (independently) (Vygotsky, 1978).

Zone of Proximal Development – The zone of proximal development (ZPD) is the zone, or range, of tasks a person can complete with the assistance of an adult of a more knowledgeable peer (Vygotsky, 1978).

Summary and Organization of Remaining Chapters

As a supplemental educational resource, the AR program had been implemented within elementary and middle school classrooms. It was the goal of this study to determine how teachers implemented the program within their classrooms and to examine the process teachers used to determine the effectiveness of curriculum resources used. This study was conducted to provide teachers and administrators information that may be useful when considering purchasing the program or continuing its use.

Chapter Two provides an in-depth literature review examining an overview of the textbook selection process, the process teachers use to make decisions, an overview of Vygotsky's ZPD and how it is used in the AR program, an overview of the AR program, and explanation of the Star Reading assessments. In addition, literature was reviewed for previous studies regarding the effectiveness of the AR program. Chapter Three provides a description of case boundaries, data collection and analysis. The detailed description of the two-part interview process that included an examination of historical data on the Star Reading Assessment and the follow up reflection is included in this chapter. Chapter Four provides a description of the findings from the interviews and follow-up reflections and questions. It starts with a description of each participant and their input during the research process. The description of the findings and themes discovered for each sub question during the coding. Finally, the findings of the overarching research question and related themes are found at the end of Chapter 4. Chapter Five, the final chapter, provides an overview of the study, discusses implications and recommendations for practice and future research.

CHAPTER II

Review of Literature

There is a long history regarding textbook and resource material selection in the United States. Watt (2009) traced the process back to the early 1800's when Philadelphia was the first location to provide free textbooks to students in public school. By the late 1800's the state of Massachusetts became the first state to enact legislation that provided public school students with free textbooks. The end of the Civil war brought the conversation of acceptable textbooks to the forefront. Confederate states were concerned that textbook publishers in the north would portray history in a light that was unfavorable to them. According to Finn and Ravitch (2004) Southern-published textbooks referred to the Civil War as "the War for Southern Independence." Watt's research went on to explain that by the end of the 1900's, the main goal for state-level adoption was to control cost. Currently, the selection of textbook and resource materials varies from state to state (Phillips, 2014). Some states let the individual school districts decide, some provide standards and a partial list of books with the option for districts to seek a waiver to purchase textbooks not on the partial list, or districts are only allowed to choose books on the state-approved list.

The State of Oklahoma selects a committee of experts through a state-wide application process (Oklahoma State Department of Education, n.d.-2). This committee reviews the subject-specific textbooks and supplemental materials to determine whether they: exemplify quality, approach quality, or do not represent quality as related to the

state academic standards. The State Textbook Committee then votes to approve the materials list. The local districts then appoint a District-Level Textbook Committee to review and select the textbooks and supplemental materials for district use (Oklahoma State Department of Education, n.d. 3). Districts may apply for flexibility in use of State-Appropriated Funding by demonstrating to the State Board of Education that the textbooks and/or materials are current and appropriate for student learning.

Phillips (2014) conducted an empirical study of textbook selection policies for students grades 9-12. The author stressed the importance of selecting quality textbooks is important because 80-90% of homework assignments are textbook-driven and in 2004 roughly $4.3 billion was spent in the textbook market. The fact that there is a great impact on students and districts, Phillips felt compelled to look at how various states select textbooks. The history of approved textbooks arose because

> former Confederate states were worried about the way Northern textbook publishers would portray their history. Southern states established textbook selection policies to make sure anti-Confederate-leaning history was not taught in their schools. For years, different textbooks were published for the Northern and Southern states.

As a result of her nation-wide policy review, Phillips was able to identify three main groups:

1) Complete Choice States – Each school district had complete autonomy when selecting textbooks, usually teachers, parents, and school principals selected the textbooks. At the time of this writing, 29 states fell into this category.

2) Recommended List States – These states published a list of recommended textbooks, but exclusive use of these titles was not mandatory. Twelve states fell into this category
3) Restricted Choice List – Textbooks were chosen at the state level and implemented in districts throughout the state. Eight states fit into this category.

The author concluded that there was a link between religious fundamentalism and government policies. States with a more fundamental religious base tended to be states that allowed local choice due to the increased interest of constituent groups. On the other hand, she found that larger school districts were more likely to have restricted book lists due to less parental involvement. Her last finding indicated that the more state government contributed to school revenue, the more control they asserted over local school districts.

The process of teacher decision making in regard to student progress when taught new science content was explored by Duffee and Aikenhead (1992). According to their review, teachers made adaptations and adjustments to their curriculum based on feelings and impulses that they had learned through individual experiences and previous teaching assignments. They discussed the practical knowledge teachers have that allows them to draw on past experiences to respond to teaching situations. These adjustments were typically an attempt to change the current situation into one that fits better with their personal beliefs of what the teaching situation should be. Their past experience may include college education, previous teaching positions, and general life experiences. The teacher's past experiences will change over time as new experiences interact with the old

constructs. Teachers' assessment practices were a reflection of their own understanding of the assessment process. For example, teachers who understood how to interpret and use data from more formal assessments, would use those assessments to adjust their curriculum and instruction to meet the needs of their students. Teachers who have a greater understanding of anecdotal data will tend to gravitate toward a more informal type of assessment.

Siuty et al. (2018) set out to determine the role curriculum played in teacher's decision-making process. They conducted a qualitative study on 11 middle school teachers regarding reading instruction for struggling readers. Five teachers agreed to implement a program designed for Tier III reading intervention. The program included whole-group warmup, computer-based, individualized instruction, independent reading, and small group instruction. The program came complete with all necessary materials. This group was then compared with a group of six teachers who served struggling readers and had the freedom and responsibility of determining appropriate education resources for their students. The study found that the teachers who implemented the prescriptive program stated they were able to concentrate on implementation of the program and who should participate. This was because the program removed the need for them to make decisions regarding what to teach. In addition, the program used an in-depth pre-test which challenged the teachers' initial beliefs that middle school students did not struggle with basic phonics skills. Once their initial beliefs were challenged, the teachers were able individualize based on their students' needs instead of preexisting assumptions. The comparison group were faced with selecting materials and resources based on what they believed their students needed. Four of the six teachers reported selecting resources based

on the students' disability category. The comparison group did not have built-in progress or pre- post-test assessments and consequently their beliefs about what the students needed to learn or focus on was never challenged.

In an effort to gain clarity on the concept of data-based decision making in U.S. high schools, Ingram et al. (2004) collected data from 9 high schools throughout the United States. This qualitative study interviewed teachers, counselors, building and district administrators regarding their evaluation process. Their expectation was that teachers and administrators used systematic data to make decisions. Instead, they found 40% of the participants discussed using systematic data to make decisions and another 40% used anecdotal information, experience, or intuition to make decisions. The remainder of the participants described using a combination of systematic data and non-systematic data. When asked how good teachers measure the effectiveness of their teaching, both teachers and administrators referred to students' classroom behavior, students' feedback on courses and success in college or after college before using student achievement data. In fact, several teachers participating in the study voiced mistrust in data by describing situations where they felt data was misused or simply not used by others. Many teachers also discussed the concern that there are many aspects of student growth that cannot be measured. One example given was student success post high school. Many of the teachers feel this is an important indicator of the quality of their educational experience but questioned how they would ever capture this type of information.

The work is not over once textbooks and/or resources have been adopted for use. Once the resources have been implemented and evaluated, the stakeholders will know if

the efforts of selection were successful (Button, n.d.). The evaluation of textbooks and resources is a process that establishes the worth of a program and helps the users make decisions on whether to continue, stop, or modify the use of the materials. (Button, n.d.; Ingram et al., 2004; Melrose, 1998). The purchase of textbooks and supplemental resources require a financial obligation on the part of the district. In addition, it is important to evaluate these resources to determine whether the use of these materials is meeting the needs of learners (Button, n.d.; Duffee & Aikenhead, 1992; Ingram et al., 2004; Melrose, 1998; Siuty et al., 2018).

The decision-making process used by teachers tend to be guided by their feelings and impulses. When looking at implementing and adapting curriculum and resources, teachers base these decisions on what they have learned in previous teaching assignments and life experiences (Duffee & Aikenhead, 1992). The authors went on to explain that teachers will adjust their teaching based on their experiences and make decisions to change the current situation into one that better suits their own beliefs. Teachers may base their opinion on certain curriculum or resources on what they have heard from other teachers, resources they have used in the past and are comfortable with the implementation process, or they may have been part of the committee or group evaluating the materials. These teachers may look at the results of using these materials through a different lens than other teachers. It is possible they will look for successes of the program instead of taking an objective look at the results of using the program. This brings into question the effectiveness of teachers' evaluation of curriculum and resources. Siuty, Leo, & Knackstedt (2018) conducted a study of middle school literacy special education teachers. They worked with teachers who had recently adopted a very

structured reading remediation curriculum. As the teachers were introduced to and began using the curriculum, the teachers made decisions that substantiated their prior beliefs as opposed to being grounded in data on students' needs. Once the use of the curriculum disrupted and recalibrated their beliefs, the teachers were able to focus on student needs rather than preexisting assumptions. The process of adapting belief systems is met with many barriers. Two such barriers are the mistrust of data and measurement challenges (Ingram et al., 2004). Too often teachers feel that data is used as a tool by administrators to force decisions that have already been made rather than to shape decisions. Teachers also struggle with measurement challenges, the difficulty measuring certain skills. Educators have long acknowledged that not all student progress can easily be measured using standard measurement instruments. For example, how does a school measure a student's desire or love of learning? While producing students who love to learn is important, how is that measured. When looking at academic areas, measuring student progress can be somewhat easier.

Curriculum and resource adoption in the content areas are designed to improve student achievement. The continued use of these materials and resources should provide measurable progress for all students. One program that has been widely implemented to improve student reading skills is Accelerated Reader (AR). This program provides structured reading practice designed to improve student reading comprehension. Once the district or building has made the decision to implement the AR program, the question remains: How do teachers determine the effectiveness of adopted programs and resources.

In order to fully understand and evaluate the AR program, it is important to understand the design and implementation guidelines. Following is a discussion of the AR program, the theoretical foundation, and research regarding the effectiveness of the program.

Literacy Practice

Students must practice their reading skills to improve their reading ability (Allington, 1977; Cunningham, 2005). The International Literacy Association (2019) states that also important that students read books that are at the appropriate level for their reading ability. Adams (1994) noted decades ago, reading independently is critical for the development of literacy, but when students read text that is too difficult for them, they learn and comprehend little. Therefore, determining appropriate texts for students – at the just right level – is an important task for teachers and students. Although helping students find a love of reading is not an academic goal and does not appear in most teaching standards, students who love to read are more likely to read in their spare time, even if it is not required (International Literacy Association, 2019). Therefore, most districts and teachers would readily agree that supporting early success and encouraging a love of reading is of the utmost priority. Optimizing teaching by finding the optimal learning zones is one way to accomplish this task. The work of Vygotsky identifies such a zone.

The review of scholarly literature began with Vygotsky's translated works in order to gain an understanding of the basis for his concept of sociocultural learning as it relates to the zone of proximal development. After reading and reviewing the seminal texts translated from Vygotsky's work (1978, 2012), scholarly texts with in-depth

analysis of his work were reviewed to gain greater clarity regarding the role of the more-knowledgeable other in the zone of proximal development. Peer reviewed journals as well as published books were part of this review (Berk & Winster, 1995; Chaiklin, 2003; Eun, 2019; Fani & Ghaemi, 2011; Wink & Putney, 2002). In addition, publications regarding ZPD and cognitive load (Center for Education Statistics and Evaluation, 2018; Sweller, 1988) were also explored to help understand the use of ZPD and how it is impacted by the type of material a student is reading. From there a focus on literacy instruction and the use of the zone of proximal development was reviewed (Adams, 1994; Allington, 2013; Allington, 1977; Arnold & Sabelski, 2007; Betts, 1946; Cunningham, 2005; DeVries, 2004; Fountas & Pinnell, 1996; Fountas & Pinnell, 2012/2013; International Literacy Association, 2019; Johnson & Keier, 2010; Mooney, 1990; Pearson & Gallagher, 1983; Smith, 1998; Thorndike, 1934; Walker, 2008).

Resource information from Renaissance Learning, Inc. (2012a, 2012b, 2013) was reviewed in an attempt to gain clarity regarding their use and understanding of the zone of proximal development as well as their use of independent and instructional reading levels. Eight resources published on their website were reviewed and used for this exploration. These resources are not peer-reviewed, but are provided by Renaissance Learning, Inc. as support for AR and can be found on their website. In order to compare Renaissance Learning's use of the ZPD with the original theory of Vygotsky, the materials reviewed were those available from Renaissance. One of the publications is labeled as a white paper, one a technical paper, and one a report. The others are topical pages on the company website. In addition, personal contact was made to acquire a reference cited in the Renaissance (2012b) publication, *The Research Foundation for*

Accelerated Reader Goal Setting Practices. Review of the reference determined the research was conducted by The Institute for Academic Excellence, which is a privately funded organization founded by Terrance and Judith Paul, the original developers of Accelerated Reader. This document does not meet basic criteria as a peer-reviewed journal, but information from this reference has been included in this paper (Schnick, 1995).

Vygotsky's Zones of Development

Lev Vygotsky (1896-1934), a Russian psychologist, developed the concept of a zone of proximal development (ZPD) through his research on intelligence and learning. Instruction at this range is that in which there is the highest likelihood that students will learn successfully (Johnson & Keier, 2010). They referred to three different zones that are reflective of the student's developmental performance, the Zone of Actual Developmental level (ZAD), the ZPD, and the level that is currently out of reach (Johnson & Keier, 2010). The ZAD is the range of developmental skills at which the child can perform independently. The ZPD is the area of development between the ZAD and the child's developmental potential. Work within this zone requires the assistance or scaffolding of a more-knowledgeable other to help advance the development. The more-knowledgeable other helps pull the child's development from needing assistance, to becoming independent. Working within the ZPD, the child can acquire new skills and understand new concepts with the guidance of a more knowledgeable adult or more-capable peer (Vygotsky, 1978; Vygotsky, 2012).

Connecting Vygotsky's Work to Reading Development

The level at which a student can read unaided is referred to as the independent or basal level. In Vygotskian terms, this would be operating on the intramental plane, or that which exists within the child. At the independent level, students comprehend at least 90% of the information they read based on factual and inferential questions and can accurately decode greater than 95% of the words in the text; this is the desirable level for silent reading (Betts, 1946; DeVries, 2004; Walker, 2008).

The level that precedes the independent level is referred to as the instructional reading level, which Betts (1946) described as "where learning begins" (p. 447). This student is operating on the intermental plane, as identified by Vygotsky, which occurs in the relationship between the child and other people or supporting tools/artifacts. Betts stressed that in order for students to improve their reading ability, they must not read books that are too easy, nor should they be reading books that are too difficult. The instructional level offers the student new vocabulary and words to decode that will help them grow as a reader. At the instructional level, the student can comprehend at least 75% of the material and can decode 95% of the words in the text (Betts, 1946; DeVries, 2004; Walker, 2008). Teachers should design and plan instruction at the instructional level because the student's comprehension is compromised, therefore independent comprehension is difficult, and instruction is needed.

The out-of-reach reading level can also be referred to as the frustration level. At the frustration level, the student comprehends less than 50% and can decode less than 90% of the words encountered (Betts, 1946; DeVries, 2004; Walker, 2008).

Vygotsky's ZPD Theory in Use

Vygotsy's identification of the zone of proximal development described an aspect of learning that bridges the child's current independent performance level and their potential (Berk & Winster, 1995; Smith, 1998). Vygotsky believed careful teaching from an adult, or more knowledgeable peer, could bridge the gap between the independent level and the potential. According to his research, development and instruction are interconnected but are measured differently (Vygotsky, 2012). Learning a concept through instruction is just the beginning, but careful, scaffolded instruction can precede development.

Providing scaffolded instruction to beginning readers assists them in expanding the range of text they will be able to read without assistance. The level of text a student can read without assistance is commonly referred to as the independent reading level, this level falls in the range Vygotsky refers to as the zone of actual development (ZAD). As teachers provide instruction and varied levels of support to assist the reader in decoding and understanding text that is above the student's ZAD, they are working within the instructional range or Vygotsky's ZPD. With the teacher's help and guidance, the student is able to complete the task successfully. The level at which the student is unable to perform successfully, even with the support and guidance of a teacher, is the student's frustration level or what Vygotsky refers to as the out-of-reach zone.

Antonacci (2000) describes the process of adjusting the level of support, or scaffolding, when teaching emergent readers. For students who need a tremendous amount of support, the book introduction step of a guided reading lesson may involve the teacher reading the title to the students while pointing to each word. The teacher may also

narrate her thinking through a picture walk or ask probing questions to help set the purpose for the reading of the text. At this level, the student needs the assistance of the teacher during the entire introduction. As the student grows in their ability, the teacher gives more responsibility to the student which allows the student to be more independent in their own reading. For example, the student now understands that they can look at the cover of the book and begin to anticipate what the story might be about, they are able to locate the title on the cover of the book independently but might need help with some of the words. The student continues to need less support from the teacher at this level in order to successfully navigate the book introduction until the new levels of text complexity create a new ZPD and require new cycles of instruction.

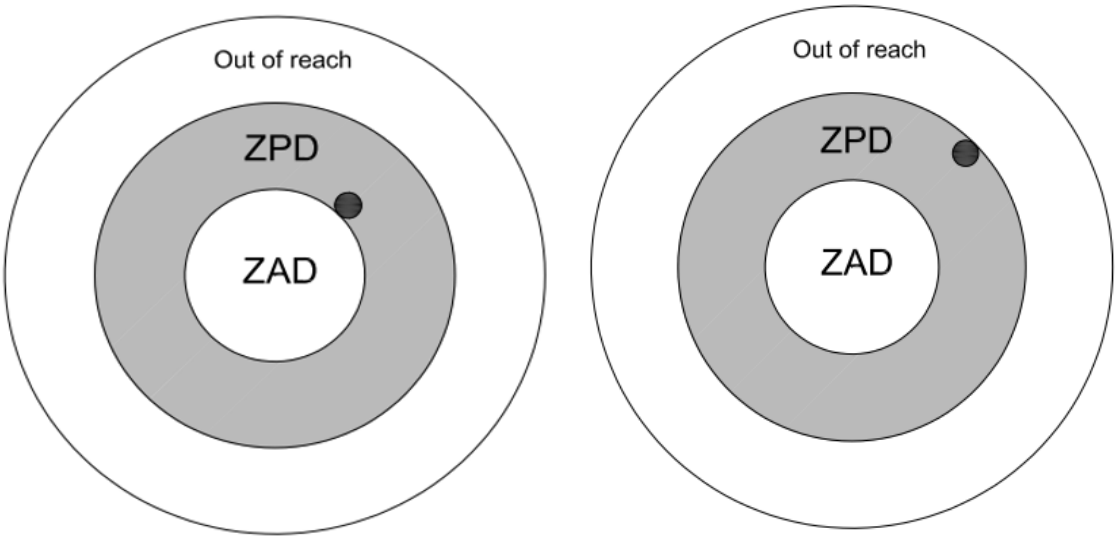
Johnson and Keier (2010) illustrated the levels as shown in Figure 2.1. The image on the left illustrates a skill that falls just outside of the student's ZAD. At this level, the student is approaching the independent level, or ZAD, and requires little assistance from the teacher. The authors use the example of a fluency lesson designed to help students recognize fluent reading versus choppy reading. The students have listened to examples of both fluent and choppy reading demonstrated by the teacher and have practiced reading familiar text. The teacher listens to the students read and using responsive prompts such as:

- “Did you sound smooth or choppy?
- Go back and put it all together.
- Make it sound like real talking” (Johnson & Keier, 2010, p. 38).

Once the students can independently self-monitor their reading for fluency, this skill is now within their ZAD.

Figure 2.1

Location of Guided Practice and Modeling in ZPD



Note. The image on the left represents work that would need light support from the teacher. The image on the right represents work that would need the heaviest support from the teacher. From "Catching Readers Before They Fall: Supporting Readers Who Struggle, K4," by P. Johnson and K. Keier, 2010, p. 42-43. Copyright 2010 by Pat Johnson and Katie Keier.

Compare this with the image on the right which illustrates a skill that falls at the outer edge of the student's ZPD, which is almost out-of-reach for the student. Teaching a skill at a level just outside of the student's out of-reach level would require more teacher support than teaching a skill at a level just outside of the student's ZAD. Johnson and Keier (2010) use the example of helping a student learn to self-monitor by checking the endings of words. The teacher begins the lesson by discussing the targeted skill and why it is important. The teacher models the skill by reading the sentence and emphasizing the ending of the word, then asks the student if he saw how she was checking to see if the word looked right at the end. Modeling is the greatest level of support the teacher can

offer and this activity would fall at the outer bounds of the ZPD, almost to the child's out-of-reach range, as illustrated in the image on the right. As long as the child continues to require instruction and guidance of the teacher for this skill, they are operating within their ZPD.

Providing instruction at the appropriate level for each child can be a daunting task for teachers who are responsible for working with 20 or more students in their classroom. Due to this challenge, school districts and teachers often look for resources and programs to use in addition to

the classroom reading curriculum or basal series. One such supplemental program is Accelerated Reader (AR) by Renaissance Learning. The AR program provides a framework for structured reading practice by identifying books that are within the range determined by AR as appropriate in helping each student become a better reader. As Renita Schmidt (2008) reflected on her school's consideration and adoption of the Accelerated Reader (AR) program, she kept thinking back to the selection committee's goal of promoting a lifelong love of reading. She remembered the selection committee being influenced by the AR homepage stating that AR would turn all students into successful readers who loved to read. The homepage does not explain how the AR program guides students to love reading, but they do state that the program uses has over 200,000 books for students to choose from which allows for individual students interests and reading levels (Renaissance, n.d.-3).

The AR program uses Vygotsky's ZPD to determine the best range of books students should read for maximum gain in skills. Through the use of assessment data, students' optimal range of text level is determined, which AR considers their independent

reading level. The students then read books within this independent level and take a short, online comprehension quiz over each completed book. Students earn points determined by the book's complexity and their quiz scores.

If, as Vygotsky suggests, that the ZPD is that range in which learners can complete tasks with the assistance of another, this would suggest that the ZPD would be synonymous with the instructional level. AR uses the ZPD however, as an independent reading level. This discrepancy in use is the focus of this literature review. Vygotsky's intention was that ZPD be used as the range where instruction and support are given to help the child gain skills (Vygotsky, 1978). Vygotsky viewed this as a social practice that he describes as learning on an intermental plane. This learning is done in cooperation and interaction with others (Wink & Putney, 2002). Without the opportunity to interact with others, whether this is in the form of discussion or modeling, we are unable to internalize information.

Accelerated Reader and Its Use of ZPD

The Accelerated Reader (AR) program is designed for personalized reading practice (Renaissance, n.d.). This supplemental reading program offers students the opportunity to read books that have been determined to be within, what Renaissance has determined to be, their instructional reading level, or ZPD, and take short comprehension tests that earn points toward a goal. Students select books from their classroom or library to read. Renaissance has an assigned point value for books that are based on the reading level of the book and the number of words contained. Renaissance defines the instructional reading level as the "highest level at which a student is 80% proficient (or higher) at comprehending material with assistance" (Renaissance, 2020b, p.1). The books

are assigned points that reflect the difficulty and length of text. For example, a book written at the first-grade level is typically worth .5 points. *The Adventures of Captain Underpants* is a book written at the 4.3 grade level and is worth 1.0 points. Students have goals for the number of points they should earn.

Once a student finishes a book, they complete an online reading comprehension quiz. Students are given four responses to choose from in order to answer fill-in-the-blank or short answer questions. The questions focus on literal understanding and typically focus on characters, events, and literary features of the book. The questions are presented in chronological order based on the events of the book. Renaissance states that this practice "reinforces the story structure as a student takes a quiz" (Renaissance, 2018, p.19). Renaissance has set the pass rate for quizzes as 80%. If a student scored below the required percentage, they do not earn any points for reading the book. They are locked out of re-taking that particular quiz unless the administrator overrides the lock. If the student scores 100% on the quiz, they get the entire point value of the book. If they score 90%, they get 90% of the point value. The more difficult the book, the higher the point value. Beginning reader books start at .5 points per book. Points earned are used by school districts in various ways. A few examples include

- giving students the opportunity to purchase items in a reading 'store,'
- utilization of points for earned grades or completion of AR goal is part of the students' grades,
- end-of-the-year celebrations for students who have met their reading goal throughout the school year, and

- some schools do not give incentives, but simply encourage their students to meet their individual point goal.

Renaissance (2012a) refers to this as guided independent reading, which they describe as consisting of three steps. The first step is for students to read books they are interested in that match their identified current level of reading. The second step is taking a quiz to determine whether they understood the reading. The final step is providing feedback to the teacher regarding the students' understanding of the reading practice from the results of the student's quiz.

Renaissance suggests acknowledging students for percent of the goal completed. For example, a bulletin board is divided into quarters, and students' names are put in the section representing the percent of their goal they have achieved. Renaissance cautions against competition related to AR points. Students should not be competing with each other but should be competing with themselves. It is unknown how many schools continue to use the AR program as a competition between students. After completing an AR quiz, the screen displays a black and white flower animation that is colored according to how close the student is to reaching their goal. For example, if a student has earned 5 points toward their 10-point goal, the flower is colored halfway up the stem. The student then gets to see the flower add color to show the quiz they just completed. This provides students a visual representation of their progress toward their reading goal.

History of Accelerated Reader

Accelerated Reader was founded in 1986 by Terrance and Judi Paul. Judi earned a degree in elementary education but never taught. Her husband, Terrance, was a lawyer and businessman. Judi wanted her four children to experience the same joy from reading

that she did. In addition, she wanted them to be exposed to the classics that she enjoyed reading when she was a child. She put together a list of classic novels and assigned each novel a point value that was based on the difficulty and length. In order to ensure that her children were able to comprehend the books, she developed multiple-choice questions for each novel and awarded points for each correct answer. St. Mary's Our Lady Queen of Heaven Catholic School in a neighboring town offered to pay Judi for the program. This idea caught the attention of Judi's husband who helped develop computer software for the program. (Renaissance Learning, Inc., 2017)

The Pauls originally developed the Accelerated Reader program under their software business, Advanced Learning Systems. They later changed the name to Renaissance Learning Inc. which was sold to a private equity firm in 2011 for a reported $455 million (Vitello, 2014). Renaissance Learning, Inc. is the parent company of Accelerated Reader. The website indicates that the AR program meets the requirements for Every Student Succeeds Act (ESSA); however, Schmidt (2008) cautions that much of the research referenced on the website was "financially supported by Renaissance Learning . . . or conducted by researchers affiliated with the company" (p. 207).

Accelerated Reader's Description of the Zone of Proximal Development

The AR program refers to the zone of proximal development (ZPD) as the recommended reading level for students to get the most benefit from the program. Vygotsky (1978) describes ZPD as "what a child can do with assistance today she will be able to do by herself tomorrow" (p. 87). This description can be interpreted as the instructional reading level identified by Betts (1946) because at the instructional reading level, the student depends on the teacher or parent to assist them in the reading process.

This level is where growth occurs. The AR program, on the other hand, utilizes the ZPD as an independent reading level because it is the reading level children will use to read independently (Schmidt, 2008). AR focuses on independent reading, not extending ideas and concepts through interaction with others (Schmidt, 2008)

Throughout the Renaissance Learning literature and website, the publishers refer to Vygotsky's ZPD as the foundation of student success when using Accelerated Reader (AR). "A zone of proximal development is a theoretical concept . . . that has been translated into the realm of guided independent book reading with the development of ZPD ranges." (Renaissance, 2012b, pg. 4). According to AR's founder, T.D. Paul, when students read within their ZPD, the portion of the text they know assists them in understanding the unknown vocabulary of the text (Schnick, 1995; Renaissance 2012b). This would align with the independent reading level (Betts, 1946; DeVries, 2004; Walker, 2008).

Identifying the ZPD for AR Use

The foundation of the AR program is built upon students reading books that are at an appropriate level. To determine the appropriate reading levels, students must be assessed. Schools are free to use an assessment instrument of their choosing, but Renaissance also markets the Star Reading assessment, which shares information with the AR program. If schools opt to use a different assessment than Star Reading, the teachers have the option to manually input each student's reading level, and the range of books they believe are most appropriate for each student. Using the Star Reading assessment makes determining reading levels, student progress, and goal setting less labor-intensive as it integrates with AR. Star Reading assessment is also one of the six approved

screening assessments approved by the Oklahoma State Department of Education (2021) for Reading Sufficiency reporting.

Star Reading Assessments

The Star Reading assessment family consists of two reading assessments, Star Early Literacy and Star Reading. Both assessments consist of a predetermined number of multiple-choice questions that are completed on a laptop, desktop, or tablet. Renaissance uses computerized adaptive testing (CAT). The CAT format moves the student through various levels of difficulty. When the student begins missing most of the questions, the computer program routes the student back to easier questions. This fluid movement helps pinpoint the level where the student achieves the most success.

Star Early Literacy Assessment. The Star Early Literacy assessment is a computerized reading assessment designed for students in grades pre-kindergarten through third grade. Star Early Literacy assesses forty-one skill sets in ten essential literacy and numeracy domains. The ten domains include alphabetic principle, the concept of word, visual discrimination, phonemic awareness, phonics, structural analysis, vocabulary, sentence-level comprehension, paragraph level comprehension, and early numeracy. The computer reads the questions to the student, and the student uses a mouse or touch screen to select the correct answer from a field of three or four. Upon completion of the assessment, the student is given a scaled score (SS), which identifies their literacy classification. The lowest literacy classification is Emergent Reader (SS 300-674). Within the Emergent Reader classification, students scoring in the 300-487 range are identified as Early Emergent Reader. Early Emergent Readers are beginning to understand that printed text has meaning, knows that text flows from left to right, and is

beginning to identify colors, shapes, numbers, and letters. A SS of 488-674 indicates the student is a Late Emergent Reader. Characteristics of a Late Emergent Reader are being able to identify most letters, matching most of the letters to their sound, and beginning to read words around the home. The next classification level is Transitional Reader (SS 675-774). Within the Transitional Reader classification, students who score in the 675-724 range are considered Early Transitional Readers, which means they have mastered alphabet skills and letter-sound relationships and can identify many beginning and ending consonant sounds, and long and short vowels. Late Transitional Readers (SS 725-774) can blend sounds and word parts to read simple words and use multiple cueing strategies to read words. The highest classification is the Probable Reader level (SS 775-900) and indicates the student is becoming proficient at recognizing many words and has learned many sight words. (Renaissance, 2019a).

The Star Reading Assessment. The Star Reading assessment was designed for students in grades one through twelve. According to Renaissance (2013), the Star Reading assessment is a standards-based test comprised of 34 questions and can be completed in about 15 minutes. Star Reading assesses word knowledge, comprehension strategies, analyzing literary text, understanding the author's craft, analyzing an argument, and evaluating text (Renaissance, 2015a). It requires the student to read the passage independently, but the program has the option to read the questions and possible answers to the student. The questions focus on literal understanding and typically focus on characters, events, and literary features of the book. Questions are presented in chronological order based on the events of the book. This assessment consists of 34 computer adaptive test questions that incorporate multiple-choice items that focus on

literal understanding. For the younger students, some are fill-in-the-blank sentences in addition to short passages with multiple-choice responses. Renaissance states that this practice "reinforces the story structure as a student takes a quiz" (Renaissance, 2018, p. 19).

According to Renaissance Learning, the Star Early Literacy and Star Reading assessments take between 10 and 15 minutes to complete. The Star Reading assessment provides teachers with ranges but does not identify the areas of reading difficulty for the student. The teacher must investigate through additional assessments where the student needs additional instruction.

After students complete the Star assessment, they are assigned a reading range that Renaissance Learning calls the ZPD. The student then uses the reading range as a guideline for checking out the appropriate level of books from the school or classroom library. According to the Renaissance Learning (n.d. 3) online resource, EdWords, the ZPD is the distance between the student's actual developmental level and potential developmental level. They describe the actual developmental level as the independent problem-solving level; the potential developmental level is where they can problem-solve with adult guidance or assistance from capable peers. Co-Founder of Accelerated Reader, T.D. Paul (1995), states that a book within the student's ZPD will be challenging and include new vocabulary that the student can understand through context clues. Paul views this as assisted reading. Vygotsky did acknowledge that there were tools that could function as the more-knowledgeable other, for example, mnemonic techniques, diagrams, maps, etc. (Wink & Putney, 2002). These tools are situated in the interpersonal plane and are used in conjunction with or as a result of social interactions and "do not simply

facilitate an existing mental function while leaving it qualitatively unchanged" (Resnick et al., 1991, p. 91). Although the AR program identifies the student's ZPD as the appropriate range for students to read, Renaissance does acknowledge that the ZPD is an approximate range, and teachers should use their professional judgment regarding the child's ability and interests.

Chapter Conclusion

Vygotsky's zone of proximal development (ZPD) clearly identifies this zone as a cognitive space in which students are not able to perform without the assistance of an adult or more knowledgeable peer. If AR is truly identifying the ZPD correctly, the students would be unable to read books at this level independently. Further investigation needs to be conducted to determine whether the assessments are identifying the ZPD as an independent reading range or whether students are being asked to read books that are clearly too difficult for them to read independently. The Star Reading assessment (Renaissance, 2020b) establishes the student's instructional reading level as the highest reading level in which the student is 80% proficient in comprehending. Star Reading does not assess word recognition but states, "research has found that this level of comprehension corresponds to being at least 90-98% proficient at recognizing words" (Renaissance, 2020b, p. 1). If this correlation is accurate, the instructional reading level identified by Renaissance could, in reality, fall in the range Betts (1946) identified as the frustration level. With this in mind, the AR program has been leaving students to independently read text that, without appropriate support, is too difficult for them to decode and understand. That means we are setting students up to fail.

With the recent downturn in the economy, school districts will be forced to look at supplemental programs to determine whether it is fiscally responsible to continue their use. The heightened fiscal awareness is a good time for teachers and administrators to step back and evaluate their use of programs such as Accelerated Reader. Teachers must determine what their goals are for this program and take a good, hard look to determine whether the program is meeting those goals. They must also look at the theoretical foundation for the AR program to determine whether it fits with their theoretical perspective. Do they believe that children will learn when they are ready? If so, is a program that is designed around a theory that children need a more-knowledgeable other to help them grow in their development fit with their beliefs? Are teachers using this program as an independent reading activity? If so, are the students capable of successfully reading the books identified as within their zone of proximal development? Teachers must also take the time to help themselves understand the impact of using this program on their young readers. Does it really foster a love of reading or is it something students do simply to earn points? Educators should also examine whether there is a need for a supplemental reading program. If the primary instruction is utilizing research-based curriculum and delivered with fidelity, why is there a need for a supplemental program? Perhaps resources could be better spent on quality professional development to help in-service teachers grow in their understanding of literacy instruction.

Although the thought of reading text where the student recognizes more than 99% of the words in the text seems as if that is too easy, consider that if an adult read a paperback novel with 98% accuracy, they would encounter about six words on each page that were unfamiliar, and the reader would have to work in order to decode. Adults

consider this level of accuracy as hard texts (Allington, 2013). Thorndike (1934) further clarified this point by cautioning that a reader should only rarely encounter unknown words. The guiding principle is not over 1 in 200 words.

This chapter gave an in-depth review of the literature regarding the ZPD as identified by Lev Vygotsky. This review compared the original definition and use of the ZPD with the use by AR. In addition, descriptions of the Star Reading and Star Early Literacy assessments were also given. The following chapter will provide a description of the theoretical perspective and the research approach. Chapter 4 will provide a summary of the findings of this study, followed by chapter 5 which is a summary and provides suggestions for future research.

CHAPTER III

METHODOLOGY

Renaissance Learning, LLC publishes an online supplemental reading program called Accelerated Reader (AR), in which they use Vygotsky's zone of proximal development (ZPD) as a theoretical and pedagogical foundation throughout their marketing and research publications. Renaissance Learning describes the AR program as a personalized supplemental reading program that accelerates progress. The program is expensive, currently $7.35 per student, a significant investment for small districts. To be good stewards of their community's resources, school district administrators should evaluate the effectiveness of the Accelerated Reader (AR) program to justify the expenditure.

Research Questions

The purpose of this study is to answer the following research questions:

- How did teachers determine a supplemental reading program's effectiveness?
    - How did teachers implement the program within their classrooms?
    - How did teachers determine goals [for their students? for the program?]
    - What evidence did teachers use to support their determination of effectiveness?

- How did data inform teachers' perception of the AR program's effectiveness?

This chapter describes the research methods undertaken to address the questions in this study.

Pragmatic Worldview and Theoretical Perspective

My education career began as a teacher for students with multiple disabilities. Therefore, I consistently focused my teaching on the practical use of the skills. For example, teaching students to rote count or recite the alphabet, but not working to ensure they understand number concepts and use of the letters, gives them no practical use of these skills. Early in my teaching career, I remember when a parent explained to me, they had taught their child his name, address, and phone number to a song. She indicated that all you must do is sing the first line, and the child would chime in and sing his information. This concept concerned me. We need our students to know their personal information so they can tell someone who they are and their parents' names in an emergency. It is doubtful that the person who finds a child crying in Walmart will know to sing the first line of their personal information song. This skill had no functional application, and I vowed at that point to always make sure my students could use the information taught to them in a variety of contexts. This stance has a name: pragmatism.

Crotty (1998) explains pragmatism as an "exploration of cultural ideas and values in terms of their practical outcomes" (pg. 73). Pragmatism allows the researcher to move beyond the issues of truth and reality by acknowledging there are multiple realities that can help find solutions to practical problems (Feilzer, 2010). Pragmatists understand that there is a reality, but the reality is fluid and changes based on our actions.

The theory of pragmatism began in the early 1900s with Charles Sanders Peirce, William James, and John Dewey. The premise of this theory is rooted in testing ideas and approaches in practice (Patton, 2015). This exploration allows the researcher to determine whether the approach has merit in their evaluation setting. It frees the researcher to look beyond the idea of right/wrong and what parts of the idea are effective. The pragmatic view guides us to search for practical answers that help us address real-life problems. Additionally, the practice of pragmatic research involves cooperative interaction with the end users and strives to identify problems that, if solved, will benefit the community at large (Dillon & O'Brien, 2018).

In the case of this research, the community is the school district. I designed this study with input from administrators and involved teachers who were familiar with the AR program. Because a group of teachers desired to reinstate the use of AR, the district sought to determine whether the use of AR was a good, fiscal decision/investment. For pragmatists like me, results that have no practical, functional value are meaningless. According to Crotty (1998), the view of a pragmatist is optimistic and progressive. By approaching research from a pragmatic view, we can look ahead and help shape how we view concepts in the future.

Theoretical Lens

The process of making judgments about the merit, value, or significance of a program, product, or performance of a person or group of people is the science of program evaluation (Patton, 2018). When looking at the field of program evaluation, there are three primary branches of inquiry: methods, valuing, and use (Alkin & Christie, 2012). This evaluation study will use the valuing model of inquiry. The valuing approach

to program evaluation began with the work of Michael Scriven (1983), who believed that it is the duty of the evaluator to place value on the outcomes or use of programs. He went as far as to state that the job of the evaluator is to decide whether a program is "good" or "bad."' Evaluators fail when they simply summarize the use of programs and allow the non-professionals to apply that information to determine the effectiveness or value of the program (Scriven, 1983). Since Scriven's introduction to the values engagement emphasis in program evaluations, Jennifer Greene has become a prominent figure in this discipline. Greene refined Scriven's original idea by including more involvement with stakeholders (Christie & Azzam, 2005). In traditional program evaluation, the researcher conducted the study and reported only to those in power, not necessarily the people involved in implementing the practice or programs (Lopez, 2005). As a result of Greene's reframing, stakeholders are more broadly defined to include those who have a vested interest in the program that is to be evaluated, not just those in power. This can include program staff, program participants, and others in the community or organization (Alkin & Vo, 2018).

Qualitative Research Approach

One issue that makes forward-looking research difficult is the research-to-practice gap. As a K12 educator, I rarely hear fellow educators discussing current research trends. When asked, I often hear that the research does not pertain to them and their daily teaching. Some researchers believe this research-to-practice gap exists because research has not been designed for practical implications (Carnine, 1997).

One of the goals of this study was to close the research-to-practice by including the teachers in the case study as a source of data, using their words and impressions to help answer the research questions. The research then becomes a tool used in the change

process through engagement of the participants studying their problems (Whyte, 1989). The teachers have voiced that the loss of the AR program is a problem for them and their students. By researching the use and understanding of the AR program at Greenburg Public Schools (GPS), this information could guide teachers in their appeal to administration to reinstate the program. Another possible outcome could be that the teachers change their initial opinion of the value of the AR program.

Research Design

A case study explores a specific issue within a particular setting (Creswell, 2007). In this instance, the case is defined as the school district's use of AR in grades three through eight. When looking at a case study, the researcher must frame the study. Framing describes the 'what' of the study. In this case, the study is framed and bounded by teachers' use of AR in one small, rural school district. Although this is not the only supplemental program used within the school district, it is the only supplemental program used school wide. This case study examined how practicing teachers in one rural school district understood, used, and evaluated the effectiveness of the AR program. Interviewing teachers from grades 3-8 who used AR provided various perspectives and levels of understanding regarding use of the AR program in this school district. I used three sources of data to give the depth and breadth of understanding: interviews, participant interpretation of archival data, and participant reflections of the AR program when considering data extracted from the Star Reading assessment scores.

Procedures for selecting participants for the case study, data collected, and the process used for analyzing the data are included in this section. For research to be pertinent to teachers, it must involve them and be about them. For this reason, case

studies are a good fit for pragmatism. By making this research about and by the teachers using this program, the research results could be meaningful to them and possibly foster changes in practice, where and if necessary. A case study's goal is to discover transferable information in which knowledge can be applied to similar contexts (Bloomberg & Volpe, 2016). In this case teachers may become more aware of their decision-making process which could result in greater understanding of how they are making decisions.

Setting and Context

Greenburg Public Schools (pseudonym) is a rural school district located approximately 35 miles from a metropolitan area. The district graduated its first class in 1908 and in the 2021-22 school year had approximately 1300 students enrolled. The ethnic makeup of the school population is approximately 40 percent Native American, 50 percent white, and less than 10 percent other ethnicities. The school district serves students in grades Prekindergarten through 12 and has three sites. The elementary school serves grades pre-kindergarten through fifth grade and has four teachers per grade level. The pre-kindergarten program serves students for the full school day. Although the elementary is considered one site for state reporting purposes, the building has been divided into an upper and lower elementary. The lower elementary includes grades pre-kindergarten through second, the upper elementary includes grades three through five. Each level has its own principal but shares a counselor. The middle school serves grades six through eight and is served by a principal and counselor. There are four teachers for each grade who teach the core subjects and other teachers who teach electives. The high school serves students in grades nine through twelve. At one time, the site operated as two different buildings, mid-high and high school. There is a small parking lot that

separates the buildings, but the students move back and forth between buildings throughout the day. There is now one principal and counselor serving the high school site.

Greenburg Public Schools (GPS) began using Accelerated Reader (AR) more than 15 years ago at the elementary and middle school levels. Although there are other supplemental programs used at GPS, AR is the only supplemental program that is used throughout the K-8 setting. Renaissance designed AR to supplement classroom reading instruction by providing a structured format for independent reading practice. Johnson and Keier (2010) describe independent reading practice as a time for students to read books matched with their ability and interest level. These books should challenge students enough to practice integrating the strategies they have been taught as part of their classroom reading instruction. At GPS, teachers used the Star Reading assessment to determine the current reading level of the student and the level of books best suited for them to use during their independent practice reading. Students then read books for practice and took a short comprehension quiz over the book. AR has assigned point values for each book based on the text difficulty and length. Once students finished a book, they completed a comprehension quiz and earned points determined by the book point value or a percentage of the point value. For example, if a student took a quiz on a one-point book and scored 100%, they would earn one point; if they scored an 80%, they would earn .8 points.

GPS began with a stand-alone version that required schools to purchase packages of quizzes. The schools then made sure they had the books in their library that were in the quiz package. This often resulted in buying the titles that were in the quiz package. As the

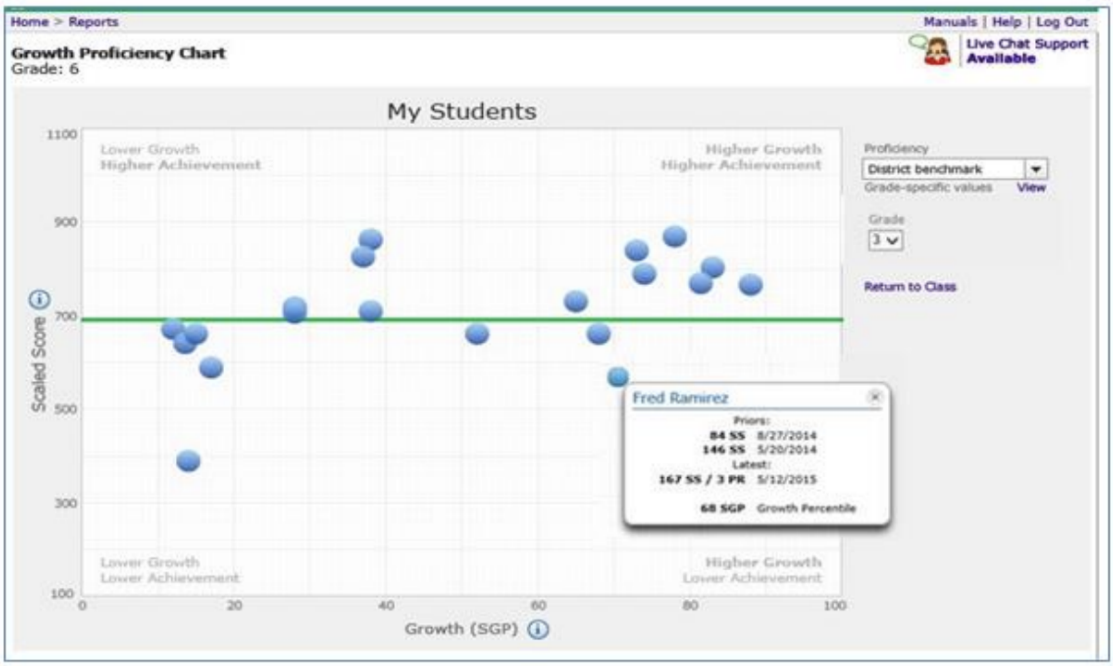
students worked their way through the initial package of quizzes and the library purchased new books, the district had to buy additional quizzes. This process limited school librarians to purchasing books that had quizzes available within the same package. Ten years ago, the fully online version became available and included school access to all AR quizzes. Within GPS, students in grades two through eight participated in the AR program for the entire school year. Some first-grade students participated during the spring semester if they were reading connected text, or multiple sentences related to each other. The Star Reading assessment and Star Early Literacy assessment were used for students beginning in kindergarten. The AR program license was not renewed for the 2020-2021 school year due to the loss of the federal funding source that had previously paid for the program. Although this supplemental program had been a staple in the district for over a decade, a survey of teachers in the spring of 2019 indicated the teachers had no specific, consistent goal for using the program. Most of the teachers stated that it encouraged/motivated the students to read books outside of the school day, while others indicated it helped improve reading comprehension.

Renaissance offers readily available reports that inform teachers of individual student performance through their website; whole-class data reports were also available that showed their entire class on a single report. Diagnostic reports for individual students indicated specific strengths and weaknesses. These reports provided various scores, such as Lexile levels, instructional reading levels (IRL), national percentile ranking, ZPD, and scaled scores. The scaled scores on the Star Reading assessment range from 0-1400 and were based on the question difficulty and the number of correct responses. According to Renaissance, this score is helpful to compare a student's progress over time and across

grades (Renaissance, 2019b). Prior to the latest update of the Renaissance website, a Student Growth Percentile interactive graphic was available that showed dots on a chart representing each student's score (see Figure 3.1). Student markers that appear above the horizontal line indicate those students who scored above the benchmark, while those appearing below the line scored below the benchmark. The vertical axis showed the 50th percentile of growth when compared to other students with similar beginning scores. The teacher used the cursor to hover over the dot to see which student's score it represented. A small window opened, and you could see the student's name, scaled score, and student growth percentile (SGP). The new version of AR does not include this specific report; however, one report has a column that indicates each student's growth percentile (see Figure 3.2).

Figure 3.1

Sample of Interactive Student Growth Percentile Report



Note. Retrieved from https://doc.renlearn.com/kmnet/r005690010d45ee2.pdf

Figure 3.2

Renaissance, Star Growth Report with Student Growth Percentile (SGP)

Growth Proficiency Category	SGP *(Exp. = 50)*	Test Date	Test Duration	SS	GE	PR	NCE	IRL	Est. ORF[a]
High Growth, Low Proficiency	82	08/19/20	04:19	81	1.0	8	20.4	PP	23
		03/01/21	14:40	235	2.3	34	41.3	1.8	60
		Latest Change		**154**	**1.3**	**26**	**20.9**	**2.8**	**37**
High Growth, High Proficiency	51	08/19/20	10:16	198	2.1	44	46.8	1.4	51
		12/11/20	18:55	293	2.8	61	55.9	2.4	76
		Latest Change		**95**	**0.7**	**17**	**9.1**	**1.0**	**25**
Low Growth, High Proficiency	23	08/19/20	14:04	177	1.9	38	43.6	1.1	46
		12/16/20	07:59	233	2.3	43	46.3	1.8	60
		Latest Change		**56**	**0.4**	**5**	**2.7**	**0.7**	**14**
Low Growth, Low Proficiency	45	08/19/20	15:31	88	1.2	13	26.3	PP	26
		03/01/21	14:19	180	1.9	20	32.3	1.2	46
		Latest Change		**92**	**0.7**	**7**	**6**	**2.2**	**20**

Since GPS started the implementation of AR, students' teachers limited the range of books students were allowed to check out to those books within their ZPD (Vygotsky, 2012) as identified by the Star Reading assessment. After reading each book, the student took a short comprehension quiz related to their reading and earned points for each test completed with 80% or greater success. The elementary teachers individualized the goals for the number of points each student should reach. Elementary teachers at GPS used the AR formula that calculated the number of points a student would earn if reading a specific amount of time per day. This individualization provided some equity for students. For students who read at emergent levels, their 30 minutes a day reading time may calculate to 10 points over a nine-week grading period, whereas a fluent reader could be expected to earn 30 points. At the beginning of the 2019-2020 school year, the faculty at the elementary school decided to allow students to check out and take quizzes on books of their choosing, not just books within their identified reading range. The change came about as a result of two teachers who attended a workshop over the summer

that suggested restricting book ranges might interfere with students' desire to read. As a result of lifting restrictions on book ranges, classroom teachers have indicated through informal conversations that their students did not grow sufficiently and attributed this lack of progress to students reading books that were too easy and did not challenge them. The teachers have discussed limiting the range of books students may check out beginning next school year.

The middle school language arts teachers required all students to earn 20 points each nine-week grading period. The AR goal completion was recorded as one test score every nine weeks. Students who met their AR goal received 100%; those who did not received a zero rather than the percentage of the goal reached. The general education teachers required the same number of points per week for each student unless the special education teachers had written a modification specifically addressing the number of points the student was required to earn into the student's individualized education plan (IEP). At the completion of each nine-week grading period, students' AR points total reset to zero. Points did not carry over from one grading period to the next. For example, if a student earned 40 points in the second nine weeks, they were still required to earn 20 points during the third nine weeks. Teachers at the middle school did not place any restrictions on the level of books students were allowed to check out and take quizzes over and were not bound by the ZPD identified through Star testing.

Participants

All GPS teachers in grades 2 through 5, librarians, and the Language Arts teachers for grades 6 through 8, a total of 21 people received an email invitation to participate in this research study. Five teachers (Table 3.1) agreed to participate. Only

one teacher from the middle school volunteered to participate. She is the special education teacher for all middle school students. At the elementary level, two teachers from fifth grade, one from fourth, and one from third grade volunteered to participate in this study.

Table 3.1

Description of Participants

		Teaching Assignment			
Name	Years Taught	Current	Previous	Years taught at SPS	Degrees
Olivia	7	3rd Grade	None	2	Bachelor's in Elementary Ed; Working on Master's - Reading Specialist
Susan	12	4th Grade	5th Grade	4	Bachelor's in Elemenatry Ed; NBCT; Working on Master's - Library Media
Jessica	24	5th Grade	Grades 2-8; Reading Specialist	24	Bachelor's in Early Childhood Education
Melissa	5	5th Grade	Paraprofessional	5	Bachelor's in Writing and Psychology
Angela	12	SPED: 6th-8th Grades		6	Bachelor's in Ag Ed; Master's in Ed Psych

Data Collection Methods

Three different types of data were collected: interviews regarding the use of AR and their understanding of ZPD, reaction and understanding of archival data, and

participants' written reflections were submitted after the member-check of the interview transcript. During the interview, participants shared how they used Accelerated Reader in their classroom and building, what their goals for the program were and how they determined whether the program was meeting their goals, which students they thought experienced the greatest success and benefitted from the use of AR and what they based this on, and what they saw as strengths and weaknesses of the program. Following is a discussion of each type of data and the collection methods used.

Interviews. All teachers who volunteered to participate in the study were interviewed. Due to restrictions placed on the project because of the COVID-19 pandemic, interviews were conducted using the Zoom platform and were recorded. The interviews were transcribed using Temi electronic transcription. After the interview was initially transcribed using Temi, I replayed the interviews to correct any errors made by the electronic transcription and punctuate the transcript for better readability. Responses were documented on a Summary Response Table (Figure 3.3) that allowed me to quickly identify similar responses by participants as well as sort by participant, question, or response. The interviews were conducted in a semi-structured format that allowed the researcher and participant to delve deeper into any topics that arose during the interview (Appendix A). It is important to note that participants were asked, based on their experience, which quartile of students benefited the most from the use of the AR program. The Star Reading assessment was used to assess each student a minimum of three times per year and these participants should have been familiar with the assessment process and reporting formats. The second portion of the interview consisted of sharing

actual test scores for students in the grade the participant was teaching at the time of the study.

Once the interviews had been transcribed, they were sent to participants for member checking. At that time, participants had the opportunity to clarify or further elaborate on any topics if they felt their response was unclear. Additionally, I followed up with questions to clarify any uncertainties I had or elaborate on a particular comment. After the member check was completed, participants were asked to write a reflection of the use of AR in their classroom and the data reviewed highlighting, but not limited to, any affirmations of thinking, new understandings, or changes in thinking because of the interview and the data analysis (Appendix B).

Figure 3.3

Sample of Summary Response Table

Question	Interview	Pseudonym	Themes	Code	Quote
1 - Use of AR	1	Olivia	Personalized Goals Extrinsic Motivators	Goal Setting (AR Driven); Class Reward; Class vs Class Competition	Class vs Class Comp: "We did it like the Iditarod Race. And so we had little huskies that we moved along."
1 - Use of AR	2	Susan	Personalized Goals Extrinsic Motivators Modified Program	Use by students is optional; Bldg required goals be set; Goal Setting (AR Driven); Gave tangible rewards for meeting % of goal; Bldg pushed reading w/in ZPD, not required by teacher; Reading Conferences to check for understanding	"I would do reading conferences with kids. So I would meet with them and talk with them about what are you reading? Do you like it? What kind of books do you like to read? I would keep records of their interests. Like if they're really into soccer, then I would try to find books on soccer and, more on an interest level versus what tests they could pass or what questions they could answer. And you can, I mean, I've been in it long enough. I can usually tell whether a kid's really read a book or not that, and I'm a reader myself. So I've read a lot of the books that they choose to read. And if I ask them, you know, what did you think about this part? And they look at me with a blank stare. I know they haven't read that book so I can usually tell pretty easily without being taken a test to tell me that."
1 - Use of AR	3	Jessica	Personalized Goals Extrinsic Motivators	Goal Setting (AR Driven-from book); Started w/party for those who made their goal-now a special treat if you got certain % of your goal; Not part of student's grade	"never had anything to do with their grade. It's just a motivator, and it was an excellent motivator."

Review of Historical Scoring Data. To review and interpret the Star Reading assessment data, I used the historical data reporting feature available on the Renaissance website. This report was the only one that retrieved information from previous school years.

After downloading the data from the Renaissance website, I arranged them in a format that showed the student scores from the beginning of the school year (BOY)

assessments compared to the end of the school year assessments (EOY). As I met with each teacher individually, I shared my screen with them so they could see spreadsheets with data related to the grade of students they were currently teaching. Based on the practice of looking at state testing data reported based on quartiles, I asked them to view their students in relation to their quartile score and discuss their students' growth. Prior to sharing the quartile data, I asked the participants to discuss which quartile benefitted the most by using Accelerated Reader, which quartile grew the most, and which quartile grew the least. At this point in the interview, the participants had not seen any of the historical data I had gathered. See Figure 3.4 for a sample of the average quartile growth table. They were answering this question based on their experience using the Star Reading assessment and AR with their students.

Historical testing information can only be extracted from the Renaissance website using their Historical Data feature. When extracting these data, the report gave the following information: scaled score, Lexile score, Lexile range, percentile rank, normal curve equivalent (NCE), grade equivalent ZPD range, estimated oral reading fluency, and instructional reading level (IRL). Before the interviews, the teachers reported they only used the scaled score, IRL, ZPD range, and grade equivalent. As a result, I did not include the columns with scores outside of this description. I included the BOY and EOY scaled scores, quartiles, percentile ranks, grade equivalents, ZPD ranges, and IRL on the spreadsheet (see Figure 3.4). I added a column that calculated the difference between fall and spring grade equivalency. I placed a box at the bottom of each worksheet with calculations for each quartile's total equivalency growth and average grade-equivalency growth (see Figure 3.5).

Figure 3.4

Sample of Star Reading Assessment Scores Shared with Teachers

	Fall						Spring					
School Year	Scaled Score	Quartile	Percentile Rank	Grade Equivalent	ZPD Range	Instructional Reading Level	Scaled Score	Percentile Rank	Grade Equivalent	ZPD Range	Instructional Reading Level	Difference in GE
2016-2017	155	1	2	1.8	1.8 - 2.8	0.8	124	1	1.6	1.6 - 2.6	-1	-0.2
2016-2017	198	1	2	2.1	2.1 - 3.1	1.4	254	2	2.5	2.3 - 3.3	2	0.4
2016-2017	240	1	7	2.4	2.2 - 3.2	1.9	212	3	2.2	2.1 - 3.1	1.5	-0.2
2016-2017	245	1	7	2.4	2.2 - 3.2	1.9	319	10	3	2.6 - 3.6	2.7	0.6
2016-2017	267	1	9	2.6	2.4 - 3.4	2.2	423	28	3.8	2.9 - 4.3	3.5	1.2
2016-2017	269	1	9	2.6	2.4 - 3.4	2.2	284	7	2.7	2.4 - 3.4	2.3	0.1
2016-2017	285	1	12	2.7	2.4 - 3.4	2.4	332	11	3.1	2.6 - 3.7	2.8	0.4
2016-2017	294	1	13	2.8	2.5 - 3.5	2.5	520	49	4.6	3.2 - 5.1	4.3	1.8
2016-2017	297	1	14	2.8	2.5 - 3.5	2.5	321	11	3	2.6 - 3.6	2.7	0.2
2016-2017	299	1	14	2.9	2.5 - 3.5	2.5	398	24	3.6	2.8 - 4.1	3.4	0.7
2016-2017	323	1	18	3	2.6 - 3.6	2.7	386	20	3.5	2.8 - 4.0	3.3	0.5

Note. This figure is a portion of one sheet in a grade-level workbook. Each year reported is on a separate tab within the worksheet.

Figure 3.5

Example of Quartile Growth

	Total Growth in Grade Equivalency	Average Growth in Grade Equivalency
1st Quartile	20.6	0.89
2nd Quartile	13.9	0.6
3rd Quartile	14.5	0.63
4th Quartile	5.2	0.21

Note. This is an example of the quartile growth charts shared with the participants at the end of the interview. This quartile chart is the 4th grade 2018-2019 scores. The total growth is the total of the difference in grade equivalency for the entire quartile. The average growth is the average of the difference in grade equivalency for the entire quartile.

I shared my screen with the participants so they could see the spreadsheet for the grade of students they were currently teaching. I told the teachers that I had redacted the student names and sorted the scaled scores from lowest to highest. I reviewed the spreadsheet layout with them and asked if anything stood out to them. I cautioned them to look at the data from the 2019-2020 school year with the understanding that students were not in school the last nine weeks due to the State Department of Education mandate to cease face-to-face instruction and move to distance learning as a response to the COVID-19 pandemic. The data from that year ended with the 3rd quarter assessment in March.

Reflections. As soon as the interview was completed, the audio recording was uploaded to the Temi application for electronic transcription. Once this transcription was completed, I replayed the audio to correct any errors and add necessary punctuation. The transcript and spreadsheet with the historical data were then emailed to the participant for them to review and make any corrections or clarifications. The participants were asked to look over the historical data and the transcript, then write a reflection (Appendix B).

Data Analysis Methods

Once each interview had been transcribed, reviewed, and returned from the member check process, I reviewed each transcript and wrote the question number next to the appropriate section of the interview and highlighted sections that I felt were quotes that added depth and richness to the data. This information was then placed in a spreadsheet table that could be sorted by participant or question number (Figure 3.3).

Each question in the interview was assigned a question number. This question number with key words of the question were placed in the first column. The second

column is the number of the interview, and the third column was the pseudonym of the participant. The first coding cycle of all transcripts used the In Vivo Coding method, also called Values Coding, which helped the researcher become more in tune with the participant's perspectives (Saldaña, 2015). The in vivo method identified phrases and statements in the original words of the interviewee to maintain the integrity of their perspectives and values. The second coding round used pattern coding, or focused coding, to categorize the initially coded datum. For example, codes such as “It’s a motivator.”, “competitive”, “motivate those who chose to participate,” etc. became the category “motivation” (Table 3.2).

Table 3.2

Summary of Codes and Categories

In Vivo codes	**Categories**
It’s a motivator	Motivation
Competitive	
Motivate those who chose to participate	
Make reading enjoyable	
Hope that by creating rewards they would invest more into reading	
Incentive to read	
Gain confidence and interest in reading so it’s enjoyable	
Increase vocabulary	Skill Improvement
Reaching comprehension goals	

Practicing computer testing	
Familiarize students with computer tests	
Adjusted AR point goals to meet individual needs	Adjustments to program implementation
Adjusted required time spent reading	
Allow students to choose whether to participate	

The in vivo codes were written on index cards and sorted into categories. Some of the categories became themes, while others were collapsed or combined to form new themes. The pattern coding method established themes that were discovered in the transcribed data (Saldaña, 2015). These themes were categorized and reviewed to gain greater insight. *Extrinsic Motivation* was defined as any type of incentive given because of participation in AR. Some of the motivational incentives were candy, gum, lunch with the teacher, and class parties. *Skill Improvement* was defined as any skill that was improved or enhanced by the use of AR, not just reading skills. *Intrinsic Motivation* was defined as internal motivation that did not require the use of any tangible reward.

This inductive approach to the research used the research questions to narrow the scope of the study (Gabriel, 2013). According to Gioia et al. (2012) the "heart" of a qualitative study using an inductive approach is the semi-structured interview. This interview process provides current information as well as retrospective views. As Bloomberg and Volpe (2016) describe it, "researchers collect data to form a bouquet that is informative about something more general than any individual flower is capable of" (p. 191). Participation in this study provided the participants the opportunity to articulate how AR had been used in the past and how they were most recently using the program.

They were also able to look back at Star Assessment scores and view them through the lens of grade-level growth by quartile. In the past, the teachers had viewed student data as individuals, not a grade level. Inductive approaches work from the particular to the general, or from concepts to theories (Vogt et al., 2014). In this case the "particular" was the individual teacher's implementation, use, and evaluation of the AR program. This data was analyzed to combine their experiences into building- and district-level theories, the "general." By looking across grade levels, I was able to use categories, codes, and themes to classify the phenomena.

Trustworthiness

To increase the trustworthiness of the data, all interview transcripts were sent to the participant for a member check. The member check process allowed the participants to add any comments they felt helped explain their responses better. They also had the opportunity to indicate to the researcher that the transcript was a fair representation of their interview (Saldaña, 2015). After completing the member check, participants were asked to write a reflection of their thoughts regarding the use of AR within their classroom. Having three types of data: interview questions regarding the use of the AR program, participant reaction and understanding of the archival data, and participant reflections provided data triangulation.

Role of the Researcher

When looking at research credibility, quantitative study instruments must be administered in a standardized manner; in qualitative research, the researcher is the instrument (Patton, 2002). The researcher in this study acknowledged that her work within the school district might have influenced the interpretation of data. To minimize

researcher bias, the transcriptions were sent to the participants for member checks. Consideration needs to be given to the possibility teachers may be hesitant to respond because I am an administrator within the district, this power dynamic could have made an impact on participation. At that time, I asked the participants to reflect on the interview and provide additional feedback regarding their use of the AR program.

Chapter Summary

This chapter described the theoretical foundation for this research as well as the methods and procedures used for collecting and reviewing the data. The purpose of this study was to gain an understanding of how teachers determine the effectiveness of a supplemental reading program. The research specifically focused on how they implemented the AR program and determined goals for both their students and the program. It also focuses on and how teachers used data to inform their decisions about the effectiveness of the AR program and to understand better how they made their determination. This information can help guide the district plan for future purchases and training of staff. The following chapter will report the findings from the study.

CHAPTER IV

PART I

Description of the Case

The purpose of this single case study was to help understand how teachers in a small, rural school district determined the effectiveness of a supplemental reading program. This study was part of a program evaluation of teacher's use and perceived effectiveness of Accelerated Reader (AR) in Greenburg Public Schools (GPS). GPS had used the AR program for over 15 years. Over time, the program evolved from software purchased and installed on the district's server to a fully online subscription. This study provides information on teacher perspectives of the program to inform school district decisions on program utilization. A qualitative, case-study approach consisting of interviews with teachers using the AR program in their classrooms, their review of Star Reading assessment scores over the past three years, and their reflections supported an investigation of the following questions:

- How do teachers determine a supplemental reading program's effectiveness?
    - How do teachers implement the program in their classrooms?
    - How did teachers determine goals [for their students? for the program?]
    - What evidence do teachers use to support their determination of effectiveness?
    - How does data inform teachers' perception of the AR program's effectiveness?

Following the interview section is a discussion of the teachers' responses and reactions to the review of historical data extracted from the AR program as described in Chapter III.

Greenburg Public Schools (GPS) is a rural district that serves approximately 1300 students in grades pre-kindergarten through twelfth grade. The participants currently teach 3rd through 8th grades in the elementary and middle school. Teachers participated in this interview via the Zoom platform due to the COVID-19 pandemic restrictions related to physical proximity. This is a single case study. The case is Greenburg Public Schools and there were five participants interviewed.

District Implementation of Accelerated Reader (AR)

At GPS, the elementary reading specialist used the Star Reading assessment four times a year to assess students at the beginning of the year (BOY), end of the first quarter, end of the second quarter, and end of the year (EOY). This assessment identified the students' instructional level, zone of proximal development (ZPD), and Lexile Level. Renaissance defines the ZPD as the grade-level range of text that the student can read independently. Renaissance explains the ZPD as not too challenging, so the reader does not become frustrated, but difficult enough to help them increase their reading ability. Renaissance encourages teachers to guide their students toward books that fall within their identified ZPD and monitor their performance using the AR quizzes (Renaissance, 2015b). The scaled score identified by the Star Reading assessment is, according to Renaissance,

> useful for comparing student performance over time and across grades. A scaled score is calculated based on the difficulty of questions and the number of correct responses. Because the same range is used for all students, scaled scores can be

> used to compare student performance across grade levels. Star Reading assessment scaled scores range from 0 to 1400. All norm-referenced scores are derived from the scaled score. (Renaissance, 2019b, p.1)

Star Reading assessments also report a grade equivalency (GE) score for each student. Renaissance describes the GE as a representation of the students test performance when compared to other students nationally. Renaissance explains that if a fifth-grade student receives a GE score of 8.0, this does not mean the student is capable of reading eighth-grade material, but that the student's reading skills are well above average for a fifth-grade student.

By monitoring the test scores, the teachers can see whether adjustments need to be made for students struggling when reading within this identified range (Renaissance, 2015b). Since GPS purchased both Star Reading assessments and AR, the Star Reading assessment scores import directly to the AR platform. Teachers can assign point-level goals for their students manually or use the goal calculator within the AR system. The AR goal calculator asks the teacher to identify the amount of time per day or week they expect their students to spend reading. The calculator then uses the students' instructional reading level to determine how many points the student would earn during the set period, typically a nine-week grading period. This calculation attempts to make the amount of time reading equitable. Teachers expect each student to read a certain amount of time each day. A struggling reader may only be required to earn 5 points in a nine-week grading period, whereas a strong reader may be required to earn 20 points. The building librarians have labeled each book in the school library with the grade level and AR point level. For younger students, there is a color-coded dot that identifies books as pre-primer

and primer level. Students use the grade level or color-coded dot and the AR point level to guide them in selecting books at their level as identified by the Star Reading assessment.

Teacher Implementation of Accelerated Reader

During the first part of the interview, I asked the participants about their use of AR in their school and classroom, their goals for using the AR program, how they used the data provided by AR and Star Reading assessments, what their perceptions are regarding what group of students benefit the most from use of the AR program, and how, in general, they believe children grow in their knowledge. During the second part of the interview, I showed each teacher a spreadsheet of Star Reading assessment scores from the three previous years with each year on a different tab (see Figure 4.1). The teachers all stated that they used the scaled score, grade equivalent, ZPD, and IRL (which they all referred to as 'independent reading level' although Renaissance uses IRL to identify the instructional reading level). I added a column on the spreadsheet to show any increase or decrease in grade equivalent from the BOY to the EOY score. In addition to the Renaissance-identified scores, I sorted the scaled scores from lowest to highest and grouped the students into quartiles. I calculated the average growth in grade equivalency for the grade and each quartile. I explained to each teacher that I had removed student names and arranged the scores to reflect fall scores and spring scores, then I calculated the difference between the two. Prior conversations with teachers led me to use the grade equivalency score since that was the score they typically focused on. After the interview was complete, I emailed the spreadsheets with Star Reading assessment scores to the

participants and asked them to look more closely at the data and send me a written reflection of the interview. Specific directions can be found in Appendix B

Figure 4.1

Sample of Star Reading Assessment Scores Shared with Teachers

	Fall						Spring					
School Year	Scaled Score	Quartile	Percentile Rank	Grade Equivalent	ZPD Range	Instructional Reading Level	Scaled Score	Percentile Rank	Grade Equivalent	ZPD Range	Instructional Reading Level	Difference in GE
2016-2017	155	1	2	1.8	1.8 - 2.8	0.8	124	1	1.6	1.6 - 2.6	-1	-0.2
2016-2017	198	1	2	2.1	2.1 - 3.1	1.4	254	2	2.5	2.3 - 3.3	2	0.4
2016-2017	240	1	7	2.4	2.2 - 3.2	1.9	212	3	2.2	2.1 - 3.1	1.5	-0.2
2016-2017	245	1	7	2.4	2.2 - 3.2	1.9	319	10	3	2.6 - 3.6	2.7	0.6
2016-2017	267	1	9	2.6	2.4 - 3.4	2.2	423	28	3.8	2.9 - 4.3	3.5	1.2
2016-2017	269	1	9	2.6	2.4 - 3.4	2.2	284	7	2.7	2.4 - 3.4	2.3	0.1
2016-2017	285	1	12	2.7	2.4 - 3.4	2.4	332	11	3.1	2.6 - 3.7	2.8	0.4
2016-2017	294	1	13	2.8	2.5 - 3.5	2.5	520	49	4.6	3.2 - 5.1	4.3	1.8
2016-2017	297	1	14	2.8	2.5 - 3.5	2.5	321	11	3	2.6 - 3.6	2.7	0.2
2016-2017	299	1	14	2.9	2.5 - 3.5	2.5	398	24	3.6	2.8 - 4.1	3.4	0.7
2016-2017	323	1	18	3	2.6 - 3.6	2.7	386	20	3.5	2.8 - 4.0	3.3	0.5

Note. This figure is a portion of one sheet in a grade-level workbook. Each year reported is on a separate tab within the worksheet.

Olivia

> *I think it's [AR] a huge motivator for children to read. Like even this year they're still asking, oh, how many points is that? They really do get into that kind of competitive nature of it. But as a teacher I really enjoy them reading and wanting to read whether it's for that competition or not.*

Table 4.1

Description of Participant

		Teaching Assignment			
Name	Years Taught	Current	Previous	Years taught at SPS	Degrees
Olivia	7	3rd Grade	None	2	Bachelor's in Elementary Ed; Working on Master's - Reading Specialist

Olivia was teaching 3rd grade at the time of the study and had taught 3rd grade for six years prior at one other district. She attended public schools in three different states before moving to Oklahoma. Once her family moved to Oklahoma, she attended school in two different districts. She earned her bachelor's degree in elementary education and, at the time of this study, was working on her Master's in Education with an emphasis on reading.

It was her second year of teaching at GPS, and Olivia had no prior experience with AR. Her first year at GPS was the beginning of the COVID-19 pandemic and the State Department of Education mandated distance learning for the last nine weeks of the school year. Throughout the interview Olivia voiced her lack of experience with AR and how to navigate the system and run reports in both the AR and Star Reading systems. She set student AR point goals using AR's online point calculator. Each student was expected to read 30 minutes a day and points were calculated based on the 30-minute reading expectation and the student's individual reading level. Olivia also provided students with snacks and pencils as tangible rewards for meeting their AR point goals. As part of the third-grade team, Olivia's class participated in between-class competitions to encourage the students to read and earn more AR points. The 3rd grade classes had a simulated Iditarod race; each class had a paper dogsled and construction paper chain that stretched the length of the hallway. For every point earned by the class, their dogsled moved closer to the finish line. The class that crossed the finish line first was the AR point champions.

Olivia specifically stated that AR is a "huge" motivator for students. At one point, she acknowledged that the competition aspect was what motivated the students, but at other points in the discussion attributed the motivation to AR. Although she indicated AR

is a huge motivator, she acknowledged that she had at least one student who read books consistently but taking AR quizzes was "not his thing." She stated that she did not penalize students for not meeting their AR goal, but did state that "if everybody gets to their goal we would have a class reward." When asked as a follow up question what this looked like in her classroom, she replied that the class established a goal of total combined points the students would earn over the nine-week grading period. This goal was a total of all points earned by the entire class. Some students may earn points above their AR point goal, while others may not meet their AR point goal. If the class as a whole reached their class point goal total, they celebrated with a class reward. This process allowed students who had not made their individual goal to be part of a goal attainment celebration. Her determination of effectiveness of AR was "seeing" students reading "bigger and bigger books."

When I asked Olivia how she used the data provided by AR and Star Reading assessments, she stated that when she started teaching at Greenburg Public Schools (GPS) she had no experience with AR and during that first year, face-to-face instruction was halted due to the COVID-19 pandemic. She voiced concern that she was just getting familiar with the program when school pivoted to distance learning and the students did not use the AR program while distance learning. The following year, the district did not renew the AR subscription, but did continue to use the Star Reading assessment. That year also brought an updated Renaissance website, and the Star Reading reports were different. As of January (when the interview took place), Olivia had not been able to find a report that identified the specific skills students were "missing." I rephrased my question seeking to understand how she used the data provided from AR and Star

Reading to adjust or change her instructional practices, but she was unable to answer that question.

During the discussion regarding what quartile of students she believed benefitted the most from AR, Olivia stated she "wasn't sure that it really pushes any group other than the kids who already know how to read really well. They [the students who know how to read really well] just kind of skyrocket from what I've seen." Olivia was shown the table describing the actual quartile growth. She was reminded that the 1st quartile of students were those with the lowest Star Reading assessment scores and the 4th quartile were the students with the highest Star Reading assessment scores (Table 4.2). The column headed "Total Growth" the total of the grade equivalent improved for each student within the quartile. The column headed "Average Growth" was the total growth divided by the number of students in the quartile. When asked what her initial impressions were regarding the low growth for the 1st quartile versus the high growth for the 4th quartile, Olivia stated,

> when they come below benchmark, that's your big goal. So, no matter how far below they are, you try to get them there. So, I mean, some of them might be over a year behind. If they moved to the fourth-grade level, that's two years.

When discussing her strategies for assisting the students in the lower quartiles to reach benchmark levels, she indicated that she helps them select library books that may be a slightly higher level than they typically check out, but the interventions are done by the Title I reading specialist.

Table 4.2

Quartile Table for 3rd Grade 2019-2020

	Total Growth	Average Growth
1st Quartile	-1.9	-0.1
2nd Quartile	9.7	0.51
3rd Quartile	2	0.11
4th Quartile	3.8	0.2

Note. This table is a sample of total growth and average growth shared with Olivia during her interview. She was shown a Quartile Table for each of the three years of historical data.

Olivia discussed the AR program as a motivator throughout her interview. She discussed using extrinsic rewards within her classroom and between classroom competitions but believed that the underlying motivator was AR. She also indicated that some students did not want to take tests over the books they were reading. She stated that she would encourage them to test but not force them as long as they read. While she viewed the AR program as a motivator, she went on to say that it helped motivate emergent readers with little-to-no reading ability to read more but did not think it pushed any group other than the fluent readers. She was surprised when she saw the upper quartile of students exhibiting the least growth for each of the school years reviewed because she had stated the top, or 4th, quartile was the group she believed benefited the most from using the AR program. Her view that AR alone was a motivator appeared to be a contradiction when considering that she also stated it did not encourage all students

to read and the grade level team found a need to add a competition to incentivize students to earn AR points.

Table 4.3 is a summary of student growth by quartile over the three-year period for students in the third grade. When reviewing the spreadsheets, Olivia expressed shock to see that in the 2017-18 school year, the upper quartile (4Q) only grew an average of 0.7 years when looking at the grade equivalency score. She stated that her experience led her to believe the students in the upper quartile were pushing themselves further. During the 2018-19 school year, 4Q grew an average of 0.6 while the lowest quartile (1Q) grew by 1.32 years. Olivia expressed that she was pleased to see the lowest quartile showing more than one year's growth since those students entered third grade reading below grade level. She acknowledged that those students need to accelerate their reading growth to catch up to their peers. When viewing the 2019-20 school year's scores, I reminded Olivia that students were assessed in March and did not have a May assessment because students had moved to virtual learning due to COVID-19. Those students were assessed after 7.5 months of instruction, so it would not be unlikely to exhibit less than one year of reading growth. When looking at the average growth, if a student grew one month for every month of instruction, they would have grown 0.75 by mid-March. Olivia expressed surprise when she saw the scores indicating 1Q grew an average of -0.1 years, the second quartile (2Q) 0.51, the third quartile (3Q) 0.10, and 4Q 0.2. She acknowledged that these scores were significantly lower than the expected 0.75-year growth. Reviewing the 2019-20 scores led to a discussion regarding students' state of mind leading up to spring break just before schools moved to virtual learning at the direction of the State Department of Education. She remembered the students were already talking about the COVID-19 virus

and worrying about what would happen as a result. She also talked about how that was her first year at GPS and using AR. The teachers and students had barely three nine-week periods of instruction. Olivia did not discuss the scores but did express surprise at the number of reports available to them and stated she looks forward to taking a deeper dive into the program.

Table 4.3

Summary of Average Grade Equivalent Growth – Grade 3

Grade	2017-2018				2018-2019				2019-2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3	1.09	1.03	0.96	0.76	1.32	1.14	1.12	0.64	-0.10	0.52	0.10	0.20

Note. This table illustrates the average growth per quartile in grade equivalency. The 4Q represents those students with the highest scaled scores, while the 1Q represents those with the lowest scaled scores.

As Olivia reflected on the interview, she expressed surprise that the upper quartile of students grew the least. She also stated that she felt she was only using the "tip of the iceberg" and hopes she gets to use this "wonderful" program in the future. Despite the evidence that students were not growing at an average expected rate, she continued to express a very positive perspective of the AR program.

Susan

> *I had to do AR [as a child] and I despised it. I hated it and I'm a reader. I love to read, but I hated when I got done, that I had to take a test over a book. Like, why do I have to take a test? I already read it. I liked it. When I watch a movie on*

Netflix, I don't have to take a test over it. I just want to talk about it with my friends. Part of why I disliked it, I guess, is from my own experience with it.

Table 4.4

Description of Participant

		Teaching Assignment			
Name	Years Taught	Current	Previous	Years taught at SPS	Degrees
Susan	12	4th Grade	5th Grade	4	Bachelor's in Elemenatry Ed; NBCT; Working on Master's - Library Media

At the time of the study, Susan was teaching 4th grade. Susan attended Greenburg Public Schools from early elementary through her high school graduation. She earned her bachelor's degree in elementary education, is a Nationally Board-Certified teacher, and she was working on her master's in education with an emphasis on library media during this study. She has 12 years of teaching experience, all in grades four and five and had taught at GPS for four years.

Susan had used AR at her previous school, but it was not pushed as heavily as it was at GPS. Her building administrator at GPS required her to set AR point goals for her students, but she made participation in the quizzes optional for her students. If a student chose to participate, she did reward them with small, tangible rewards such as a piece of candy, for attaining a percentage of their goal. For those who did not choose to take quizzes, she conducted reading conferences to discuss their reading selection. She raised the concern that pushing students to earn points might have resulted in students selecting books based on the number of points they could earn, not books they were interested in.

She reported that some of her students voiced relief when they discovered that AR participation was optional. They would "often tell me, oh, thank goodness. I don't want to take that quiz." She told them it was fine to not take the quiz, she just wanted them to read. Susan asked each of her students to read a minimum of 30 minutes at home each night; that was their only homework assignment. What they read was not important, they could read a magazine, cookbook, or comic; she just wanted them engaged with print for 30 minutes each night.

She used data to review her class progress as a whole and help determine who would receive supplemental help from the Title I reading specialist. In addition, she reviewed the assessment information individually with her students. They discussed how much time the student took to complete the assessment, what their scaled score was, and what their grade equivalency was. The student then set a scaled score goal for the next assessment period. Susan used the information garnered by the assessment to help group her students with like needs for more tailored instruction.

Prior to viewing assessment data for the 4th grade students, I asked Susan which quartile of students she had observed benefiting the most from us of the AR program. She responded with two different viewpoints. She indicated that the 4th quartile, or her strongest readers, benefited the most in point acquisition. These students were "going to read Harry Potter anyway, might as well take a test over it, I'll get 20 points." As far as growth in reading, she believed that the 3rd quartile of students grew the most when participating in the AR program. These students had to work harder than the students in the 4th quartile to reach their goal but were still accomplished readers. When looking at the spreadsheet of historical student Star Reading scores, Susan noticed that most of the

students did not meet the year's goal of one-grade level growth. When I asked her about the individual students showing negative progress, she stated there are several situations that could impact the score in that way. Since the score is based on one test, it could have been a bad day for the student, or they could have rushed through the assessment. As we discussed the quartile averages (see Table 4.5), she noticed that one student regressed -1.7 years and voiced concern that this student would skew the average for the entire quartile. While she did not specifically use the terms reliability or validity, she did raise the concern that some students regressed, according to the Star Reading assessment, while others exhibited extremely large gains. She saw no real pattern when comparing the beginning of the year (BOY) scores with the end of the year (EOY) scores. I was led to believe that she was questioning the validity of the assessment when she said, "if this is really accurate, we would be seeing that in our state testing." Further review of scores had Susan questioning the reliability and validity of the test scores. The 2018/19 assessments indicated that the average fourth-grade student's grade equivalent increased less than six months.

Table 4.5

Summary of Average Grade Equivalent Growth – Grade 4

Grade	2017-2018				2018-2019				2019-2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
4	1.82	1.09	-0.06	-0.88	0.89	0.60	0.63	0.21	0.76	0.47	0.73	0.47

Note. This table illustrates the average growth per quartile in grade equivalency. The 4Q represents those students with the highest scaled scores, while the 1Q represents those with the lowest scaled scores.

Susan's reflection stated that

> AR is very difficult to justify as a tool to improve readers. The data just doesn't back that. I find it hard to measure how beneficial of a program it is, especially in my own classroom since I do not make all my students participate.

She also stated that she wants her students to "love reading because they fall in love with a good book . . . not because it got them a sucker or five points." After participating in the interview and reviewing the data, Susan and her team approached the building principal about reinstating an assessment like Star Reading so they could identify those students who may have suffered from learning loss due to COVID-19. Susan went to her principal individually and let him know that while she would like an assessment, she did not think the Star Reading assessment had given them the information needed for her students and she would like to look at other assessments.

Jessica

> *I even had a kid today say, I wish so bad we had AR. I realize they're supposed to be reading for enjoyment, but you know what, there's some kids that just don't and that gave them a little bit of motivation they needed to continue to read.*

Table 4.6

Description of Participant

		Teaching Assignment			
Name	Years Taught	Current	Previous	Years taught at SPS	Degrees
Jessica	24	5th Grade	Grades 2-8; Reading Specialist	24	Bachelor's in Early Childhood Education

At the time of the study, Jessica taught 5th grade. Jessica attended GPS from kindergarten through her high school graduation and earned a bachelor's degree in early childhood. Her certifications include elementary education and science through 8th grade. She had 24 years of teaching experience at the time of the study, all at Greenburg Public Schools. During that time, she taught grades 2-8 and served as a reading specialist.

When she first started using AR, Jessica had a class party at the end of each nine-week grading period for all students who had met their AR point goal. She stated that "they [the building principles and other teachers] felt like that was too much" so she moved to small rewards for students as they reached a percentage of their goal. For example, when earning 10% of their goal she gave them a piece of gum; when they reached 25% of their goal, they got to have lunch with her. She discussed the changes the teachers and building administrators have made over time in respect to the extrinsic rewards used for student AR goal achievement. Jessica acknowledged that in the past,

teachers assigned a grade for the AR point goal, but that was no longer the practice for the elementary. She considered AR as "just a motivator and it was an excellent motivator." The motivation, in her opinion, came from giving students a goal to reach and incentive to try and reach that goal, although she acknowledged that she has always provided tangible rewards for goal and partial goal completion. She also stated that completing the quizzes was motivating because some, but not all, students want to "prove" they read the book.

Since AR was no longer being used in the district, she was using Whooos Reading. The Whooos Reading program is similar to AR with the exception of quiz question format. Although she stated that the AR quizzes were motivating, she went on to say that the Whooos Reading program did not motivate her students. AR uses multiple-choice questions while Whooos Reading uses a short answer format. It is important to note that Jessica stated, "I don't like it and the kids don't like it either." When asked what she did not like about the program she stated that some of the question scoring was inconsistent. Students would answer a question with what she thought was the correct answer, but the computer would not give them credit for it. She was unsure whether this was due to the short-answer format and the computer was looking for a specific word that the student was not using. She also reported that the questions are the same for each book, not specific to the reading.

Jessica stated multiple times during the interview that AR was a great motivator for all students. Later, on two different occasions she noted there are students who do not appear to be motivated by the program. She addressed this during the discussion of quartile growth. She expressly stated, "there were always a couple of the lower kids that

just didn't [grow] because you could not get them to read." This acknowledgement seems to contradict her idea that AR motivated and improved all students' reading.

When discussing data and goals, Jessica stated that she believed her students were improving their vocabulary and reading comprehension through reading their AR selections. The only measurement she used for student growth was the Star Reading assessment. She indicated that she always "saw" a correlation between students reaching their AR point goal and increased Star Reading assessment scores. As far as use of the data provided by the assessment and AR reports, she said that she used them to pinpoint students with reading deficiencies. This helped her identify those students who she needed to "keep close to me or maybe do a separate reading group." She stated in her reflection that she was surprised at the lowest and highest quartiles lack of growth but went on to state that this interview process served as a reminder of how well AR worked for her students.

Jessica also focused on the motivational aspect of AR. She discussed the progression of student rewards from parties, to extrinsically rewarding students who reached their goal, to rewarding students as they met a percentage of their goal. As she discussed the motivational aspect of AR, she also emphasized the need for students to find books that were appealing to them, and they would be motivated to read more. She saw AR as a tool to get them to read so they would find reading material that is interesting to them. This is contradictory, did AR motivate students to read or does appealing reading material motivate them? She stated that she could always tell those students who had not met their AR goal because their Star Reading assessment scores did not progress.

Prior to viewing the historical assessment data, Jessica shared her belief regarding students who benefit the most by using the AR program. When discussing student growth as quartiles, Jessica stated there was growth across the board, but there were always a couple of "lower" students who did not grow as hoped because you could not get them to read. When asked in a follow-up email to elaborate on what information led her to determine which quartile benefitted the most from the use of AR, she replied that the lower quartile, or 1st quartile, grew the most because they were pushed to read more and developed a love of reading. These contradictory positions show that her understanding of quartile growth was not rooted in data review, but rather in her best estimate based on informal observations, which the data did not support. She also stated that AR helped improve vocabulary, which she measured by the results of the Star Test. While the AR program has a vocabulary component that has its own set of quizzes, this piece of the program was not used by any of the teachers. Star Reading assessment can report progress toward state standards and the diagnostic report generated by Star Reading includes three domains, literature, informational text, and language (which includes vocabulary acquisition).

Jessica expressed surprise in her reflection that 1Q and 4Q exhibited the least growth (see Table 4.7). She had always felt that there was growth across the board for her students. Over time, she had witnessed students who love to read and those who hate to read, and all these students showed growth that was, in her opinion, a result of using the AR program. She believes that her job is to find tools that encourage her students to read, and that tool is Accelerated Reader. Once the reluctant readers find reading material that

appeals to them, they become better readers. If they do not have AR to push them, they have no incentive to start reading.

Table 4.7

Summary of Average Grade Equivalent Growth – Grade 5

Grade	2017-2018				2018-2019				2019-2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
5	0.95	1.34	1.41	0.57	0.89	0.79	1.02	0.99	0.80	0.44	0.31	0.20

Note. This table illustrates the average growth per quartile in grade equivalency. The 4Q represents those students with the highest scaled scores, while the 1Q represents those with the lowest scaled scores.

Melissa

> *I wanted students to gain confidence in their reading and interest in their reading. As the writing teacher, reading plays a lot into organizing thoughts, being able to get them out on paper, being able to read papers and almost create them into a movie, because if they're just words on paper and they're not imagining what's going and they can't create that picture image, then reading doesn't hold a lot of value.*

Table 4.8

Description of Participant

		Teaching Assignment			
Name	Years Taught	Current	Previous	Years taught at SPS	Degrees
Melissa	5	5th Grade	Paraprofessional	5	Bachelor's in Writing and Psychology

Melissa worked as a special education paraprofessional in two different school districts before working at Greenburg Public Schools (GPS). She started at GPS as a special education paraprofessional. When a first-grade teacher went on maternity leave, the elementary school principal hired her as the long-term substitute. After completing the long-term substitute position, the principal offered her the 5th grade English Language Arts teacher job, which was her role at the time of the study. Melissa had been a teacher for 5 years at the time of this interview. She was also a graduate of GPS, where she attended kindergarten through 12th grade. She earned a bachelor's degree in writing and psychology and received her elementary education certification through an alternative certification process.

Although Melissa teaches English Language Arts for the 5th grade team, she is not the reading teacher, Jessica is. When supporting AR in her classroom, she used a colored paper chain hanging from the ceiling for each student, called the 'Rainbow Wall' (see Figure 4.2). When a student reached 10% toward their goal, they added another link to their chain. Melissa wanted to ensure that other students were not aware of specific student progress, so she put the student's name on the inside of the top loop of the chain. She was concerned that some students might be embarrassed by their progress when

compared to others. Other students could not see the names because the loop is at the ceiling. Only the teacher and the student were aware of which chain represented reading progress for a particular child. They would then discuss how the chains were growing, and she could get a quick visual of how the class was doing overall and how each student was doing individually. The students designed the starter loop, and they added their loops on Fridays. On Fridays, the class had designated independent reading time for the first half of the class; the second half consisted of small group instruction. During the independent time, she called each student to the teacher's table, and they discussed how many links they got to add to their chain for the week. Once Melissa had given the students the correct number of links to add to their chain, they left for lunch. While they were at lunch, she pulled the chains down and placed them on each student's desk. Upon returning to the classroom, the students added the new links to their chains and placed them on the back table. After school, Melissa returned the chains to their Rainbow Wall.

Figure 4.2

Rainbow Wall in Melissa's Classroom

Note. Photo courtesy of Melissa, used with permission.

Throughout the interview, Melissa discussed the lack of training and understanding of how AR is meant to be used. She discussed that it "was just something that we kind of added in as a supplemental thing." At first, this statement seemed confusing because AR is a supplemental program, but after reviewing the entire interview, it became apparent that what Melissa was conveying was the concern that there was no time built within their daily schedule for students to read for pleasure, she was not referring to the program being used supplementally, but the practice of providing independent reading time for the students. I followed up with Melissa to make sure my understanding was correct. Her concern was that those students who were already strong

readers and who enjoyed reading were the ones most likely to fully participate in the program since it required reading outside of the school day. While Melissa talked about AR motivating students to read, she also acknowledged that she provided plenty of extrinsic rewards for the completion of AR goals and that is what motivated some of the students. In her reflection, she expressed interest in student growth and whether she would have seen greater growth if the teachers had adjusted each student's ZPD based on more than the Star Reading assessment.

There were two contradictory items that stood out in Melissa's interview. The first was her discussion of AR as a motivator. She expressly stated that she used it to help motivate her reluctant readers, but later stated that she took extra time to visit with her students and provide positive feedback and claimed that "the teacher taking the time to have a conversation" motivated her students. Melissa also went on to say that students are motivated in different ways, and it is the teacher's job to find out what motivates the students in their classroom.

Another area of discussion that appeared contradictory was the quiz format used within the AR program. When discussing the strengths of the program, Melissa liked the fact that shorter books had shorter quizzes and the questions were very "concise." She went on to explain that the nature of the questions allowed her students who needed the extra support to look up the answers to the questions. When asked about the weaknesses of the program, Melissa again focused on the question format. She discussed the belief that there are better ways to determine whether a student understands a book and that AR is just a "limited view of ways to see what a kid gets out of a book." She went on to express the concern that there were no deeper level questions and that her experience is

that students struggle with thinking beyond what is "black and white on the page." She acknowledged that short answer questions would be difficult for a computer to grade but would like the students to think "about the content of the book and be able to infer and think more deeply."

Prior to viewing the historical assessment data, Melissa stated that she thought the middle quartiles were the students who saw the most benefit. Melissa showed interest in the shared scores (Table 4.7) and was quick to offer her impressions of the various scores for the students. Her first comment was regarding the wide range of scores reported. She stated, "there's a lot of variance. There's some that grew a year and a half, and then there are students that regressed." When I asked Melissa to explain the scores that indicated a negative progression, she explained that many students are not motivated by the test, and the actual test is long and repetitive. According to Melissa, if you are a student who struggles with reading, the length of paragraphs is discouraging, and students typically stop trying. Melissa expressed concern about using a test score as a finite description of a student's ability. She equated the Star Reading assessment with the annual state-mandated testing; it is one measure on a given day and not necessarily a picture of the student's ability or performance level. She also acknowledged that she had previously reviewed Star Reading assessment data using "confirmation bias" to reaffirm her growth expectations of specific students. She had expected to see student growth concentrated in the middle two quartiles, but the upper and lower quartiles showed both growth and regression, as did the middle quartiles. She gave the example of a student who was a very motivated student, but always tested several years behind her peers. Melissa reported the student was discouraged by the Star Reading assessment

> because the students around her would start to finish. So, then she'd feel like I must be stupid. I'm not finishing at the same speed everybody else is. So, I kept her in at specials and I just sat and graded papers at my desk. I told her to just read the test out loud and take her time.

As a result, the student's assessment score result was two years higher than she had previously tested.

In her reflection, Melissa reported, "I was able to see that the AR program shows random growth and regression throughout all the quartiles. Lower performing students to high performing students benefited from the program to some degree whereas I expected a noticeable difference in the middle." She also expressed concern that the AR program was not a priority, and the teachers could have used more features. Melissa was the only teacher who mentioned that they might have been able to do some things differently to get greater use from the program. She also questioned whether students exhibiting low growth according to their Star assessment might have performed better if the teachers had adjusted the ZPD instead of relying on the ZPD identified by the Star assessment.

Angela

> *Sometimes I say, you get one [book] within your ZPD and let them pick another one. Just so that they have that choice, but as long as you're monitoring that so that they're not trying to read something that's much more difficult for them. I think it works really well as far as if you're using it as an incentive type thing.*

Table 4.9

Description of Participant

Name	Years Taught	Teaching Assignment: Current	Teaching Assignment: Previous	Years taught at SPS	Degrees
Angela	12	SPED: 6th-8th Grades		6	Bachelor's in Ag Ed; Master's in Ed Psych

At the time of this study, Angela taught special education for students in grades six through eight. She attended school in Europe and Washington, DC, and finished high school at a district that neighbors Greenburg Public Schools (GPS). She earned her bachelor's degree in agriculture education. She earned certification in Elementary Education and Early Childhood Education through the High Objective Uniform State Standard of Evaluation (HOUSSE) process in Oklahoma. This process considers the number of years a person has taught, professional development attended, coursework in the subject area, awards earned, and service in the subject area. She then wanted to become certified to teach special education. In Oklahoma this required her to take the Mild-Moderate Disabilities certification examination. Upon passing this examination, she achieved certification to teach special education. She recently completed her master's in educational psychology. She had also taken courses in elementary education with an emphasis on reading. She taught in two different states before coming to GPS and had six years of teaching experience at GPS at the time of this study.

As the special education teacher, Angela did not use the AR program within her classroom but served in a supportive role for her students with special needs who attended a general education class for English Language Arts. In the middle school

building, students in grades six through eight participate in the AR program through their ELA class. The middle school ELA teachers required all students to earn 20 AR points per nine-week grading period. If they earned the 20 points, they were given an A that was weighted as a test grade. If they did not earn the 20 points, they were assigned a zero, also weighted as a test grade. Angela began writing into her students IEP the accommodation that required their point goal be calculated by the AR point calculator based on 30 minutes of reading a day and the student's reading level. She required these students to read within the lower end of their ZPD range so there was a greater likelihood the student would be successful using the AR program. She held individual conferences with her students regarding what goals they would like to set for themselves regarding their Star Assessment. She did not report that she saw the AR program as a motivator but did acknowledge that if it does encourage students to read.

Angela used the information gleaned from the Star Reading assessment in combination with additional assessment resources available to her, such as easyCBM and the reading assessments included in another supplemental reading program, Wilson Reading System. She found the assessments within the Wilson Reading program as diagnostic and provided a more detailed identification of student needs. She described the easyCBM as an additional literacy assessment that looks at the different processes within the task of reading. The assessment started with foundational skills such as letter recognition, letter sounds, and word fluency. After a student has mastered these foundational skills, the assessments progress to reading fluency. Teachers administered the reading and word fluency assessments in one-on-one format with the student, while the student completed the reading comprehension and vocabulary assessments on a

computer. She assessed her students every two weeks to determine whether her instructional strategies were effective.

Prior to viewing the historical assessment data, Angela stated that the group she believed benefited the most from the AR program was the 2nd quartiles of students. She stated that the lower quartile still "need some intensive reading instruction, those basics that they're not getting with AR." She also expressed that the middle school's current position of requiring all students to earn 20 AR points per nine-week period does not challenge the top, or 4th, quartile.

Table 4.10

Summary of Average Grade Equivalent Growth – Grades 6-8

Grade	2017-2018				2018-2019				2019-2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
6	3.34	2.25	0.43	-0.96	0.69	0.81	1.45	-0.02	0.57	0.09	0.60	-0.47
7					1.22	1.38	1.02	0.57	0.36	0.08	0.13	-0.73
8									0.31	1.06	0.42	-0.67

Note. This table illustrates the average growth per quartile in grade equivalency. The 4Q represents those students with the highest scaled scores, while the 1Q represents those with the lowest scaled scores. Blank cells are a result of data not being available because the student is no longer in the Renaissance system.

I shared the Star Reading assessment data with Angela beginning with the 2018-19 sixth grade scores. After explaining the scores reported on the spreadsheet, Angela quickly noticed that some students' grade equivalencies dropped from the fall to spring

assessment. I asked her for her thoughts on students showing regression. She explained that when she sees this on her student reports, the first thing she does is to run the report for the spring assessment that shows her how long the student took to complete the assessment. If the amount of time spent on the assessment is unrealistic for a 35-question test, she has them retake the assessment with her supervising them. She explains to the student that she needs a clear picture of where they are performing to identify areas she needs to concentrate on when designing their instruction. She voiced concern that the students in the upper quartile may not have been challenged enough to help them grow in their reading ability. When she saw a student who had regressed according to the grade equivalency, she asked me to scroll over the spreadsheet to see the scaled score. She pointed out that the scaled score only dropped 50 points and was still in the 900 range. If this were her student, she would not be too concerned since the student was still within the 900-point range that is considered above the expected level for a student in this grade.

Angela also expressed concern regarding the use of grade-equivalency as a valid unit of measurement. In fact, she voiced concern in her reflection that teachers do not understand score reports and she is also concerned about "how schools and teachers are allowed to continue the use of a program without a complete understanding of its use and how to appropriately use the data to drive instruction."

The conversation moved to the ZPD and how it was vastly different for some students. She noticed one student with an instructional reading level of 9.0 had an identified ZPD of 4.9-12.0, but another student with an 8.8 instructional reading level had an identified ZPD of 4.6-8.8. Her question was why the low end of the ZPD was in the

fourth-grade range. She understood the lowest range of the ZPD to be close to what they could read independently. If that is the case, why is the instructional level so high? She also noticed that the average growth for the highest quartile of students showed the lowest growth across years. Consistent lack of growth for the 4Q (see Table 4.10) made her wonder whether teachers have challenged those students or whether they are putting their best effort into the assessment.

The preceding profiles described how teachers in this district implemented or supported AR, their perceptions of student progress and program effectiveness, and how they used data to inform decision making. Each teacher brought a unique perspective that reflects their prior experiences, both as teachers and students. Next, I will discuss the findings as they relate to the four sub-questions identified as part of the overarching research question.

PART II

Findings

This study used an inductive approach which uses research questions to narrow the scope of the study (Gabriel, 2013). In this study, the sub questions support the over-arching question of "How do teachers determine a supplemental reading program's effectiveness?" The findings for each sub question (SQ) are presented first, additional findings, and findings for the over-arching question are presented after. These findings will be discussed in Chapter 5.

SQ1 – How did classroom teachers implement the program in their classrooms?

I asked the teachers to describe how AR is implemented within their classroom and building. Their responses determined the following themes: *individualizing student*

AR point goals, incentivizing the motivator, identifying students needing additional assistance, and *modifying the program*. Each theme is discussed in the following section.

Individualizing Student AR Point Goals. All the elementary teachers reported using the AR goal-setting calculator that personalizes the total number of points each student should earn based on their reading level and the teacher's expected time spent on reading. The classroom teachers set the amount of time for each student to read daily (typically 30 minutes/day). Melissa explained,

> We wanted them to be able to achieve goals. For some of them, we might set their goal higher. We set them a little bit lower for some, but we always started at that 30 minute a day target based on their ability. And then we adjusted it according to the student.

She also stated that because the fifth-grade teachers do not build independent reading time within their classes, students are required to complete their independent reading outside of the school setting. Because this requires students using their personal time to complete the independent reading, AR tended to target those students who were already motivated to read. Melissa believed that students who are motivated to read will take the time to read outside of class, while students who are not motivated to read or possibly struggle with reading will not make reading practice a priority. None of the teachers at the elementary level, grades 3-5, used the points earned through AR towards the students reading or language arts grade.

The special education teacher from the middle school agreed that the AR point goals should be individualized, however she reported that all English Language Arts teachers, grades six through eight, assigned a 20-point goal for every nine-week grading

period. The students' points reset to zero at the beginning of every new nine-week grading period. Even if the student earned 40 points in a nine-week grading period, they could not carry 20 of the points over into the next grading period. The middle school teachers also assigned the students a grade for meeting their AR goal. This grade was equal to one test grade, so the student received either 100% or zero. Students who did not meet the 20-point goal earned a zero for their AR grade. Since her students with special needs often had difficulty earning 20 points during a nine-week period, Angela wrote an accommodation into their individualized education plan stating the number of points the student was required to earn.

Incentivizing the "Motivator." All participants stated that AR motivates students to read. Some students are motivated by the competition, some by the rewards, and some by the avoidance of a poor grade. While these teachers did not all state the same motivation, they did agree that if AR encourages students to read independently, that is a strength of the program.

Although participants all stated that AR motivates students to read, the general education teachers indicated they use additional extrinsic motivators to encourage their students to work toward the personalized point goal. *Extrinsic motivation* is defined as a student being motivated to read because of expected consequences such as grades, praise, or outperforming other students (Hebbecker et al., 2019). These teachers all reported the use of gum, candy, lunch with the teacher, etc. as rewards for students meeting a percentage of their goal. In addition, Olivia discussed the between-class competition. "We did it like the Iditarod Race. And so, we had little huskies that we moved along." She went on to say that at the end of the week, each class moved their husky along the

track (which was a paper chain attached to the hall ceiling). They moved the husky a link for every point earned by the students in the classroom. The first class's husky that reached the finish line won the competition. The winning class had a party to celebrate their victory.

Identifying students who need additional assistance. All the elementary teachers who participated responded that they used the Star Reading assessment data to identify those students who needed additional assistance. Susan stated, "Those [students] below grade level could go work with Mrs. ____ [the Title I reading specialist] in the reading resource room weekly for extra help and extra instruction based on their Star levels." Olivia also indicated that the Star Reading assessments were used to determine who qualified for Title I reading services. She added that she used the standard Star Reading assessment report that gives grade equivalent and scaled scores to see her students' reading level and how they are progressing through the school year. She also mentioned that since Renaissance updated their website, she had been unable to find a report that identified skills and reported what skills the students successfully completed. The website update changed the layout and reporting options. As a point of reference, this study was conducted the year after Renaissance updated its website. The website was updated over the summer, and the interviews were conducted in January.

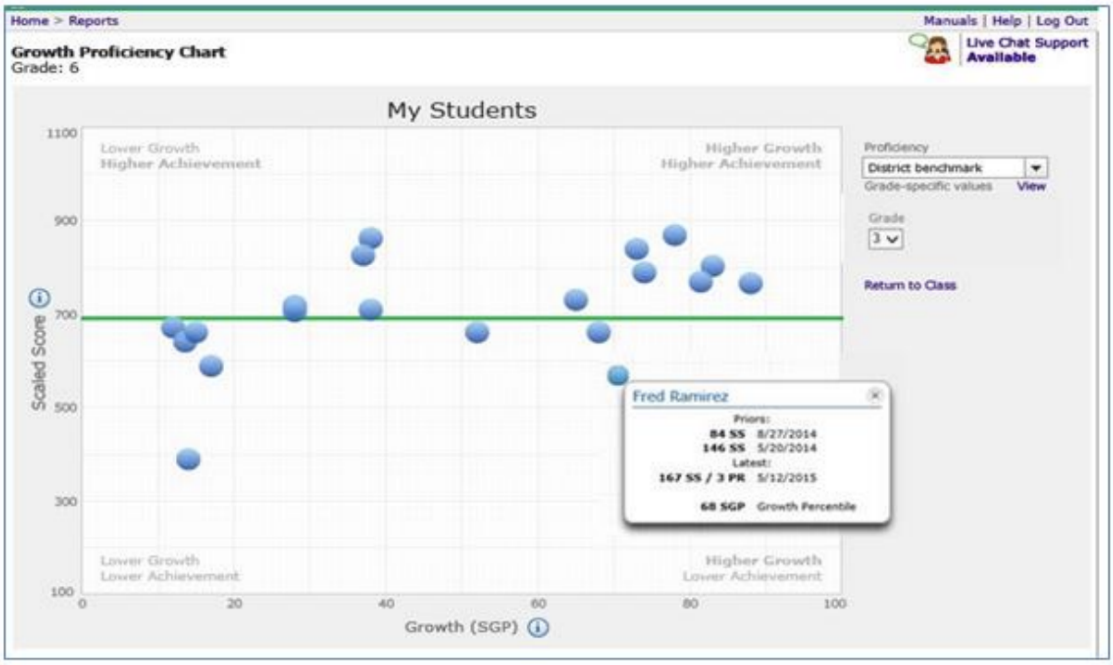
The 5th grade students do not receive pull-out services for Title I, so Jessica and Melissa reported using the scores a little differently. Theirs was more focused on classroom use. Jessica used Star Reading assessment scores to "pinpoint a student that might have a reading deficiency." When asked to explain what that extra help might look like, she said there are usually about four or five that she probably needed to "keep close"

or maybe do a separate reading group with. Melissa reported that since she is not the reading teacher, she uses the information a little differently. She reviews her students' Star Assessment scores and visits with students who are not showing improvement to attempt to find a reading topic that would interest them. She then finds a book to read aloud to the class with the intent to interest the student into reading additional books in the series.

While Angela, the special education teacher, does not have specific goals for the use of the AR program, she does use the data from the Star Reading and AR assessments. Using multiple reports allowed her to identify students who exhibited high growth but still may be below the benchmark. While the report illustrated in Figure 4.4 includes the student growth percentile information, it is not in a format that provides a quick visual overview of her students like the one illustrated in Figure 4.3. As a result of the change in formatting, she had to spend more time with the reports to really understand how her class was growing. She also used the Instructional Planning report that identified the sub-set of skills of which the student needed improvement (Figure 4.5). This report was available on the website for individual students or the entire class.

Figure 4.3

Sample of Interactive Student Growth Percentile Report



Note. Retrieved from https://doc.renlearn.com/kmnet/r005690010d45ee2.pdf

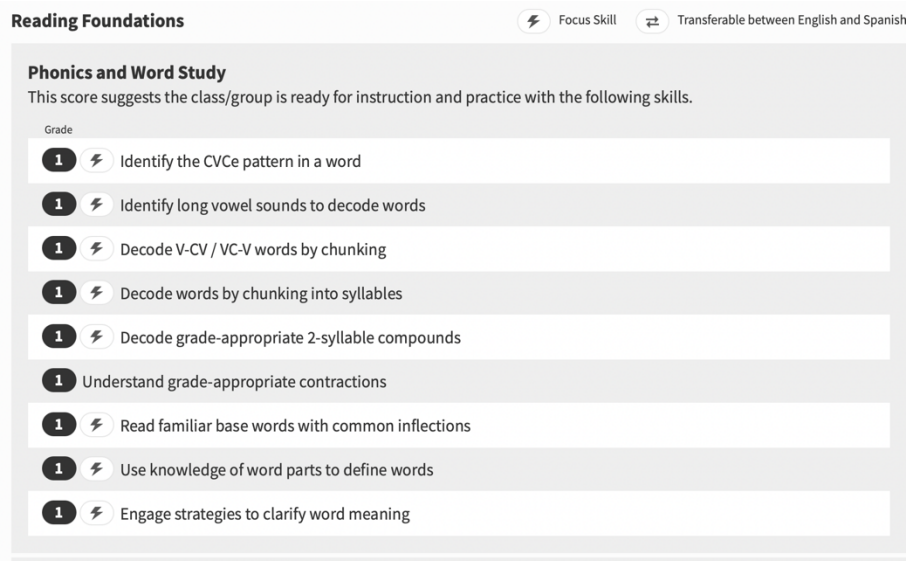
Figure 4.4

Renaissance Star Growth Report with Student Growth Percentile (SGP)

Growth Proficiency Category	SGP *(Exp. = 50)*	Test Date	Test Duration	SS	GE	PR	NCE	IRL	Est. ORF[a]
High Growth, Low Proficiency	82	08/19/20	04:19	81	1.0	8	20.4	PP	23
		03/01/21	14:40	235	2.3	34	41.3	1.8	60
		Latest Change		**154**	**1.3**	**26**	**20.9**	**2.8**	**37**
High Growth, High Proficiency	51	08/19/20	10:16	198	2.1	44	46.8	1.4	51
		12/11/20	18:55	293	2.8	61	55.9	2.4	76
		Latest Change		**95**	**0.7**	**17**	**9.1**	**1.0**	**25**
Low Growth, High Proficiency	23	08/19/20	14:04	177	1.9	38	43.6	1.1	46
		12/16/20	07:59	233	2.3	43	46.3	1.8	60
		Latest Change		**56**	**0.4**	**5**	**2.7**	**0.7**	**14**
Low Growth, Low Proficiency	45	08/19/20	15:31	88	1.2	13	26.3	PP	26
		03/01/21	14:19	180	1.9	20	32.3	1.2	46
		Latest Change		**92**	**0.7**	**7**	**6**	**2.2**	**20**

Figure 4.5

Instructional Planning Report



Modifying the Program. Melissa**,** Angela, and Olivia discussed how they modified and adapted the program for use within their classroom to meet students' individual needs. Some of the modifications involved further adjustment of student AR point goals for those who struggled to reach their goal or if there were special circumstances. Special circumstances could be a student with a parent who worked at night and had no adult to help with homework, a student with a disability, or any other personal situation that interfered with the student's ability to complete at-home assignments. For example, suppose the AR point calculator indicated a student reading 30 minutes a day would earn 10 points in a nine-week grading period. The teacher was aware that the student's parents worked evenings and were not home to make sure the student completed their reading. In that case, the teacher might have reduced the expected reading time to 15 minutes because she knew there would be 15 minutes within the school day that the student would be able to read. Melissa was the only teacher who

mentioned allowing students to take the quizzes in an open-book format. She felt this modification was important for her struggling readers to achieve success. None of the teachers discussed adjusting the ZPD range if students had difficulty meeting their AR goal for other reasons; they only discussed changing the number of points required for each grading period. Jessica noted that she adjusted the percent required to earn points for her special education students. The percent required to pass a quiz is set at 85%, but she adjusted the pass rate to 75% for her special education students.

At the middle school, teachers assigned a 20-point goal to each student. Angela, the special education teacher, modified the point requirements based on minutes read per day for the special education students monitored by her. Her modification of the point requirement received push back from the general education teachers, so she started specifying this accommodation in student's individualized education plans:

> …during the last year and a half, I started implementing - instead of the school had a overall goal that everyone had to get 20 points at the end of the quarter - I actually started scaling that to their reading level so that their A [grade] was whatever it is based off of a 30 minute per day reading time

She did not use AR for the students who received direct instruction for reading with her in the special education classroom because she worked on specific reading skills the students needed to improve and accommodated the assignments from the general education setting. Angela brought up a feature within the program that she saw as problematic, the countdown clock. There was a time limit within the AR quizzes, and there was no way to hide the clock. Her concern was with her students who suffered from anxiety; this clock added pressure on an already anxious student. In addition, she

indicated that the countdown clock often distracted students with attention difficulties. If a student was having great difficulty with the countdown clock distraction, she would put a piece of paper over the clock. Angela stated that it would be a good option to have the ability to disable the countdown clock.

Fourth-grade teacher, Susan stated that her building principal required her to set an AR point goal for each student but did not require them to participate in AR. She let the students know that AR was available if they wanted to use it, but it was optional. In place of quizzes, she held reading conferences with students to discuss their book choice and check for understanding.

> I've been in it long enough. I can usually tell whether a kid has really read a book or not. I'm a reader myself, so I've read a lot of the books that they choose to read. And if I ask them, you know, what did you think about this part? And they look at me with a blank stare. I know they haven't read that book, so I can usually tell pretty easily without them having to take a test to tell me that.

She also indicated that she was the only teacher in the elementary building who did not require students to read books within their ZPD range as established by the Star Reading assessment. Other teachers in the building restricted the selections students could check out, read, and take AR quizzes to books in the reading range identified as the ZPD by Star Reading assessment. Susan was also concerned that students tend to select books based on the number of points, not books that interested them. She specifically discussed students looking for books that were just the "right number of points" needed to meet their AR goal. These students may be ready to read a book that is worth 10 points but may select a book worth only one point because that is all they needed. To help her

students identify books that were just the right fit for them, she taught them the 'five finger rule,' which encouraged students to read the first few pages, and if there were more than five words that they could not read or understand, the book was probably too difficult. She was the only participant who acknowledged that teaching students to depend on having the grade printed on the book spine limited them to check books out only from the school library. The public library and bookstores do not show the grade level of the text on the spine, so they needed tools to carry with them.

SQ2 – What goals did the teachers identify [for their students? For the program?]

Teachers' discussion of goals for the AR program revealed two themes: *motivation* and *student growth/improvement.* Prior to discussing goals for this supplemental program, we discussed their core reading curriculum resources. Teachers in grades three through five reported using Storyworks Magazine, by Scholastic, as their adopted reading textbook. None of the teachers had thought about their goals for using the AR program before this interview. During our discussion, all the general education teachers indicated that motivating students to read was their most significant AR program goal. While Susan's goal was to motivate those students who enjoyed AR, she had negative memories of using the program when she was a student. She stated that she "despised it." Although she is an avid reader and was as a child, she was turned off by the idea of taking a quiz over something she read.

Jessica explained that she appreciated that students were getting practice taking online quizzes. Her impression was that the students were growing their technology skills by using the computer to take the AR quizzes. She thought this was important since students take their state assessments online. She also stated that she "felt like kids were

getting a lot more vocabulary." Jessica did not have any specific way of measuring improved vocabulary but expressed the idea that they were exposed to more vocabulary through their reading. Melissa wanted her students to gain confidence in their reading and writing. She said that "reading plays a lot into organizing thoughts," which helps them improve their writing skills. Melissa used a comparison of growth in writing to the students' attainment of their AR goal as an informal evaluation method to determine whether the students were attaining the goal. She used writing samples from the beginning of the year and compared them with writing samples at the end of the year. Olivia determined student reading growth based on the level of books students read as her goal measurement tool. Since Angela only used the AR program for her special education monitoring students, she did not measure these goals. She required her students to use the program as part of their general education curriculum.

Motivation. All the general education classroom teachers, Susan, Olivia, Jessica, and Melissa indicated their goal for using the AR program was reading motivation. They all suggested that taking quizzes and earning points served as a motivator for the students. All stated that getting students to read was a primary focus. Susan allowed her students to choose whether they wanted to participate in AR, and she saw it as a motivator for students that liked the AR quiz structure. She gave the students who chose to participate in the AR program a piece of candy or gum as recognition that they had chosen to do extra. Still, she believed that the students who participated in the AR program were motivated by the point system and their drive to earn points. Her evaluation for determining whether the program met her goals was to see whether the participating students met their predetermined AR goals. Olivia stated:

> I think it's a huge motivator for children to read. Like even this year they're still asking, “Oh, how many points is that?” They really do get into that kind of competitive nature of it. But as a teacher I really enjoy them reading and, wanting to read whether it's for that competition or not.

When asked how she determined that AR was motivating, she replied that when she saw them reading more and longer books, this led her to believe it had motivated them. Jessica acknowledged that students should read for enjoyment, but some kids just did enjoy it. AR gave them a little bit of motivation to read. She thinks that giving the students an AR point goal to reach was what motivated them. Since there was no longer an AR store or end-of-the-year party, she rewarded students with gum, candy, and lunch with the teacher. Melissa explained that the fifth-grade teachers rewarded students with tangible rewards when they reached their AR goal. In the past, students had to meet their AR goal every nine weeks to earn a reward. At the end of the nine-week grading period, the points reset to zero. She and the other teachers in her grade level met and decided not to reset the points to zero at the end of each nine-week grading period. The teachers rewarded the students for reaching a goal, even if it took them all year to achieve it. She realized this is not intrinsic motivation but hoped that giving them the extrinsic reward would encourage them to read and hopefully build a love of reading.

While Melissa saw the program as an extrinsic motivator, she was the only teacher who indicated intrinsic motivation was a goal. She hoped the program would improve her students’ confidence in their reading ability and make reading more enjoyable. Melissa did not indicate how she measured this goal; her measurement of the

program's success was to compare the students' writing growth to their AR goal attainment.

All the general education teachers participating in this interview discussed an extrinsic reward system for students earning points toward their goals. Olivia told about a between-class competition, in the form of an Iditarod Race, between the classes in her grade level. She also provided in-class rewards such as snacks and pencils. Melissa used a colored paper chain that she called the "Rainbow Wall."

Angela, the special education teacher, only used AR with students who received their primary instruction in language arts/reading in the general education classroom. These students received a grade for AR points. The AR points were equivalent to one test grade, so this could impact their class grade. Therefore, she wrote into students individualized education plans that the number of points required for each nine-week grading period would be based on their reading level and the amount of expected reading time instead of the 20-point requirement.

All the elementary participants stated that the AR program motivated students in one way or another. Oliva felt that the sense of competition motivated the students to read and earn points. She was also the teacher who discussed class vs. class competition for points earned. By earning points as a class, she indicated all students had ownership of the competition and it motivated students to help their class win. Jessica, Angela, and Susan all believed that earning points was rewarding and motivating for the students, but Jessica and Susan stated they also give tangible rewards to students for reaching a percentage of their goal. Susan clarified her position by stating that the AR points motivated only certain students because some students elected not to participate in AR

program. Jessica also added that in addition to the points as motivating, her students were also motivated to work toward meeting their score goal from the Star Reading assessment.

Students Who Are Not Motivated by AR. Although motivation was identified as a goal for AR program goals, participants also mentioned students who are not motivated by use of the AR program. Olivia discussed a student who was an avid reader, but he never took quizzes over the books he read. She stated that she was happy he read for pleasure and was not concerned that he chose not to participate in AR. On the other hand, Jessica stated that there are students who are not motivated to read at all. Jessica reported that her students reading ability "grew across the board" except for a few students with lower reading ability. She attributed the low growth to the inability to get them to read. Susan discussed students who love to read, but do not want to participate in the AR program. She does not think AR is a motivator for those students.

Student Growth/Improvement. The second theme identified was the teachers' expectation of student growth due to the use of the AR program. Two of the teachers, Angela, and Jessica, indicated one of their goals was to improve specific student skills using the AR program. While not specifically related to reading, the teachers mentioned that taking tests on the computer was good practice for state assessments and gaining confidence in computer use. In addition, Jessica stated,

> I felt like kids were getting a lot more vocabulary. They were reaching comprehension goals. It would definitely, we always saw a difference in their star test scores by how much they read. Like I could look at if I set their goals and say they only made it halfway, I could always see a difference between their star test

> scores or whether they reach their goal. So, I feel like it definitely helped their comprehension in their testing. And also, they, you know, using the computer and testing, that was also a skill that they learned from that.

Since Angela only used the AR program for the special education students, she monitored in the general education classroom she did not indicate how she measured the goal. Jessica used the Star Reading assessment and compared the students' beginning-of-the-year and end-of-the-year Star Reading assessment scores to determine whether students were making progress.

Two of the teachers discussed items related to student performance. Susan mentioned that AR quizzes could indicate that a student read the book but added that she did not think that was the best way to evaluate their understanding of the text. Angela felt the use of AR and Star Reading assessment scores were effective ways to improve student reading ability. Angela looked at the changes in their scores to assist her in identifying those students who were not growing as readers.

SQ3 – What evidence do teachers use to support their determination of effectiveness?

Once the participants had identified their goals for using the AR program, I asked them to discuss how they determined whether the program was meeting their goals. Their responses indicated the following themes: *observation* and *Star Reading assessments.* Angela, the special education teacher, does not have her own goals for the use of AR, but serves in a supportive role by assisting and encouraging her students to earn the AR point goal that was established by the general education teacher or dictated by the IEP accommodations.

Observation. While two of the five participants discussed using informal observations to measure the effectiveness of the AR program, they both discussed observing different things. Olivia based her observations on "seeing them read constantly and getting really into the books that they're reading and bigger and bigger books." Susan, on the other hand, based her evaluation of the AR program's success in meeting her goal by observing how many of her students participated and whether they met their AR point goal. Susan's experience had been that most of the students who chose to participate met their AR point goal. Both teachers, along with Jessica, acknowledged that not all students were motivated and wanted to participate in the AR program. As long as they are reading, Olivia and Susan do not force them to participate.

Jessica and Olivia stated that they believe the growth in student reading ability can be attributed to the use of the AR program. Melissa agreed that the AR program helped encourage students to read and improve their reading skills, but voiced concern that the students were not given enough time to read independently during the school day and the students who struggle with reading are less likely to participate outside of their instructional day. This is similar to Susan's perspective. Her higher achieving reading students volunteered to participate in the AR program, but her struggling readers did not.

Star Reading Assessment Data. Jessica and Melissa both discussed using the Star Reading assessment to determine whether the AR program was meeting their specified goal. Jessica's goal was improved vocabulary and reading comprehension. She indicated that she compared the beginning of the year (BOY) and end of the year (EOY) scores and "always saw a correlation to whether they reached their goals or whether they didn't almost always progress if they were reading and testing and reaching those goals."

It is important to note that the Star Reading assessment does not assess vocabulary. As a result of using AR, Melissa wanted her students to gain confidence in their reading and increase their interest in reading. When asked how she measured this, she replied,

> I would compare their growth on their writing with their Star Reading assessment. If those went up or down the kids that . . . we were trying to see, was the student that was meeting their [AR point] goals?

In addition to looking at the current assessment information, Melissa indicated that the 5th grade teachers looked at the Star Reading assessment information from previous years to see if there was a pattern.

SQ4 – How did data inform teachers' perception of the AR program's effectiveness

From 2006 to the time of this study in 2020, districts and schools in Oklahoma were issued a report card available to the public on the State Department website or the link from each district's website. Before the 2019-20 school year, one of the areas addressed on this report card was growth for students whose testing scores fall in the bottom quartile. Beginning with the 2019-20 school year, the Oklahoma Department of Education (n.d.) changed the growth measurement to Academic Growth Indicators. These academic growth indicators measure individual student growth within and across four levels: below basic, basic, proficient, and advanced performance levels. Review of the participant responses regarding data and how it informed their perception of the AR programs effectiveness, *perceptions based on observations* and *reduced impact of historical data.*

Perceptions Based on Observations. Prior to viewing the actual data from three years of Star Reading assessments, the participants were asked to discuss their perceptions of which group of students grew the most and which grew the least. Olivia had observed students at the upper end as those who grew the most. In fact, she said "I'm not sure that it really pushes any group other than the kids who already know how to read really well. They just kind of skyrocket from what I've seen. Melissa stated that the "top quartile, they were going to succeed no matter what we did" which was similar to Susan's viewpoint. Susan saw her stronger readers choosing to participate in the AR program because "they were going to read anyway and so it was easy for them. If they're going to read Harry Potter anyway, might as well take a test over it and get 20 points." Melissa, Susan, and Angela agreed that the 3rd quartile of students were those who grew and benefitted the most from use of the AR program. All three of them also voiced concern about the students in the 1st, or lowest quartile. Melissa and Susan were concerned that these students would give up or had already decided they could not be successful in meeting their AR point goals. Angela stated that the lowest quartile needed intensive reading instruction that they do not get with the AR program. Jessica originally stated that her experience indicated that all students benefitted and grew in their reading from using the AR program except "there were always a couple of the lower kids that just didn't because you could not get them to read." While each of the students had a perception of which quartile grew the least/most, they voiced a belief that was rooted in informal anecdotal information.

Reduced Impact of Historical Data. Table 4.11 shows the average quartile scores for each grade during the previous three years. When averaging quartiles across

grades and years, no quartiles exhibited an average of more than one year of growth. The students in Q1 exhibited the most growth with an average grade equivalency growth of 1.00. The students in Q2 had the next highest average grade equivalency growth of 0.87. The third highest average growth was the students in Q3 with an average growth in grade equivalency of 0.68. The highest performing students exhibited the lowest growth with an average grade equivalency growth of 0.06. While there was a substantial difference between the grade equivalency average growth of 0.06 in the highest quartile and the 1.0 average growth in the lowest quartile, the growth of the lowest performing students was the same growth you would expect from one year of instruction with the school's adopted curriculum. These students were also performing more than a year behind their peers and required a greater average growth than 1.00 per year to catch up with their peers.

Table 4.11

Summary of Average Grade Equivalent Growth

Grade	2017-2018				2018-2019				2019-2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
3	1.09	1.03	0.96	0.76	1.32	1.14	1.12	0.64	-0.1	0.51	0.1	0.2
4	1.82	1.09	-0.06	-0.88	0.89	0.6	0.63	0.21	0.76	0.47	0.73	0.47
5	0.94	1.34	1.41	0.57	0.89	0.79	1.02	0.99	0.8	0.44	0.31	0.2
6	3.43	2.25	0.43	-0.96	0.69	0.81	1.45	-0.02	0.57	0.09	0.6	-0.47
7					1.22	1.38	1.02	0.57	0.37	0.08	0.13	-0.73
8									0.31	1.06	0.42	-0.67

Note. This table illustrates the average growth per quartile in grade equivalency. The 4Q represents those students with the highest scaled scores, while the 1Q represents those with the lowest scaled scores. Blank cells are a result of data not being available because the student is no longer in the Renaissance system.

It is also important to note that only one teacher, Angela who taught special education, discussed using the Star Reading assessments as a starting point to help her identify additional assessments that might be necessary to target the students' need for

further instruction or intervention. The remainder of the teachers used only the Star Reading assessment yet had numerous reasons why the information gleaned from the assessment might not be accurate

The teachers expressed surprise and concern when reviewing the overall student growth reports but continued to find reasons why the students showed minimal growth from the BOY to the EOY. Olivia was pleased to see that the lowest quartile, 1Q, showed the most growth for the first two years. She indicated that these students need to have greater growth than their peers if they are to catch up. She also suggested that the 2019-2020 scores were most likely low due to the COVID-19 pandemic. When discussing those scores, we talked about the fact that students had been in school for 75% of the school year and we should look for growth of approximately .75. None of the third-grade quartiles showed growth above 0.51. Melissa expressed concern at the "variance" in scores. She suggested that the students who showed little growth to negative growth are not motivated by the test. The task of reading is difficult for them, and the students typically stop trying. Jessica looked at the same numerical data as Melissa and voiced surprise that upper and lower quartiles grew the least, she had believed there was growth across the board. She went on to say that some students' reading scores will not grow because they are not motivated to read. Susan shared Melissa's opinion that the low-test scores could be a result of lack of student interest or effort, she also was concerned that when looking at quartile averages, the students with scores that showed large growth or regression would "skew the average for the entire quartile." Angela was the only teacher who discussed "digging deeper" to help identify individual student needs. She stated that she used the Star Reading assessment as a starting point for gathering information. At no

time did any of the teachers question the assessment instrument, teaching practices, or the curriculum and supplemental resources used.

Overarching Research Question: How do teachers determine a supplemental reading program's effectiveness?

Looking across the themes from the research sub questions helped answer the overarching research question, how do teachers determine a supplemental reading program's effectiveness? The themes identified for sub question (SQ)1, how do teachers implement the program in their classrooms? were: *individualizing student AR point goals, incentivizing the motivator, identifying students needing additional assistance,* and *modifying the program.* The themes identified in SQ2, how did teachers determine goals [for their students? for the program?] were: *motivation* and *student growth/improvement.* Answers to SQ3, what evidence do teachers use to support their determination of effectiveness? identified two themes, *observation* and *Star Reading assessment data.* Analysis of the final research question, SQ4, how did data inform teachers' perception of the AR program's effectiveness? identified: *perceptions based on observations* and *reduced impact of historical data.* When looking across these themes, I looked for common threads that appeared across questions. In addition, I looked for themes that directly answered the overarching research question. I analyzed the responses to each sub question and determined that the theme for the overarching research question was *perceptions and personal beliefs*. According to the Cambridge English Dictionary (n.d.), a perception is being aware of things through the physical senses, especially sight, or an opinion based on how things seem. A teacher's belief, on the other hand, is the assumptions they "hold on to" related to their students, classrooms, and the academic

material to be taught (Kagan, 1992). Fives and Buehl (2012) explained that beliefs are content or domain specific but may be influenced by underlying personal beliefs. The participants' perceptions included: perceptions of AR's point system as a motivator and perceptions of student success as measured by the Star Reading assessment. Analysis of the *perceptions and personal beliefs* overarching theme identified teacher perceptions that the AR point system is a motivator and that their perceptions regarding student success as measured by the Star Reading assessment.

Perceptions. The elementary teachers relied on perceptions to determine the effectiveness of the supplemental reading program. They used the words "believe," "observed," "feel," and "think" when describing the students who benefitted the most or the least from using the AR program. Olivia has "seen" her students choosing books that were at higher reading levels. Jessica "thought" the AR program benefitted all students. While Susan used the AR point goal to determine the effectiveness, she admitted that the students who chose to participate found the program motivating and typically met their AR goal. She acknowledged that this is something she has typically observed but had not kept records of the number of students meeting their AR goal.

While the teachers discussed using the results of the Star Reading assessment to determine program effectiveness, their goals for the program cannot be measured using this assessment. Jessica mentioned improved reading comprehension as one of her expected outcomes, but she also mentioned improved vocabulary. Star Reading does assess reading comprehension, but not vocabulary. After viewing the actual Star Reading results over the past three years, the teachers were surprised to see scores that showed minimal growth across all quartiles and attempted to explain why the students' scores did

not increase as expected. Even though they reported using the assessment to measure program success, they found ways to justify and excuse the lack of growth. Susan suggested that it might have been a bad day and not a true picture of the student's ability. Melissa expressed the idea that the lower readers may already feel defeated and not put forth much effort into the assessment. Jessica stated that there were always some students who did not enjoy reading and cannot be motivated to read independently. Although the scores did not indicate the expected growth of at least one year, Olivia, Jessica, and Melissa continued to praise the program. Jessica reflected that the "interview was a good reminder of how well AR worked for my classes." Melissa's reflection stressed that the program had been under-used and "always on the back burner which wasn't a fair go at the program itself." Olivia expressed her hope that the district would reinstate the AR program. When given time to reflect and study the Star Reading assessment data, they participants did voice some concerns. Susan went to her principal and told him that she did not believe the data supported using the Renaissance programs, while Angela and Melissa voiced concern that the teachers using the program needed additional training to understand how to appropriately implement the program. Jessica and Olivia both reflected on the lack of student growth, but also added that they loved the program and hoped they would get the opportunity to use it again in the future. Olivia ended her reflection with, "I hope to be able to dive much deeper if we are able to get this wonderful program back."

Throughout the interview process, none of the teachers questioned the reading programs being used within the classrooms and the impact they are having on the students reading progress. The elementary teachers all talked about how much they like

the Storyworks reading resource and acknowledged that students should grow at least one year through traditional instruction over the course of the school year. They all stated that the AR program is supplemental and should give students an additional boost. Even though the students did not show a one-year growth in reading, none of them questioned whether the Storyworks resource is meeting the needs of their students.

Summary of Findings

This pragmatic case study was designed to determine the process teachers use to determine the effectiveness of supplemental materials used in the instructional setting. Data analysis of teacher interviews, the AR test data, and written reflections and elaborations answered the research questions as follows. Throughout the interview process, the participants consistently talked about *the program's motivational value*. In addition, the teachers appeared to have a preconceived ideas as to the effectiveness of the AR program and *despite seeing evidence, many continued to hold on to their beliefs*.

This process also brought some issues to light. One of the issues was the teacher's perception of AR as what motivated students to read outside of the classroom setting. Although they attributed the motivation to the program, they continued to supplement with extrinsic rewards that also served as motivators. Another issue was the lack of data use for adjusting classroom instruction, instead they typically used it to determine qualification for Title I services. The third issue was the teacher's rejection of the evidence provided regarding student reading score improvement. They gave multiple reasons why there could have been minimal growth, most attributed to student effort. Teacher knowledge of the use and features of the program was another issue that should be addressed.

The following chapter will provide a discussion regarding the findings from this chapter, recommendations for practice, limitations, significance of study, recommendations for future research, and the impact this study had on me as the researcher.

CHAPTER V

CONCLUSION

This pragmatic, qualitative study was designed to assist a small, rural school district with determining the effectiveness of their use of the Accelerated Reader (AR) program. Pragmatic studies are designed to identify problems that have a practical application. Dewey (1993) specifically indicated that research should be conducted on problems that have an importance to the group, in this case, Greenburg Public Schools (GPS). He asserted that researchers are ethically bound to work on studies that promote a democratic life, which supports the belief that all people are socially equal. By conducting interviews with teachers who were using the program, this helped give them a voice in the resource selection process.

The AR program had been used by GPS for over 15 years, but the funding source used to provide this program was discontinued. Teachers expressed that they wished to have the program reinstated for use with their students. This study was conducted to assist the administrators of the district in determining whether the use of the AR program was a fiscally sound practice and to give teachers the opportunity to have their voices heard. Thus, this study was also designed to help the teachers determine whether the program was effective in meeting their needs and the needs of their students. Through teacher interviews, reflections, follow-up questions, and a review of assessment data from the Star Reading assessments over the past three years, I addressed the following research questions:

- How did teachers determine a supplemental reading program's effectiveness?
    - How did classroom teachers implement the program in their classrooms?
    - What goals did the teachers identify [for their students? For the program?]
    - What evidence did teachers use to support their determination of effectiveness?
    - How did data inform teachers' perception of the AR program's effectiveness?

Discussion of Findings

Chapter 4 presented the findings from this study. Data indicated that when implementing the AR supplemental reading program, participating teachers *individualized student AR point goals*, *incentivized the motivator*, *identified students needing additional assistance,* and *modified the program*. Their goals for the program included *motivation* and *student growth/improvement*. They determined effectiveness by *observation* and *Star Reading assessment data*. Additionally, even though teachers used Star data to monitor their students' progress, when they looked at grade level data across three academic years showing limited and sometimes the growth appeared to be negative, they *explained and excused the results* and *held on to their initial opinion of the AR program*. Themes from the sub questions supported the ascertainment of the answer to the overarching questions of how teachers determined a supplemental reading program's effectiveness. The themes that supported the overarching question themes were: SQ1 - *incentivizing the motivator;* SQ2 - *motivation;* SQ3 - *observation* and *Star Reading assessment data;* and SQ4 - *perceptions based on observations* and *reduced impact of historical data.* A review and analysis of these themes indicated that these

themes could be collapsed under one umbrella, *perceptions, and personal beliefs.* In this case, the *perceptions and personal beliefs* were further clarified and led to subthemes of *participants' perceptions of AR's point system as a motivator* and *perceptions of student success as measured by the Star Reading assessment data*.

Perceptions and Personal Beliefs

Throughout the interview process and reflections, participants described their perceptions and beliefs regarding the AR program. As explained in Chapter 4, the teachers held on to their prior beliefs regarding the program, even after viewing assessment scores that indicated minimal growth and even negative scores. The teachers who entered the study with a positive view of the program explained or excused the assessment data and continued to "sing the praises" of the AR program. Susan, on the other hand, entered the study with a negative view of the program and used the assessment scores as validation for her dislike of the program.

Perceptions of AR's Point System as a Motivator

This theme was supported by the sub question themes of *motivation* and *incentivizing the motivator*. All of the elementary participants saw the AR program as a type of motivator. Jessica, Olivia, and Melissa all perceived that the AR program motivated students to read independently. Susan only saw AR as a motivator for those who chose to participate.

General education teachers provided informal observational evidence to support their belief that AR motivated students to read. Anecdotal records are commonly used in education and are "brief notes grounded in the close observations of children" (Clay, 2001). While anecdotal records are a valuable formative assessment, these records should

provide concrete descriptions and details to inform future instruction (Bates et al., 2019). The participants used words like "feel," "see," and "believe." Even Susan, who did not like the AR program, "felt" it motivated some of her students to read. Her determination of this was the fact that she "saw" those who chose to participate, typically met their AR goal. Although observations are considered anecdotal records when systematically recorded, none of them had notes or written observations to support their beliefs and feelings, therefore they had anecdotes rather than anecdotal records.

Jessica and Olivia identified a goal for use of the AR program as motivating their students to read independently. Susan hoped the students in her class who chose to participate would be motivated to read. Since Melissa was the English Language Arts (ELA) teacher and did not teach reading, she was looking for her students to gain confidence in reading and improve their writing skills by being exposed to text that allowed them to visualize the events of the story. She talked to them about "making a movie in their head." Melissa felt that the practice process of AR helped motivate her students to work toward meeting their AR point goal.

While this research found that the teachers' believed the AR program served as a motivator for students' independent reading, all of the general education teachers *incentivized the motivator*. They all described giving their students tangible rewards as they met a portion of their nine-week AR point goal. These incentives consisted of between-class competitions and individual tangible rewards for students meeting a percent of their AR point goal. Susan used tangible rewards for those students who chose to participate in the AR program because she believed they were putting in "extra work" and did not mind rewarding students for extra work. Angela, the special education

teacher, did not use AR as part of her classroom practice but served in a supportive role for her students who were required to use it as part of their general education curriculum. Angela acknowledged that if using AR made students read independently, then that was certainly a benefit. In a study of adults, Wooley and Fishbach (2018) discovered that earlier rewards had a greater impact on motivation than later rewards did. Although the move to rewarding students as they reach a percentage of their goal was better than the end-of-the-quarter reward party, research showed that students would be more motivated by immediate rewards for completing books or taking quizzes (Wooley & Fishbach, 2018).

According to Deci's (1971) study, the use of monetary rewards extinguished intrinsic motivation. For young children, tangible rewards of candy, gum, etc. can be considered a type of monetary reward. Deci discussed that the use of verbal praise and positive reinforcement can increase intrinsic motivation. According to research conducted by Hebbecker et al. (2019) with third and fourth-grade students, intrinsic motivation had a greater impact on reading achievement than extrinsic motivation. They further clarified that success in reading had a greater impact on future intrinsic motivation than extrinsic motivators. In fact, their study indicated that extrinsic motivators had no positive impact on reading achievement. Teacher praise and constructive feedback have shown to be greater motivation than tangible rewards (Biggers, 2001). Troyer et al. (2018) found that motivation was a strong predictor of a student's reading comprehension. The researchers identified positive associations between "intrinsic motivation, reading amount and reading comprehension, and negative associations between extrinsic reading motivation, reading amount and reading comprehension." This body of work suggested that students

who were intrinsically motivated to read tended to read more and have better reading comprehension, whereas those who had extrinsic motivation to read tended to have lower reading comprehension.

Pavonetti et al. (2002) indicated that using AR to motivate students to read was not an effective long-term strategy. They stated that middle school students who used AR during their elementary years did not read more than their peers who did not use AR. They found students who did not have AR in elementary school read more during their middle school years than those who participated in AR during elementary school. This led me to believe that moving forward, the middle school teachers should see students who read more because the AR program has been discontinued at the elementary level.

Perceptions of Student Success as Measured by the Star Reading Assessment

As discussed in Chapter 2, stakeholders must evaluate the success of a program or resources to assist in making decisions regarding the future use, notifications to the program, or discontinuation of the program (Button, n.d.; Ingram et al., 2004; Melrose, 1998). The needs of the learners should be the focus of these evaluations (Button et al., 1992; Ingram et al., 2004; Melrose, 1998; Siuty et al., 2018). Teachers in this study indicated that they determined the effectiveness of AR and student success through the Star Reading Assessment.

The sub questions' themes supporting this overarching theme of perceptions of student success as measured by the Star Reading assessment were: *observation, Star Reading assessment data, perceptions based on observations, and reduced impact of historical data.* It was important to look at what goal or outcome the teachers attempted to measure. Olivia wanted her students to love and be motivated to read. The Star

Reading assessment does not measure motivation or love of reading. Jessica's goal for using the AR program was to improve the students' vocabulary. Jessica stated that she "always" saw a correlation between students reaching their AR point goal and improved Star Reading scores, although the data with overall average improvement did not support this relationship. In addition, there was no report generated from the Renaissance online reporting system that compared AR point goals with Star Reading scores. Melissa's response was that she compared the Star Reading assessment improvement with the student's writing. She reported that she looked for correlations between the progress of Star Reading scores and individual writing samples. Her evaluation of the writing samples was based on her observation, and she stated she was looking to see if the writing was improving at the same rate as the student's reading.

Briscoe et al. (1990) found that teachers' assessment practices reflected their understanding of the assessment process and could change over time. This change can come as a result of interaction with other educators and teaching experience. It appeared that the teachers in this study used the test data available to them to support the goals they had even if the assessment was not designed to evaluate those goals. When their individual student score came back in the green zone, they appeared to link success with all types of reading goals. Ingram et al. (2004) also found that teachers struggled with measurement challenges and the difficulty of measuring certain skills. This concept was illustrated by the teachers' use of Star Reading assessment data to measure all of their goals for the program including a love of reading, motivation, or improved writing skills.

All participants discussed using the Star Reading assessment and progress toward AR point goals as a way to *identify students needing additional assistance.* Olivia and

Susan, 3rd- and 4th-grade teachers, specifically stated that student performance on these measures determined who qualified for intervention from the Title I reading specialist. Because the reading specialist did not provide direct services for 5th-grade students, Jessica, the reading teacher, used the scores to identify those students who she needed to "keep close" and possibly put in a small reading group. Angela, on the other hand, was the teacher responsible for providing that additional instruction and intervention at the middle school. She used the Star Reading Assessment to identify general areas of weakness for her students. This helped guide her to more specific assessments and instructional strategies. Although all were asked how they used the data from Star Reading assessments to adjust their instruction, only Angela, the special education teacher, was able to articulate a process. She also referred to the Instructional Planning Report provided by Renaissance (2013). This report explained the process for designing instruction based on the Star Assessment data and identified students with similar needs so they can be grouped based on specific skills for instruction.

The Power of Teacher Belief Systems. In spite of grade-level, historical data showing only minimal growth, the teachers held on to their original opinion of the AR program, whether that was a positive or negative view. When looking at the results of the assessments, the teachers attempted to excuse or explain the reasons for the limited growth indicated by the Star Reading assessments. One of the reasons voiced for low scores during the 2019-2020 school year was the COVID-19 pandemic. While this was a plausible reason for students not growing due to virtual learning during the last nine weeks of the school year, a bigger reason would be that they had only received seven months of instruction prior to the last reading assessment of the school year. The last Star

Reading assessment for the 2019-20 school year was conducted in March, just before the State Department of Education directed all schools to pivot to distance learning. That being said, a reasonable expectation for growth that year would be seven months' growth, or 0.7, for seven months of instruction. On average, the students did not grow 0.7 years during that time. Another explanation used for low test scores was the assumption that students did not put their best effort into the assessment. Another concern, although this was not specifically expressed by the participants, was that the wide range of Star Reading assessment scores may not be valid results for some students. Since the assessment was computer-based and given in a group setting, the teacher was unaware of how each student was answering specific questions. The teachers mentioned that oftentimes the students rushed through the assessment. What they did not discuss, was what they do when they discover the student rushed. Within the Star Reading assessment platform, teachers can administer the assessment multiple times so there was no reason teachers could not re-assess those students who they thought rushed through the assessment.

When organizing and reviewing the historical data, I found many students with score dates within a week of each other. The earlier score was typically a significantly lower score than the latter which would fit the pattern of retesting students who did not perform as expected on the benchmark assessment. Although I am aware of this because of my work within the school, none of the participants articulated this practice. This made me question whether the process of retesting was part of their evaluation of the data if the decision to retest was made by the Title I reading specialist, or whether they retest students who they want to be referred for special education testing and know that the

special education staff will question the student's score as part of the referral process. They also mentioned that it may have been a 'bad day' for the student.

While all these concerns could be valid, the overall lack of growth cannot be explained by a few students having a bad day or rushing through the assessment. This indicated a need for additional assessment instruments, whether those are anecdotal in nature or a more formal skills test, to help determine whether the testing information gained from the Star Reading assessment was a valid measure of the student's reading ability. Unfortunately, teachers' personal theories and beliefs often have a greater impact on their educational practices than research-based information (Basckin et al., 2021; Thomm et al., 2021). Teachers with a closed belief system are unlikely to evaluate their beliefs and adjust according to evidence that is contrary to their beliefs (Green, 1971). Three of the participants voiced concern in their reflections that the data regarding student improvement was surprising, but two of the teachers continued to praise AR despite being confronted with data that was in opposition to their beliefs. None of the teachers questioned the assessment format or whether the assessment could accurately portray the student's reading ability. They also did not mention that they used other tools to evaluate their students' reading progress such as running records, informal reading inventories, or reading responses. In fact, when discussing what students benefited the most from the AR program, the teachers responded using the words: hope, feel, and believe. They had no empirical evidence or data to support their answers.

When presented with evidence designed to change their misconceptions, research indicated that teachers were often resistant to making long-term changes based on the evidence (Thomm, et al., 2021). This type of evidence is not a new phenomenon;

Rokeach discussed the concept of teachers resisting change in spite of evidence in his 1960 book, *The Open and Closed Mind*. He discussed people with open and closed belief systems and stated that those with open belief systems are more likely to evaluate information on its merits. Belief systems serve two conflicting motives: the need to understand and the need to protect ego (Amis, 1961). Green (1971) applied this concept to education. He discussed that it is important to distinguish between these two belief systems to understand how they may be changed. If a teacher's belief system is based on evidence, that teacher would be willing to hear new evidence and possibly change their thinking on the topic. If a teacher's belief system is closed, their individual belief will hold up despite contrary evidence. Not only will the belief system hold up, but the presentation of evidence increased the likelihood that teachers would hold on to their misconceptions (Double et al., 2020). Jessica and Olivia were examples of teachers with a closed belief system. They believed that the AR program improved the reading abilities of their students despite reviewing Star Reading assessment data that showed otherwise. Thomm et al. (2021) found that educators are more likely to devalue disconfirming evidence-based sources when they believe the process they are reviewing is effective. This explains Jessica's and Olivia's response to the assessment data that showed minimal growth.

Melissa, Susan, and Angela all voiced concerns in their reflections regarding their previous assumptions regarding which groups of students benefited the most from the AR program. Susan reported to her principal that the data did not support the Renaissance products. Melissa's reflection indicated that she was surprised at the low scores and had concerns regarding her students' progress and how it was measured. Angela stated in her

reflection that it was troubling to her that teachers had very little understanding of the data provided by the Renaissance programs and how they continue to support and promote programs that show little growth. According to Basckin et al. (2021), insufficient professional development was a factor that greatly hindered teachers' beliefs and their use of evidence. The researchers stated that the result was teachers who were not equipped to truly understand data and how to use it appropriately.

Abelson (1979) went on to write about the difference in belief and knowledge systems. He identified the main difference between the two as the understanding that other viewpoints or answers are possible. If teachers are unaware or unwilling to acknowledge that there could be shortcomings in their curriculum, supplemental programs, or teaching methods, then they are relying on their belief system, not their knowledge system. This idea is not new, nor is it confined to the expertise of education. Rynes et al. (2018) discussed this concept in the *Journal of Management*. In their summary, they stated:

> Our tool kit needs to expand beyond conducting systematic reviews and factually communicating results to practitioners. We need to consider how to communicate evidence to reduce resistance, help people draw their own evidence-based conclusions, and actively repair public trust in science and scientists. We also need more empirical evidence about what strategies work best to shape research-related beliefs. Armed with such evidence, researchers will have the tools necessary to convince skeptics and rebuild public trust in science and scientists.

This solidified Davison's claim (2001, as cited in Basckin et al., 2021) that teachers are unlikely to change their beliefs unless they are discomforted by inconsistencies between

their beliefs and theoretical understanding. Teachers may feel conflicted because the publisher's literature promoting AR clearly stated that it is an evidence-based program. Some of the teachers were not teaching in GPS at the time the decision was made to implement the AR program. Newer teachers may feel that questioning the program would be questioning those teachers with longevity in the district. If they are new to GPS, they may not be aware that most resource decisions are made at the teacher level. This could lead to their hesitation to question a program that their building administrator may have chosen.

Implications

As this study evolved, its significance also changed. In addition to looking at the financial impact and student progress, some additional significance was determined. This evolution was possible due to the pragmatic approach of the study. Involving the teachers who used the AR program on a regular basis helped guide the evaluation process. While the administration wished to determine the financial implications of using AR, some participants wished to show the value of the program in the hopes the district would reinstate it. By the end of the study, two teachers no longer wanted to use the program based on the lack of progress shown from the assessment data, one teacher stated that with training for the teachers she hoped the program would be more effective, and two teachers continued to sing the praises of the program despite being shown evidence that students are not progressing as expected.

Teachers are expected to use evidence-based programs and strategies to help ensure student success. This study brought to light the need to train teachers to evaluate programs and use data provided to make solid decisions based on knowledge, not what

they want to believe. This study also illuminated some teachers' difficulty adjusting their thinking based on evidence; some of the participants continued to hold onto their belief that the program was improving students' reading ability despite evidence showing otherwise. Understanding how strongly teachers may hold on to beliefs, regardless of evidence to the contrary. gives insight to the need for teachers to understand how to use data objectively to determine whether they are meeting the needs of their students. Teachers may also need to consider whether they need to make adjustments to the program or use a different program altogether.

Recommendations for Practice

The goal of this study was to assist the district in determining the effectiveness of AR as a supplemental reading program and whether it is a good fiscal investment. Findings from this study indicated that the participants with positive perceptions of AR did not adjust their opinion based on evidence provided to them, but instead based their opinion of the program on their perceptions and personal beliefs. Angela, the special education teacher, used the assessment information provided by the Star Reading assessment as a starting point for further assessments. She did not utilize the AR program within her classroom but assisted her students in meeting the AR point goals as established in the general education classroom. In addition, teachers must evaluate their use of tangible rewards to motivate students to use a program that they feel is motivating itself. The findings also brought to light some specific needs for classroom teachers to effectively use supplemental programs within their classrooms. Following are some suggestions for implementation:

Alternative Motivational Strategies

Student motivation is an area on which teachers and building staff may wish to concentrate. The teachers who gave extrinsic rewards did so for completing a percentage of the student's AR point goal. Research indicated that immediate rewards are more effective in increasing intrinsic motivation than rewards that are delayed (Woolley & Fishbach, 2018). By delaying the extrinsic rewards, teachers reduced the potential effectiveness of these extrinsic rewards on the students' intrinsic motivation. If teachers aimed to increase student intrinsic motivation, they may need to consider providing extrinsic rewards immediately after completion of the AR quiz. There is also supporting research that indicates feedback and praise are more intrinsically motivational than tangible rewards (Biggers, 2001; Cameron & Pierce, 1994; Deci, 1971; Lepper & Cordova, 1992).

The participants acknowledged that they would prefer students read because they love to read, not because of the tangible rewards provided. With that in mind, Brandt et al. (2021) identified a list of motivational principles they call the Salient Seven. The seven principles include:

1. Allow students a choice of book titles, response projects, work with partners, etc.
2. Provide collaboration opportunities between students and teachers through discussions focused on books and literacy-related projects.
3. Teach necessary literacy skills and then allow students to make reading selections and participate in their own goal setting.
4. Challenge students by providing open-ended assignments with the appropriate level of scaffolding.

5. Model authentic interest in literacy and provide books and activities that reflect students' academic needs, interests, and cultural identities.
6. Use technology to motivate students.
7. Provide proximal rewards. These rewards are literacy-based rewards such as receiving a book for meeting their individual goal or having an author speak to the entire class after they have met the class-wide goal.

This list brings into question many of the practices associated with AR. In practice, students have been limited to choosing books that are on the AR list and the way the students respond to their book choices has been limited to quizzes. Only Susan provided the opportunity for book conferences in lieu of quizzes. None of the teachers talked about giving students a menu of options to share what they have read; this practice could increase intrinsic motivation for independent reading. It is important to note that although the AR program is computer-based, this does not meet the criteria for principle six. Teachers could use the technology piece to give students more options for sharing what they read. Students could produce short movies, a slide presentation, or FlipGrid video reflection. Providing proximal rewards is a great alternative to the typical extrinsic rewards of candy, gum, or lunch with the teacher. By giving students rewards that have ties to literacy the teacher reinforces the importance of reading.

Setting Measurable Goals for Use of the AR Program

The participants stressed their desire for students to practice reading and to have a love of reading. According to Anderson et al. (1988), students who read 30 minutes per day typically scored at the 80% percentile and read 1,146,000 words per year. Conversely, students who read 12 minutes per day scored on average at the 50th percentile

and read 200,000 words per year. Anderson et al. (1988) confirmed the teachers' understanding that spending time reading books is beneficial to students. Reading engagement has been shown to predict students' learning, grades, achievement test scores, and even graduation (Skinner & Pitzer, 2012). When students have little motivation to read, they read less and are slower to develop early skills such as decoding and fluency (Stanovich, 1986). While young students are often excited and motivated to read, as students get older, that motivation declines. For these older students, whose academic performance was measured by the ability to comprehend narrative and expository texts, "high achievement was associated with high engagement" (Campbell et al., 1997). The teachers' desire to have their students practice reading was supported by research. The concept that AR promotes a love of reading was found in research that is sponsored or conducted by Renaissance. Jessica and Olivia noticed that some students had voiced their wish that they could use the AR program and stated this indicated that AR was a motivational tool. Susan, on the other hand, reported that some students had voiced relief that she did not require them to participate in the AR program as confirmation that the program does not encourage a love of reading. She preferred to conference with students regarding their book selection or have them participate in book clubs. It was interesting to note that Susan did not have a positive view of the AR program and noticed students voicing relief that they were not required to use it, while Jessica had a very positive view of the program and noticed students voicing their desire for the program to return. Often when teachers engaged in classroom discussions with or observed something from a few students, they made assumptions about the whole class, or a majority of the class, which Gonzalez (2015) labeled the "Fisheye Effect." Some

students grab our attention, while others fade into the periphery (Schenk, 2019). Another possible example of the "Fisheye Effect" was the discussion surrounding the motivational power of AR. Jessica and Olivia both talked about AR motivating all of their students. When presented with assessment data that showed limited growth, Jessica stated that there are students that "you just can't get to read." These students who were not motivated by the AR program may be those students who fade into the periphery.

Susan stated that she did not have any predefined goals for use of the AR program but stated that she used it to reward the students who liked the program. Since she allowed students to choose whether they participated or not, her experience was that the students who chose to participate in AR were those who enjoyed reading and progressed in the Star Reading assessment. She acknowledged that the AR program motivated some students and she wanted to provide whatever she could to encourage students to spend time reading independently. Angela, the special education teacher, served in a supportive role for her students who were required to participate in the general education classroom. She also stated that she had no goals for using the AR program.

The fact that the participants were not able to easily identify their goals or outcomes for using the AR program made the ability to evaluate its effectiveness difficult. Mandinach and Schildkamp (2021) stressed that teachers should begin with clear, measurable goals, not data. Data will then be used to help determine whether the goals are being met.

To determine whether a program or resource is meeting the needs of a school or district, it is necessary to have clearly defined outcome goals. If teachers do not have a defined goal for use of the product, how will they evaluate its effectiveness? Teachers use

programs and curricula to improve student achievement outcomes, but unless they have specific goals defined, they have no way of measuring the effectiveness of the program. Administrators should guide teaching staff through the process of goal setting and how they will measure the goal. Moving forward, all resources should have an established goal and a way of measuring the goal.

Time should also be spent identifying an appropriate way to measure the program goals. For example, participants stated that working toward these goals instilled a love of reading. It is unclear how teachers are determining whether students love to read because of the AR program. Teachers may consider surveying students who used AR as elementary students to get feedback on how they view the program.

Professional Development

Teachers, like their students, are on a continuous learning path. Professional development is provided by school districts annually. These professional development opportunities are typically designed to provide teachers with new, updated information regarding the field of education.

Overall use of the AR Program

Throughout the interviews, the participants mentioned the lack of training for using the AR program. They stated that there were features available that they did not know how to use, and they were sure there were features they were not even aware of. As the AR program evolved, no additional training was provided for teachers. The Renaissance Learning website has easy-to-access tutorials for use of any Renaissance Learning product. Building sites should consider requiring teachers to participate in training to use the program to its fullest potential. In addition to learning about the

features of the AR program, teachers should be aware of various reports that can easily be accessed with student results. The teachers received paper reports that had been accessed and printed by the Title I reading specialist. Teachers should be instructed on how to run the report that would give them the information they need to design and improve instruction. Specifically, teachers should be instructed on how to run a class report so they can get a good overview of how their class is doing as a whole. One such report would be the Star Growth Report (Figure 5.2).

Figure 5.2

Star Growth Report

Growth Proficiency Category	SGP *(Exp. = 50)*	Test Date	Test Duration	SS	GE	PR	NCE	IRL	Est. ORF[a]
Low Growth, Low Proficiency	1	04/24/19	15:02	818	1.3	76	64.9	-	-
		09/03/19	08:01	777	0.9	55	52.6	-	21
		03/02/20	07:46	695	0.0	2	6.7	-	0
		Latest Change		**-73**	**<1**	**-53**	**-45.9**	**-**	**-21**
Low Growth, Low Proficiency	20	08/17/20	10:18	860	1.7	36	42.5	-	45
		04/27/21	08:33	889	2.1	28	37.7	-	62
		Latest Change		**28**	**0.4**	**-8**	**-4.8**	**-**	**17**
High Growth, High Proficiency	81	08/17/20	11:01	861	1.7	36	42.5	-	46
		04/26/21	11:37	964	3.5	69	60.4	-	118
		Latest Change		**101**	**1.8**	**33**	**17.9**	**-**	**72**
Low Growth, High Proficiency	36	08/24/20	18:05	884	2.1	48	48.9	-	59
		04/27/21	14:40	925	2.7	47	48.4	-	88

Note. This is a portion of the report for 3rd grade Star Early Literacy from Olivia's class. Student identifying information has been cropped from the figure.

Use of Data for Decision Making

In addition to learning the features of the AR program, teachers need to be educated on the use of data to drive instruction. Results of these interviews indicated that teachers assumed the curriculum and resources they used had a positive impact on student learning despite reviewing data to the contrary. Since the teachers were given the authority to choose their own resources, this may have contributed to their resistance to accepting data that was contrary to their beliefs. Refutational texts can be useful in targeting misconceptions (Sinatra & Broughton, 2011). When using refutation text, the misconceptions need to be explicitly stated and the scientifically valid position must be explained (Kendeou et al., 2014). Although the historical data presented would be considered refutational text, the general education teachers' lack of experience reviewing data may have interfered with the process of overcoming misconceptions. Training teachers on how to use and read data, along with repeated exposure to the refutational text, may increase the likelihood that the participants will overcome their misconceptions. As they are instructed and coached on reading and interpreting assessment data, teachers will begin to trust and use data to support their decision making. Teachers should make decisions based not only on experience and intuition but also on data (Schildkamp et al., 2017) and Susan did just that. After this study, Susan went to her principal requesting to explore purchasing an assessment for the 4th grade but wanted to look at products other than Renaissance Learning because she did not feel data supported the continued use of the programs. There was a new principal in that building. He was committed to data-driven instruction and planned on having data team meetings. This was a new development for the district.

Recommendations for Additional Research

This study was conducted in one small district with five participating teachers. Further research should be conducted broadening the scope of this study. Involving more participants could provide a better overview of the effectiveness of the AR program. The study could also involve students and their perceptions of AR as a motivator. In addition to a broader scope study, there is a need for further research in the following areas:

- How do the results of Star Reading assessments compare to other reading measures in terms of individual reading levels?
    - Do Star Reading assessments render the same results as other reading assessments?
    - How do the scores compare with reading assessments not completed on a computer?
- How does ongoing teacher professional development regarding the use of data inform teacher decision-making?
- How do the results of this study compare to other school districts' use and understanding of the AR program?

Limitations

Chapter One discussed limitations to the study that were identified prior to beginning the research study. Those limitations included: the project was limited to five teachers in one, small district; the research was conducted during a pandemic; the teachers were not currently using the AR program, and my role as an administrator places me in a position of power. As the research project progressed, further limitations were brought to light. One of the limitations was the teachers' lack of knowledge regarding the

use of the AR program and the Star Reading assessment reporting system. Because the teachers were not familiar with, or fully implementing the programs, they could not provide a complete overview of its effectiveness.

Impact of the Research Study on the Scholar-Practitioner

As a district-level administrator in the district where this study was conducted, I found myself struggling with the lack of data-informed information from the teachers. I was unaware that teachers were basing their decisions of an expensive, supplemental program on their possibly informal observations, thoughts, and feelings. As I interviewed teachers and shared the assessment results with them, I was surprised that they were not more interested in the outcomes of the assessments. They appeared to have an explanation for all the low growth illustrated by the assessment. This experience led me to believe that they have not been guided through data-driven decision making and that should be a focus of professional development moving forward.

One concern I found from this study was the issue of equity. Discovering that equity was an area of concern regarding the use of the AR program made it even more clear that a pragmatic approach was appropriate. Dewey (1993) stressed that a pragmatic approach to research contributes to the democratic life while providing equity for all. He specifically mentioned the concepts of freer and more humane experiences. Restricting students' book choices and ways of responding to their selections certainly restricted their freedom within the literacy education process. Students who read below the level of their same-grade peers, often read books with lower point values. This meant they must read more books in order to earn an equivalent number of points as their more fluent peers, which translated into having to take more assessments. The question must also be asked

whether requiring struggling readers to read more and often many more books and take the corresponding number of quizzes is considered equitable. At the least, it is not equitable, at the worst it is inhumane. Working with the end-users of this program gave first-hand information that can be shared with administrators and teachers alike.

Since the completion of this study, my role in the district has changed. I am now semi-retired and working on the management of all federal COVID-19 relief projects. This puts me in a position to guide site administrators in the development of programs that address student learning loss. Using what I learned from this study, I will recommend that administrators be required to ~~develop measurable~~ goals for any newly implemented program. These goals can be determined by administrators and/or teachers. It is my hope that this process will transfer to the teaching staff once administrators have received training and embrace the need for goal setting and using data-based decision-making.

This project has shown me the need for quality program evaluations to be conducted within the school settings. GPS invested a considerable amount of money into a program that some of the teachers still believe meets the needs of their students when the comparison of beginning-of-the-year scores compared to end-of-the-year scores shows minimal growth. Participants in the study indicated their belief that AR motivated students but have added tangible rewards to encourage their students to participate in AR and earn the points assigned. If teachers want to motivate their students to read, they should consider the seven salient principles (Brandt et al., 2021). Teachers could study these principles together and begin by implementing just two or three of the principles to see what impact these have on their students using measurable goals. Providing the students with choices in both book selection and alternative formats for responses to their

reading could be just the motivation students need to really develop a love of reading (Brandt et al., 2021; Huang, S., 2012; Sharp et al., 2016; Turner & Paris, 1995). Another thought is regarding the use of the district-adopted textbook resources. If the resources the school district has adopted are meeting the needs of the students, wouldn't the expectation for a supplemental program be accelerated growth instead of minimal growth?

I was struck by the contrast between Susan and Olivia's responses to the data. Susan entered into this study not having a positive opinion of the AR program and used the data shared to support that opinion. On the other hand, Olivia entered this study loving the AR program and, despite being faced with the assessment data and stating concerns about the low assessment scores in her reflection, her final words of the reflection were, ``I hope we can get this wonderful program back." This brought to life the concept of an open or closed mindset. Teachers have difficulty letting go of their long-standing beliefs, but Susan saw this as a sense of empowerment when she approached her administrator with her concerns regarding the fidelity of the AR and Star Assessment programs.

Conclusion

Dillon and O'Brien (2018) remind us that "through the lens of pragmatism, knowledge and research results are simply those used and thoughtfully understood to be useful to real people in real context" (p. 582). This study can be useful to "real people", students, teachers, and administrators in a "real context," the school setting. Once goals have been established and communicated to the teachers for any selected resources, teachers will be able to use data to determine whether those resources are meeting the

established goals. Training educational personnel to use data to drive decisions will not only assist in decision-making regarding the effectiveness of supplemental and core resources but will transfer to teachers evaluating their instructional practices. Once teachers consistently use the evaluation of their resources and instructional practices, they may find that with good quality core instruction, delivered with fidelity, the need for supplemental programs will diminish. Understanding the concepts of open and closed belief systems and discussing these systems with teachers and administrators can open the door for conceptual change that bases future decisions on data not beliefs that are challenging to change; all this translates into better educational experiences for our children. Our students' educational growth is too important to spend time on resources that have limited benefit to our students.

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APPENDICES

Appendix A

Semi-Structured Interview Questions and Possible Probes

Informal conversational interview strategies were used with the following guiding questions:

- What is your teaching and education background?
- Explain how you utilize the Accelerated Reader program in your building and classroom?
    - What are your goals for the program?
    - How do you measure those goals?
    - How do you utilize the data from AR and Star Assessments?
    - How do you adjust your instruction and/or expectation after reviewing student data?
- What do you see as the strengths of the AR program?
    - How does this compare to other reading programs you have used?
- What do you see as the weaknesses of the AR program?
    - How does this compare to other reading programs you have used?
- Discuss the students as quartiles and how you see each particular group benefitting or not by using the AR program?
    - How much growth do you expect from each student as a result of using your base reading curriculum?
    - Which quartile of students do you think grows the most?
    - Which quartile of students do you think grows the least?
    - What do you do to compensate/supplement for those students you think experience less growth?
- Tell me about your belief of student learning.
    - How do you think students grow in their knowledge?
    - What is the role of the teacher during this process?
- What do you understand about the Independent/Instructional reading level and Zone of Proximal Development (ZPD) identified by the Star Reading Assessment?
    - Using Vygotsky's definition of ZPD, how do you provide a sociocultural learning experience related to Accelerated Reader (AR)?
- Any other information you would like to share regarding your experiences with AR and student reading growth that we haven't already discussed?

Appendix B

Participant Reflection Prompt

After reading the transcript of your interview and considering the data you reviewed, what are your thoughts about Accelerated Reader and how it has been used in your classroom? Is there anything that stands out to you? Is there anything you think should be done differently? What were your "takeaways"?

Appendix C

Participant Interpretation of Archival Records

After the initial interview had been completed, grade-specific archival records were shared with the participants. This information consisted of three years of pre-test and post-test data for students in the grade they are teaching. In the case of special education teachers, the data consisted of students in their building. The participants compared the pre-test scores (August-September Star Reading scores) to post-test scores (April-May Star Reading scores). Questions such as, "What do you notice about this data?", "What did you expected to see in the data?", "What surprises you about this data?" and "What questions do you have about this data?" were asked of the participants.

Appendix D

IRB Approval

Oklahoma State University Institutional Review Board

Date:	10/08/2020
Application Number:	IRB-20-448
Proposal Title:	Accelerated Reader and its use in a northeastern Oklahoma rural school
Principal Investigator:	Lynn Debolt
Co-Investigator(s):	
Faculty Adviser:	Sheri Vasinda
Project Coordinator:	
Research Assistant(s):	
Processed as:	Exempt
Exempt Category:	

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,

Oklahoma State University IRB

VITA

Lynn DeBolt Schroeder

Candidate for the Degree of

Doctor of Philosophy

Dissertation: TEACHER PERCEPTIONS OF THE GOALS AND EFFECTIVENESS OF ACCELERATED READER

Major Field: Language, Literacy, and Culture

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Language, Literacy, and Culture at Oklahoma State University, Stillwater, Oklahoma in December 2021.

Completed the requirements for the Master of Arts in Early Childhood Education at Northeastern State University, Tahlequah, Oklahoma in 1994.

Completed the requirements for the Bachelor of Arts in Special Education at Northeastern State University, Tahlequah, Oklahoma in 1988.

Experience: Director of Federal Programs and Special Education at Sequoyah Public Schools, Claremore, Oklahoma 2011-present

Professional Memberships:
Association of Literacy Education Researchers
The Reading League
International Literacy Association
Council for Exceptional Children