# Perceptions and Implementation Factors of the Bookworms Curriculum on Third through Fifth Grade Students' Reading Performance

A Dissertation submitted
to the Graduate School
Valdosta State University

in partial fulfillment of requirements
for the degree of

DOCTOR OF EDUCATION

in

Curriculum and Instruction

in the Department of Leadership, Technology, & Workforce Development
of the Dewar College of Education and Human Services

May 2025

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ABSTRACT

This case study aimed to investigate the effectiveness of the Bookworms (BW) program in improving student reading performance among 128 students transitioning from third to fifth grade, who attended two public elementary schools in a rural school district. The school district utilized Lexile scores from GMAS during the 2020-2021, 2021-2022, and 2022-2023 academic years. This study also included the perceptions of teachers who taught the program, as assessed through a 30-item survey. Paired *t*-tests, independent *t*-tests, ANOVA, and chi-squared tests of independence were conducted to analyze the quantitative data. Qualitative data were coded to generate themes that help understand teachers' perceptions of the Bookworms program.

The results revealed the Bookworms program's potential to support diverse learners regardless of gender and ethnicity. It seemed to benefit all learner service subgroups, particularly those in the Early Intervention Program (EIP). The teachers expressed reservations about the impact of Bookworms on student learning, but agreed that it helped enhance students' vocabulary, comprehension skills, and overall reading performance. They emphasized the needs of (1) sufficient professional training, (2) specific guidelines on differentiated instruction, (3) specific guidelines for effectively using resources, (4) enough time for implementation, (5) appropriate resources to address the full spectrum of student reading needs, (6) scaling back the program and reduce the number of books, (7) incorporating additional instructions or supplemental materials resources such as phonics, grammar, worksheets, and assessments, and (8) allowing some flexibility from the scripted Bookworms curriculum to support effective program implementation.

TABLE OF CONTENTS

Chapter I: Introduction……1

Problem Statement……..……1

Purpose of the Study……...……6

Methodology……..…….……7

Student Reading Performance……..……...…..7

Lexile Scores…….…..……8

Teacher Survey…….…..……...……...9

Research Questions…….…..……...…….…...10

Conceptual Framework…….…..……...……...……...11

Phonemic awareness…….…..……..…...…...12

Phonics…….……....……...……..…….....13

Fluency…….…..……....……..…….....14

Vocabulary…….……....…….…..……..…...…...14

Comprehension…….…..……....……..…….....……...15

Significance of the study…….…..……...……...…15

Assumptions, Limitations, and Delimitations…….…..…….....16

Assumptions…….…..……...……...…...16

Limitations……..…..……...……...…….17

Delimitations…….…..……...…….....…19

Definition of Terms……..……...…….…...20

Organization of the Study……...…..……...……...21

Chapter II: Literature Review……23

Organization of Review……..…..…….....…….…….25

Georgia's Reading Scores……...…..……...…….……..….25

Government Policies on Initiative……...…..……...……...….27

Reading Excellence Act of 1998……...…..……..……....….27

National Reading Panel of 2000……...…..……...……28

No Child Left Behind of 2001……...…..……...……...…....28

Reading First of 2001……...……..…….……...……...……..29

Striving Readers Comprehensive Literacy Program of 2015..……...…….…...30

The Science of Reading……...…..……...…….……..32

Scarborough's Reading Rope……...…..……...……...…….33

Components of Reading……...…..…….....…….……...34

Phonics……...…..……...……...…….34

Phonemic Awareness……...…..……...……...…...35

Fluency……...…..……...……...…….37

Vocabulary……...…..……...…….....38

Comprehension……...…..……...……...…39

Bookworms……...…..……...…….……40

Relevant studies related to Bookworms……...……...……..…...42

Small Group Skill Lessons……...…..……...……...…...43

Shared Reading……...…..……...……...…43

Differentiated Instruction……...…..……...…….……..45

Bookworms Benefits……...…..……...…….……..47

Teacher Perceptions……...…..……...…….…….…...48

Summary……..…..……..…….…49

Chapter III: Methodology……50

Research Design……..…..……..……..……...51

Research Setting and Participants……..…..……..…….……...…52

Research Setting……..…..……..……..……...52

Participant Selection……..…..……..……..……...52

Student Participants……..…..……....……..……52

Teacher Participants……..…..……..…….…..52

Description of Program……..…..……..……....……53

Intervention……..…..……..……..……..53

English Language Arts……..…..……..…….…..54

Shared Reading……..…..……..…….…..55

Differentiated Instruction……..…..……..…….....…...57

Instructional Materials Used ……..…..……..…….…….……58

Teacher Manual……..…..……..…….…….58

ELA Lesson Plans……..…..……..……..……..…59

Shared Reading Lesson Plans……..…..…….....……59

Student Workbooks……..……..……..……..…60

Instrumentation……..…..……..……..…….……60

GMAS……..…..……..……..…….60

Lexile Measures……..…..……..…….……....61

Teacher Survey……..…..……..……..……...62

Data Collection Procedure……...……..…..……..……..…...62

Student Reading Performance ……..……..…….....62

Teacher Survey……..…..……..……..…...63

Ethical Considerations……...……...…..……...……..……...64

Data Analysis…….....……...…….…...64

Lexile Scores……..……...…..……...….64

Likert-Scale Questions from Teacher Survey ……...……...…..65

Open-Ended Questions from Teacher Survey…….…...…..……...……...66

Validity & Reliability……..…...…..……...……..…….…..66

Validity……...…...……...……66

Internal Validity……...…..……..…….…….67

External Validity……...…..……...…….……68

Reliability……...…...……...……...…….69

Reliability of GMAS……...…..…...…….…....70

Reliability of Teacher Survey……...…..……....……...70

Inter-coder Reliability……..……...…..……...…….…….71

Summary……...…..……...……...……..71

Chapter IV: Findings……..…..……...……72

Descriptive Data……...…...……...……...……..…73

Student Data……...…..……...……...…..…73

Teacher Data……...…..……...……...……...…..…76

Data Analysis for Research Question One…….…..…77

Lexile Scores……...……77

Lexile Stretch Bands……...……78

Grade 3 to Grade 4 Growth…….……...79

Grade 4 to Grade 5 Growth…….……...80

Grade 3 to Grade 5 Growth…….…...81

Data Analysis for Research Question Two……...…….82

Lexile Scores……...……82

Lexile Stretch Bands……...……83

Grade 3 to Grade 4 Growth…….……...84

Grade 4 to Grade 5 Growth…….……...86

Grade 3 to Grade 5 Growth…….……...87

Data Analysis for Research Question Three…….…...…89

Lexile Scores……...……90

Lexile Stretch Bands……...……91

Grade 3 to Grade 4 Growth……....92

Grade 4 to Grade 5 Growth…….…...95

Grade 3 to Grade 5 Growth…….…...98

Data Analysis for Research Question Four…….…...102

Lexile Scores……...…..102

Lexile Stretch Bands……..……...……104

Grade 3 to Grade 4 Growth……..……....104

Grade 4 to Grade 5 Growth…….….107

Grade 3 to Grade 5 Growth…….….111

Data Analysis for Research Question Five……....……114

Professional Training on Bookworms……...…115

Resources that Bookworms Offered……..…..116

Factors for Bookworms' Implementation……..…..117

Bookworms' Impact on Student Learning……....118

Summary……...……119

Research Question One……..…..119

Research Question Two……...……...…..120

Research Question Three……....…...……..121

Research Question Four……..……....……...…..122

Research Question Five……..……....…...……..122

Chapter V: Conclusions, Implications, and Recommendations…….……..…...125

Overview of the Study……...…….……...……125

Discussions and Findings……..129

Research Question One……...……..129

Research Question Two……...…...……..130

Research Question Three…….....……..131

Research Question Four……..…….....……..132

Research Question Five……..……....……...…..134

Implications for Practice…….……...138

Recommendations for Future Research…….……141

Conclusions……....142

References…….…….…….……..144

Appendix A: Teacher Survey……..…….....……..175

Appendix B: Permission Letter from the Superintendent……179

Appendix C: IRB Approval……...…….181

Appendix D: Invitation E-Mail……...……..……...……...183

Appendix E: Response to Section 4 of the Teacher Survey…….……..…….....185

Appendix F: Summary of Statistically Significant Results (RQ1-RQ4)……....187

Appendix G: Summary of Crosstabulation Results (RQ1-RQ4)……...…….…….....189

LIST OF TABLES

Table 1: College & Career Ready "Stretch" Lexile Bands……...……...9

Table 2: Mean Lexile Scores from Grade 3 to Grade 5 by Demographics…...…….....76

Table 3: Demographic Information of Teacher Participants.……...…….77

Table 4: Paired *t*-test Results of Lexile Mean Scores from Grade to Grade…….….78

Table 5: Crosstabulation of Grade 3 * Grade 4 Stretch Band…….……..….79

Table 6: Crosstabulation of Grade 4 * Grade 5 Stretch Band…….....…..80

Table 7: Crosstabulation of Grade 3 * Grade 5 Stretch Band……..…….…….81

Table 8: Mean Growth Scores in Lexile from Grade to Grade by Gender…….....…….83

Table 9: Independent t-test Results of Lexile Mean Growth Scores by Gender...…...….83

Table 10: Crosstabulation of Grade 3 * Grade 4 Stretch Band by Gender.....85

Table 11: Crosstabulation of Grade 4 * Grade 5 Stretch Band by Gender.....87

Table 12: Crosstabulation of Grade 3 * Grade 5 Stretch Band by Gender.....89

Table 13: Mean Growth Scores in Lexile from Grade to Grade by Ethnicity……..…….91

Table 14: ANOVA Results of Lexile Mean Growth Scores by Ethnicity…….91

Table 15: Crosstabulation of Grade 3 * Grade 4 Stretch Band by Ethnicity…….96

Table 16: Crosstabulation of Grade 4 * Grade 5 Stretch Band by Ethnicity…….....98

Table 17: Crosstabulation of Grade 3 * Grade 5 Stretch Band by Ethnicity……...101

Table 18: Mean Growth Scores in Lexile from Grade to Grade by Learner Service…..103

Table 19: ANOVA Results of Lexile Mean Growth Scores by Learner Service……103

Table 20: Crosstabulation of Grade 3 * Grade 4 Stretch Band by Learner Service …...107

Table 21: Crosstabulation of Grade 4 * Grade 5 Stretch Band by Learning Service…..110

Table 22: Crosstabulation of Grade 3 * Grade 5 Stretch Band by Learning Service…..113

# DEDICATION

This dissertation is dedicated to my beloved mother, Dawn Miller, a compassionate and devoted nurse, as well as a lifelong advocate for learning. Your compassion, resilience, and unwavering support continue to inspire me every day. Even though you are no longer here, your words – "*I had no doubt you could do it*" – echoed in my heart through every challenge and every moment I wanted to give up. You believed in me long before I believed in myself, and this accomplishment is a reflection of your love and faith. I hope this work makes you proud. I carry your spirit with me always.

# ACKNOWLEDGEMENTS

First and foremost, I give all glory and thanks to God. It was through His grace, strength, and guidance that I was able to persevere through this journey. Through every setback, every sleepless night, and every moment of self-doubt, my faith sustained me and reminded me that this journey had a purpose beyond what I could see in the moment.

Completing this dissertation has been one of the most challenging experiences of my life, both academically and personally. There were times when I doubted whether I would be able to finish, and I owe its completion to the support and encouragement of several key individuals.

I extend my deepest gratitude to my dissertation committee: Dr. E-Ling Hsiao, my chairperson and researcher, whose unwavering support, wisdom, and patience guided me through countless revisions and moments of uncertainty; Dr. Steven Downey and Dr. Xiaoai Ren, whose insightful feedback and encouragement helped shape this work into what it is today. Your belief in my potential – even when I struggled to see it myself – made a lasting impact.

I also wish to thank Valdosta State University for the academic and institutional support throughout this process. The resources and learning environment provided here played a crucial role in helping me complete this work, despite the many obstacles I faced along the way.

To my colleagues and friends – thank you for walking alongside me through the highs and lows. Your words of encouragement, late-night check-ins, and simple acts of kindness helped carry me through more than you may know. I am especially grateful to Ann Pickett for the many years of support, love, and friendship that have brought me to this point and for being a friend who taught me the importance of having a plan. To Darlene, for the countless hours of late-night phone calls, talking me off the ledge, meals, and articles to read, which aided and boosted my motivation to keep pursuing this study. To Brenda for the guidance, moral support, and assistance in staying focused throughout this journey. To Ashley and Keith for always pushing me to keep going. To Kimberley for always being my inspiration to overcome obstacles in my way. To Barbara and Glenn, I would like to express my heartfelt gratitude for the countless lunches and late-night sessions that encouraged, inspired, and uplifted me throughout this journey. Your guidance, compassion, and support helped me navigate the emotional weight of this adventure. To Tamara and Tony, Mollie and Pastor Brett, Angel, and the rest of my church family, thank you for helping keep me on track with your prayers and support. To my tribe at work, Jessica, Michelle, Elexis, Melanie, Madison, Marcie, Lori, Carol, Allison, Mrs. Johns, Mrs. Johnson, Mrs. Sebring, Mr. Robbins, and Mrs. Larson, thank you for being my motivators and my community.

For all mentioned above, your constant support, listening ear, and unwavering belief in me carried me through some of the most difficult phases of this journey. Whether it was your encouraging messages, late-night talks, or simply your presence when I needed someone to lean on, you reminded me that I was not alone. In moments of overwhelm, self-doubt, and exhaustion, your steady presence and encouragement helped me stay grounded and reminded me that my well-being mattered just as much as my

work. Your friendship has been one of the greatest sources of strength throughout this process, and I am forever grateful to you all.

To my dissertation cohort, thank you for your support, late-night homework sessions, weekend visits, and online therapy sessions, which helped me navigate the coursework and the dissertation process. I am thankful to say that I am part of a fabulous cohort that will always be cherished.

Lastly, to my family, Dad, Travis, Ree, and extended family – thank you for your unconditional love, patience, and faith in me. To the memory of my mother, I will always hear your voice saying to me, "I knew you could do it!"

To all of those mentioned and those not mentioned specifically, your support was my foundation when everything felt like it was falling apart. You stood by me even in the moments when I questioned whether I could finish this journey. This accomplishment is as much yours as it is mine.

This dissertation was born through difficulty, perseverance, and grace. This path was far from easy, but every challenge has shaped both this dissertation and the person I have become through it.

# Chapter I

# Introduction

## Problem Statement

After many years of reading wars between whole language and phonics theories, a new player emerged in this battle. This new player is known as the "Science of Reading" (SOR). Chu (2022) suggested that the SOR encompasses evidence-based reading instruction that synthesizes research findings on effective teaching practices in reading. While phonics is a component of SOR, it represents a broader framework derived from various disciplines, indicating that most children can achieve literacy when provided with appropriate instructional approaches. Chu (2022) outlined phonics as mastering a specific set of symbols, comprehending the structure of words composed of distinct elements, and grasping how various letters and combinations represent the 44 phonemes in the English language. Phonics emphasizes the relationship between letters and their associated sounds, employing decoding techniques to recognize words by sounding out the constituent letters and phonemes. The repetition of sounding out the letters and phonemes will become more automatic as you use it.

The reading wars became very heated in the early 1980s. By 1990, the United States Congress had to step in and establish the Nation's Reading Panel (NRP) to review all research and decide which side would win the war (NICHD, 2000). The NRP found that teaching phonics improves children's reading abilities. However, advocates of the whole language method argued that it remains superior as it acknowledges that children

differ in their learning pace and style. While that may be true, researchers have stated that learning to read cannot be learned naturally, just as learning to speak (Chu, 2022; Walpole, 2022). Over the last 40 years, the problem has become the peddling of whole language or balanced literacy in the school's curriculum, while negating the phonics portion because it is perceived as arduous and often dull. The reading wars have affected not only the curriculum but also literacy stakes. Walpole (2022) noted that the number of students in the United States who struggle with reading is shockingly high. Approximately 33% of fourth-grade students struggle to reach a basic level of reading proficiency, and the majority continue to lack proficiency in reading upon completing high school.

Furthermore, the study by Conner et al. (2014) revealed that children who struggle with reading are at higher risk of grade retention, dropping out of school, early parenthood, and involvement in the juvenile justice system. Walpole (2022) continued by saying that children who have grown up in a home with rich vocabulary have a more substantial advantage than those who grow up in language-poor households, which establishes significant gaps and deficits that phonics cannot address alone. Reading is not hierarchical or sequential like math; it is more cumulative. According to Snow et al. (1998), "reading is a complex developmental challenge that we know to be intertwined within many other developmental accomplishments: attention, memory, language, and motivation, for example" (p. 15).

Like many pressing issues today, the true nature of the problem is not being addressed, as it has become more of a political issue due to state regulations. Arguments are being lost on how the legislation is worded or framed, rather than drilling down to the

root of the issues. Therefore, there has been a renewed interest in solving the problem of poor reading instruction; therefore, the new focus is on the SOR theory.

Beginning in the third grade, academic expectations increase. Numerous researchers have proposed that children who face difficulties in reading during their early years are prone to encountering ongoing challenges with reading and writing as they progress through school, with a heightened risk of eventually dropping out (Alexander et al., 1997; Ramey & Ramey, 1998). According to Melekoglu (2011), the shortcomings of literacy skill disparities could engender negative attitudes and low motivation. Consequently, children with low motivation tend to demonstrate and maintain subpar performance in reading tasks (Chapman et al., 2000). Most students learn basic reading or literacy skills in their early years. These skills are not limited to adolescence but progress throughout a lifetime. Pikulski and Chard (2005) outlined that proficient reading involves fluency, where a child transitions from decoding individual words to achieving automaticity—rapid, precise, and effortless word recognition. This skill enables the child to concentrate on comprehending the text, which is the ultimate goal of reading (Pikulski & Chard, 2005). Bender and Larkin (2009) argued that reading skills do not naturally develop and must be explicitly taught; therefore, teachers should integrate literacy instruction across all aspects of the school curriculum, particularly during the early and middle school stages. Failure to facilitate a smooth transition in literacy may lead to behavioral and academic challenges for children during their crucial developmental years and beyond (Ramey & Ramey, 1998). The positive takeaway from several concerning reports is that educational interventions can mitigate or prevent the severe academic and social impacts of reading difficulties (Fletcher et al., 2019; Foorman et al., 2016;

McCardle & Chhabra, 2004). When students attain fundamental reading abilities at the outset of their academic journey, the advantages can be observed for years (Cunningham & Stanovich, 1998). Remediation during the second and third grades can yield enduring positive impacts on fundamental reading skills for the subsequent decade (Blachman et al., 2014). Similarly, older students from grades 3 to 5 can enhance their skills to the average level and maintain these improvements through intensive, expert, and prolonged remediation efforts (Torgesen et al., 2001).

The strong correlation between implementing literacy interventions in the early grades and the effect they have on students' reading achievements has resulted in a variety of programs being implemented in schools as an attempt to close the achievement gap (Chapman, 2016; Foorman et al., 2016; Grapin et al., 2018; Higgins et al., 2015; McBreen & Savage, 2021; Mitchell & Begeny, 2014; Pasini, 2018; Ross & Joseph, 2019; Wood et al., 2002). Some of these programs include but are not limited to (1) Accelerated Reader (AR) (Lawson, 2000; Peak & Dewalt, 1993; Samuels & Wu, 2004), (2) Read 180 (Interactive, Inc., 2002; Papalewis, 2004; (3) Reading Recovery (Clay, 1987, 1990; Groom et al., 1991; Hiebert, 1994; Lyons et al., 1994), (4) Soar to Success (Cusumano & Mueller, 2007), (5) Wilson Reading System (McIntyre & Pickering, 1995), (6) Reading First (U.S. DOE, 2002a, 2002d), and (7) Strategic Literacy Initiative (Greenleaf et al., 2001). These programs are designed to incorporate evidence-based practices into their core.

Evidence-based practices (EBPs) – which include activities, strategies, and interventions – are "derived from or informed by objective evidence—most commonly, educational research or metrics of school, teacher, and student performance" (Great

Schools Partnership, 2016, para. 1). EBPs refer to practices that use the most reliable research findings within the field. Those who utilize evidence-based practices are assured that the strategies and activities incorporated into the program are grounded in sound scientific evidence. Several themes emerged when examining the EBPs behind Bookworms (BW) comprehensive reading program. These include but are not limited to (1) SOR, (2) Phonemic Awareness, (3) Phonics, (4) Fluency, (5) Vocabulary, and (6) Comprehension. The SOR denotes the pedagogy and practices validated by comprehensive research to effectively teach children to read. One primary framework, the SOR, incorporates Scarborough's Rope to simplify the intricate amalgamation of skills necessary for reading proficiency (Scarborough, 2001). The SOR approach can be found in BW, which the Cherokee Lee School District chose to use. Moats and Tolman (2022) explained that during the second and third grades, as students develop decoding skills to enhance word recognition accuracy and engage in regular reading practice, they typically solidify their reading abilities and improve reading fluency. Usually, their reading speed advances from approximately 60 words correct per minute (WCPM) by the conclusion of first grade to about 120 WCPM in oral reading by the culmination of third grade (Hasbrouck & Tindal, 2006). Failure to achieve this milestone may result in reading being too slow and inefficient to effectively support sustained comprehension during passage reading (Moats & Tolman, 2019).

Drawing from their research, Walpole and McKenna (2009) suggested that teachers should differentiate instructional approaches to accommodate the diverse needs of students in reading and writing. They authored two books: one in 2017 titled "*How to Plan Differentiated Reading Instruction: Resources for Grades K-3*," and another in 2019

titled "*Differentiated Reading Instruction in Grades 4 and 5: Strategies and Resources*." These two books would later help build the foundation for BW. After the Guilford Press published those two books, Walpole and McKenna conducted action research to examine how classroom teachers were implementing and using the research strategies from the previously mentioned books. In partnership with Open-Up Resources (OUR), they utilized their action research data and input from teachers implementing the program to refine, polish, and compile a more cohesive and comprehensive curriculum (OUR, 2022a). They included the spelling and writing portions in the curriculum in addition to advanced vocabulary and comprehension. They promoted equity in K-12 education by providing districts and schools with open access to excellent, highly-rated curricula (OUR, 2022a). The new BW program features simple, repetitive, evidence-based instructional routines and comprehensive lesson plans for whole-group, small-group, and differentiated instruction.

**Purpose of the Study**

The current study aimed to investigate the effectiveness of the BW program in raising student reading scores for students progressing from third to fifth grade ($N = 150$ students) attending two public elementary schools in a rural school district. The school district used reading achievement assessment data from the Georgia Milestones Assessment System (GMAS), including Lexile scores. The data were compiled from the school years 2020-2021, 2021-2022, and 2022-2023. Due to the COVID-19 pandemic, the GMAS assessments were put on hold until schools fully reopened in the Spring of 2021.

In addition to the BW program's impact on student academic performance, this study also examined the perceptions of the teachers who taught the program. A 30-item survey was created to gain both quantitative and qualitative data from the teachers' responses (see Appendix A).

## Methodology

In this study, a case study design was employed to collect both quantitative and qualitative data, providing a comprehensive understanding of the BW program. Its primary goal is to conduct an in-depth analysis of an issue from the participants' perspective (Merriam & Tisdell, 2017; Stake, 2015; Yin, 2016). The following data were included in the analysis.

### *Student Reading Performance*

Student reading performance refers to the Georgia Milestones Assessment System (GMAS) score, which comprises end-of-grade measures in English/language arts and mathematics (GaDOE, 2014). GMAS matches the skills taught by Georgia standards in the content areas of English/language arts, mathematics, science, and social studies (GaDOE, 2014). The GMAS replaced the previous assessment screener, the Criterion-Referenced Competency Tests (CRCT), as well as the End-of-Course (EOC) tests and writing assessments. The GMAS was first implemented during the 2014-2015 academic school year. Due to nationwide school closures during the COVID-19 pandemic, the GMAS assessments were suspended until schools fully reopened. The GMAS assessment screener was not reinstated until the Spring of 2021. The purposes of collecting GMAS scores were: (1) to determine the impact of BW on one cohort of students beginning in third grade as they progressed through fifth grade, and (2) to show if an increase occurred

in reading performance based on the GMAS participation as a result of the BW implementation. The GMAS assessment screener was reinstated in the Spring of 2021 after the COVID-19 pandemic. The scores were gathered during the school years 2020-2021, 2021-2022, and 2022-2023. All students participating in the Bookworms (BW) in this school district were assessed using the GMAS assessment screener (GaDOE, 2014). Students who did not remain in the district during the data collection years were excluded from the data analysis.

**Lexile Scores**. Lexile scores are employed to assess a child's reading ability as well as the difficulty of reading materials. These scores enable teachers to appropriately align students with reading materials suited to their level (Cervetti et al., 2020; Feng & Webb, 2020). Students will receive this Lexile score once they have taken the GMAS test in the Spring of each school year. According to the Georgia Department of Education (GaDOE) (n.d.), the Lexile tool helps identify the text complexity required for students to meet the requirements of college and career readiness across various grade levels. Georgia's educational standards emphasize the complexity of texts students engage with and their ability to read and comprehend effectively. The Lexile stretch bands outlined in Table 1 assist teachers and parents in identifying suitable texts for each grade level. These bands indicate which texts are conducive to enhancing students' literacy skills in alignment with the goals for college and career readiness.

**Table 1**

*College & Career Ready "Stretch" Lexile Stretch Bands*

| Grade | College & Career Ready "Stretch" Lexile Bands |
|---|---|
| 1 | 190L to 530L |
| 2 | 420L to 650L |
| 3 | 520L to 820L |
| 4 | 740L to 940L |
| 5 | 830L to 1010L |
| 6 | 925L to 1070L |
| 7 | 970L to 1120L |
| 8 | 1010L to 1185L |
| 9 | 1050L to 1260L |
| 10 | 1080L to 1335L |
| 11 and 12 | 1185L to 1385L |

*Note*. Reprinted from *Lexile Framework for Reading* by GaDOE, n.d.

***Teacher Survey***

This study examined the perceptions of Bookworms among teachers at two rural schools in southeast Georgia. While many teachers teach within this district, a survey was administered. It contains (1) three eligibility questions, (2) three demographic questions, (3) 13 open-ended questions, and (4) 11 4-point Likert scale questions. The teachers must meet a set of criteria to take the survey: (1) have taught during the school years 2020-2023, (2) taught in grades three through five, and (3) taught the ELA content area to participate in the study. They were asked to answer three demographic questions: their years of teaching experience, the grade level at which they taught, and the highest level of education they had achieved. The open-ended questions provided qualitative data on teacher perceptions of the BW program, while the Likert-scale questions provided quantitative data related to BW implementation and student learning.

In appreciation of the teachers' participation, they were asked to fill out a separate form to provide their names and email addresses once the survey had been completed and

returned. If the teachers provided their contact information, they were contacted and emailed a $10 Amazon gift card. To make it even more enticing to complete the survey, those who provided their contact information were entered into a drawing for a $25 Amazon gift card. Since the surveys were electronically administered and returned, the gift cards were also distributed electronically.

**Research Questions**

The following five research questions were used to guide this study.

1. To what extent did participation in the Bookworms program increase third-fifth grade elementary-aged students' reading performance (Lexile scores) as measured by the GMAS standardized assessment screener using reading performance scores during the school years 2020-2023?

2. To what extent did the Bookworms program have a greater impact on student growth across gender subgroups?

3. To what extent did the Bookworms program have a greater impact on student growth across ethnic subgroups?

4. To what extent did the Bookworms program have a greater impact on student growth across learner service subgroups (i.e., regular education learners, gifted learners, Early Intervention Program learners, special education learners)?

5. What were the perceptions of teachers of grades three through five who implemented Bookworms for the 2020-2023 school years regarding the program's influence on students' reading performance as measured by a teacher survey?

## Conceptual Framework

This study aimed to determine the effectiveness of BW on the end-of-year GMAS scores of third through fifth-grade students and to contribute to the research on teacher perceptions of BW implementation (see Figure 1). According to OUR (2022c), the BW program is built on SOR principles. For this study, the SOR is defined as "the accumulated knowledge about reading, reading development, and best practices for reading instruction obtained by the use of the scientific method" (Petscher et al., 2020, p. S268).

The Georgia State Board of Education has enacted legislation, known as House Bill 538, mandating that all schools adopt superior instructional materials that conform to the SOR. As approved by the State Board of Education, these materials are required to teach students foundational literacy skills and English Language Arts (ELA) standards suitable for their grade levels. Foundational literacy skills encompass phonological awareness, phonemic awareness, phonics, fluency, vocabulary, reading comprehension, spelling, oral language, and the integration of reading and writing. Hudson et al. (2021) stated, "Research has consistently demonstrated that for early elementary students and older struggling readers, explicit instruction of foundational literacy skills provides students from a wide variety of backgrounds with the greatest opportunity to learn to read proficiently" (p. S288). Currently, the knowledge of SOR calls for explicit and systematic instruction in phonemic awareness, phonics, fluency, vocabulary, and comprehension. It is becoming increasingly widespread as stakeholders and other educators become aware of the evidence, practices, and resources that align with its principles. States such as Georgia have enacted legislation requiring educators to acquire this knowledge, apply the

principles of that knowledge to their instructional practices, and use curricular resources or materials aligned to the SOR.

### *Phonemic Awareness*

Phonemic awareness is a fundamental element within the SOR methodology, constituting one of its five core components. It involves hearing and manipulating individual sounds (phonemes) within words (Gonzalez & Brown, 2019, p. 2). Instruction in phonemic awareness is a precursor to subsequent phonics teaching (e.g., Ehri et al., 2001; Hecht & Close, 2002; NICHD, 2000) and typically commences as early as kindergarten. Teachers can intervene promptly and intensively to equip children with essential reading skills by prioritizing phonemic awareness in early developmental stages (Torgesen, 2005). It's necessary to distinguish between phonemic awareness and phonics. Phonemes represent the smallest units of spoken language, with the English language consisting of 44 phonemes that form syllables and words when combined (Castles et al., 2018). This results in a seemingly unpredictable orthography (Bahr et al., 2020; Ehri, 2020).

Instruction focused on phonemic awareness emphasizes manipulating sounds in a language without using corresponding letters or blending sounds (Torgesen & Morgan, 1990). Phonemic awareness instruction specifically targets the manipulation of phonemes within spoken words. In contrast, phonics instruction involves teaching reading using the correspondence between graphemes and phonemes. Solid phonemic awareness skills enable children to decode words more rapidly, fostering fluent, automatic reading and text comprehension (Becker & Sylvan, 2021; Ehri, 2020; Hendry, 2020).

### *Phonics*

Phonics is another essential component of the SOR approach. Phonics is the mapping letters of the alphabet to their corresponding sounds. The NRP identified phonics and phonemic awareness as two of the essential components in learning to read, emphasizing that these skills can be effectively developed through systematic and explicit teaching approaches (NICHD, 2000). Phonics and phonemic awareness are foundational abilities that enhance readiness for reading, thereby contributing to success in school and life (Carr et al., 2020; Montfort, 2023; Woods & Graham, 2020). To foster the development of these skills, teachers and administrators at various levels—whether at the grade, school, or district level—implement evidence-based reading programs. These programs are carefully structured to align with students' ages or grade levels, facilitating systematic instruction in the necessary skills (Ehri, 2020). Students who struggle to master phonics and phonemic awareness skills are at risk for school failure and may necessitate direct, systematic, and explicit instruction (Jordan & Bratsch-Hines, 2020; Kjeldsen et al., 2019). Researchers concurred that a firm grasp of phonics lays the groundwork for early learners' readiness success (Englert et al., 2020; Hendry, 2020; Swanson et al., 2020). Reading involves intricate cognitive and psycholinguistic processes, with phonics and phonemic awareness as fundamental components that must be taught from a scientific standpoint. However, these skills are often not systematically trained within the SOR framework but tend to be taught incidentally or overlooked entirely.

### *Fluency*

Fluency stands as the third essential element within the SOR methodology. It denotes the skill of reading text accurately, smoothly, and with appropriate expression, ultimately facilitating comprehension (Nichols et al., 2008). Reading fluency emerges from a reader's ability to effectively engage, integrate, and self-monitor various interactive reading skills, encompassing automatic word recognition, suitable reading pace, fluidity, natural phrasing, expressive reading, and comprehension (Oakley, 2005). Reading fluency involves the rapid, precise, and coordinated execution of various component skills, such as visual decoding, word recognition, phonological processing, and syntactic and semantic parsing or grouping. Proficient readers automate and unify these skills, allowing them to concentrate their attentional resources on higher-level processes like comprehension, analysis, and interpretation (e.g., Grabe, 2009; Huffman, 2021; Kuhn & Stahl, 2003; LaBerge & Samuels, 1974; Pikulski & Chard, 2005).

### *Vocabulary*

Vocabulary is the fourth essential component of the SOR methodology. Proficiency in vocabulary is highly correlated with reading ability and is the most significant predictor of reading comprehension (Bauer, 2022; Gallagher et al., 2019; Harmon & Wood, 2018; Moody et al., 2018; NICHD, 2000). As students enhance their reading skills and enrich their language abilities, their grasp of vocabulary becomes increasingly pivotal for comprehension (Foorman et al., 2018; Oslund et al., 2018). Research indicated that understanding vocabulary can predict students' reading comprehension across various grade levels (Foorman et al., 2018; Oslund et al., 2018). The NRP defined explicit vocabulary instruction as teaching the definitions of key terms

or other attributes of words to be learned, including exploring word roots or affixes (NICHD, 2000). Hence, the deliberate selection of vocabulary is crucial for explicit vocabulary instruction. Moreover, research has shown that explicit vocabulary instruction, such as teaching how to infer meanings from context and utilizing dictionaries, is more effective for learning (Ender, 2014).

### *Comprehension*

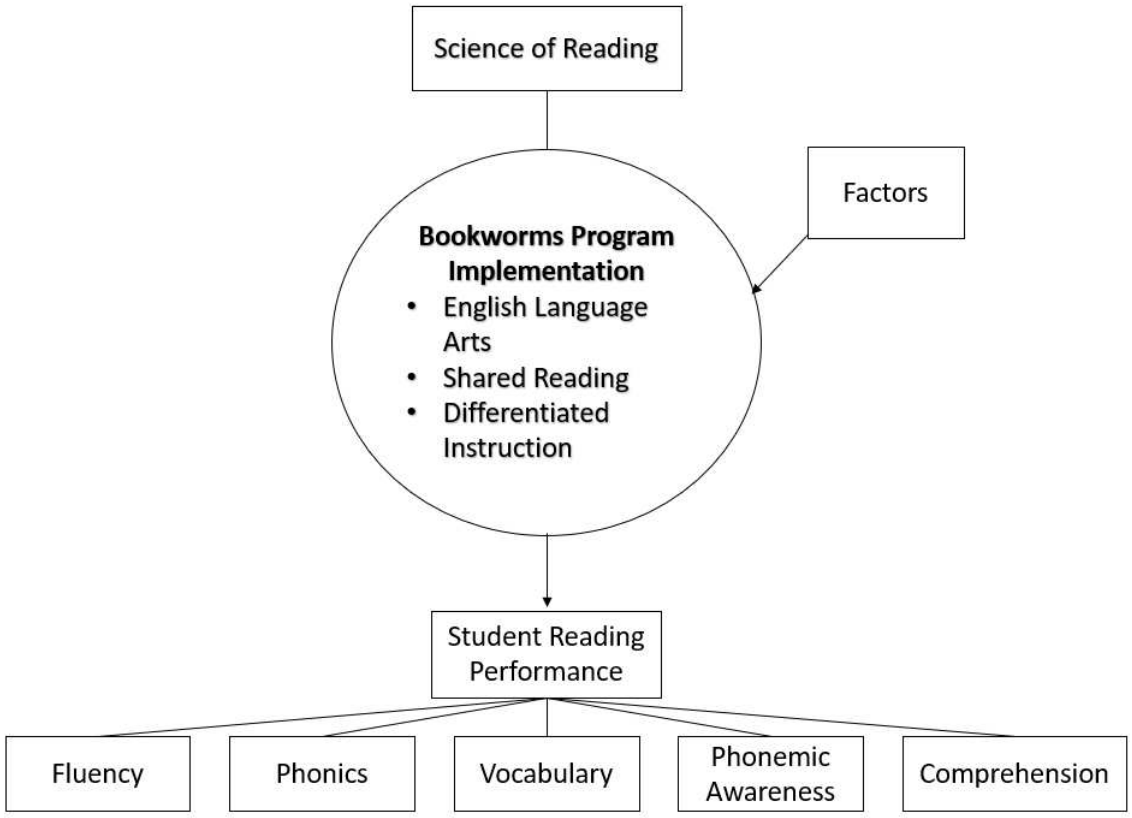
Comprehension is the last of the five essential components of the SOR approach. Vocabulary knowledge can predict comprehension (Mokhtari & Nieuderhauser, 2013). Leider et al. (2013) stated that "reading comprehension is the ability to decode, or simply convert graphic information into linguistic form" (p. 1460). Disturbingly, elementary students with limited vocabulary proficiency at the outset of their academic journey face substantial challenges in reading comprehension and overall academic achievement throughout their schooling (Carlisle et al., 2013; Graves, 2006; Nagy, 2005).

## Significance of the study

The significance of this study was based on the premise of the overall acceptance of the BW by teachers and its impact on their teaching practices, specifically in literacy skills, reading comprehension, and the provision of reading interventions. While most of the program is scripted, there is a level of autonomy for teachers to allow for teachable moments. In addition to the teachers' perceptions, there is a larger task of determining the effectiveness of Bookworms (BW) on students' Lexile scores. The results of this study had the potential to explain how a program rooted in the SOR affects teachers' perceptions of a reading curriculum program, as well as determine the program's effectiveness on state standardized screening assessments.

**Figure 1**

*Conceptual Framework*




## Assumptions, Limitations, and Delimitations

### *Assumptions*

Creswell and Creswell (2018) described an assumption as accepting an idea as accurate without requiring supporting evidence. Archival quantitative data from students in grades three through five were collected for this study during the school years 2020-2023 in two public elementary schools in a rural school district in Georgia. This study was based on the following assumptions:

1) It was assumed that third- to fifth-grade teachers understood the requirements for BW implementation.

2) It was assumed that the teachers understood what best practices were for reading instruction of all students.
3) It was assumed that the BW program was administered with fidelity.
4) It was assumed that students assigned to the intervention program put forth their best effort when completing the lessons aligned with their individual instructional levels.
5) It was assumed that students put forth their best effort on the 2020-2021, 2021-2022, and 2022-2023 GMAS reading subtests.
6) It was assumed that all teachers were given adequate time to implement the program.
7) When looking at growth and performance, it is assumed that teachers taught the same standards and students in grades three through five received quality instruction.

In addition to archival quantitative data from students, quantitative and qualitative data were collected through a teacher survey to understand teachers' perceptions of BW implementation. It was assumed that the teacher participants in the study were honest and forthcoming about the qualitative data collection protocol. While collecting, analyzing, and interpreting these data, I, as a researcher, was honest about my biases and how these affected the findings. Data were validated through multiple sources to ensure accuracy.

***Limitations***

The purpose of limitations is to identify any aspect that might hinder a study and its findings. Limitations are factors the researcher cannot control (as cited in Roberts, 2010, p. 139). There were limitations to this case study. The first limitation was the lack

of a control group for student archival quantitative data. Since all student achievement data were archival, the researcher could not control how the content was taught. This study was not an actual experiment, as it had already occurred. Thus, there could not be a claim for cause and effect.

Second, GMAS scores were limited to a representation of students' performance on a single day and might have been influenced by external factors that could not be controlled. These factors include, but are not limited to, anxiety levels, hunger, and exhaustion. These factors might have contributed to a student's underperformance on the GMAS reading test.

Third, another limitation was the limited number of teachers completing the survey. The survey was completed by teachers who only taught 3rd through 5th grade during the school years 2020-2023. That excluded teachers due to transfers, movements within the system, retirements, and teacher turnover.

Fourth, another limitation of this study was that it only covered data collected during the school years 2020-2023. The reason for collecting data after the 2019-2020 year was the worldwide COVID-19 pandemic. COVID-19 shut down all schools and, therefore, shut down any end-of-the-year assessments that might have been given in the 2019-2020 year and would continue to impact teaching and the collection of continuous data to the present day. Therefore, the only data available for me to use were from one cohort, which began in third grade during the 2020-2021 school year and continued through to fifth grade, concluding in the 2022-2023 school year.

The fifth limitation of this study was related to the teachers' perceptions. While data were gathered from the teacher survey, the initial year of the BW implementation

needed to be considered, 2020-2021, which was four years ago. Teachers' perceptions might change over time. The reliability or dependability of the teacher participants' recalled accounts creates another limitation.

Sixth, the data were confined to a single school system. Not many schools are using this program as it is relatively new. The school chose to use portions of the curriculum. It would be difficult for future research to replicate the results, or attempting to do so may prove challenging, unless a school uses the same curriculum components implemented during the program.

The final limitation was specifically related to difficulties encountered during the implementation process. Qualitative data collection was planned, including a teacher survey with open-ended questions and focus groups. However, despite the intention to offer gift cards as incentives, no teachers were willing to participate in the focus group interviews, and only a few completed the survey. The limited data on teacher perceptions may affect my ability to interpret the findings from the student data or explore deeper insights into teachers' perceptions of the BW program.

***Delimitations***

The scope of this study was delimited to the knowledge and implementation practices of BW among certified elementary teachers in two public elementary schools in a rural school district in Southwest Georgia. This study's delimitations included a purposeful homogeneous sample comprised of students at risk of reading failure in grades three through five who participated in the BW implementation and completed the GMAS reading test at Cherokee Lee School District. Only student achievement data in reading and limited teacher feedback were included and analyzed. The study did not account for

other variables influencing reading performance, such as parental involvement or instructional time outside of the BW curriculum. In addition, the perceptions gathered are limited to teachers who were directly involved in the BW implementation and exclude input from administrative staff.

**Definition of Terms**

To enhance the understanding of the content throughout this research, the following key terms and their definitions are provided.

*Bookworms*. Bookworms (BW) is said to be a comprehensive curriculum program that meets the needs of students in both reading and writing, while encompassing the SOR at its core.

*Ethnic Subgroups*. Ethnicity refers to the ethnic categories reported in the school's demographic data, used to examine potential differences in reading performance among diverse groups. The categories included Asian/Pacific Islander, African American, Hispanic, Native American/Alaskan Native, White/non-Hispanic, and Multi-Racial.

*Gender Subgroups*. Gender was examined as a demographic variable to explore potential differences in reading performance growth among male and female students.

*GMAS*. Georgia Milestones Assessment System (GMAS) comprises end-of-grade measures in English/language arts and mathematics (GaDOE, 2014). GMAS is also matched with skills taught by Georgia standards in the content areas of English/language arts, mathematics, science, and social studies (GaDOE, 2014).

*Learner Service Distinction*. In this study, the classifications refer to students' participation in specialized educational services, including regular education learners,

gifted learners, learners in early intervention programs, and learners with special education needs.

*Lexile Scores.* According to the GaDOE (n.d.), the Lexile tool helps describe the text complexity necessary for students to meet the demands of college and career readiness at each grade level. These ranges indicate which texts are conducive to enhancing students' literacy skills in preparation for the goals of college and career readiness. Reading performance in this study refers specifically to Lexile scores.

**Organization of the Study**

This dissertation contains five chapters. Chapter I includes a problem statement, the purpose of the study, methodology, research questions, conceptual framework, significance of the study, assumptions, limitations, delimitations, definitions of terms, and a summary. Chapter II reviews the literature on Georgia's reading scores and government policies on initiatives such as the National Reading Panel (NRP), Reading Excellence Act (REA), No Child Left Behind (NCLB), Reading First (RF), and the Striving Readers Comprehensive Literacy (SRCL) Program. The literature review continues with SOR, Scarborough's Reading Rope, and Concepts of Reading, including phonemic awareness, phonics, fluency, vocabulary, and comprehension. Finally, Chapter II ends with a literature review of the BW program and a summary. Chapter III contains the methodology used to conduct the study. The method includes explaining the case study design, research questions, setting, participants, sampling, instruments, data collection, and analysis. Chapter IV reports the study results, guided by the research questions, along with a detailed explanation of the results. Chapter V includes an

overview of the study and a discussion of the results. Additionally, implications for practice, recommendations for future research, and conclusions are presented.

# Chapter II

## Literature Review

Why do teachers need to teach foundational reading skills? Learning to read involves the application of a complex array of linguistic knowledge through various mental structures, resulting in a complex yet continuous process that generates an understanding of text (Lane et al., 2022). In the review of the literature associated with this case study's research interest, prior studies have been found where students displayed robust decoding and listening comprehension abilities, yet still faced challenges with reading (Aaron et al., 1999; Catts et al., 2003; Catts et al., 2005; Hock et al., 2009; Morris et al., 2016).

Over the years, the United States government has made numerous efforts to improve reading performance through various reading initiatives. The governmental policies that require practical concordance with research are: No Child Left Behind, NCLB (U.S. DOE, 2001, 2002b), Reading Excellence Act, REA (GaDOE, 2002; U.S. DOE, 2000), Reading First, RF (U.S. DOE, 2002c), and Striving Readers Comprehensive Literacy Program, SRCL (U.S. DOE, 2015a, 2015b). To enhance the application of research in reading, these policies emphasized decoding skills significantly. Moreover, the government expanded the scope of these policies to encompass broader aspects, including domain knowledge, vocabulary, reading comprehension, metacognition, oral language, and other instructional matters (Shanahan, 2020).

Enhanced reading proficiency can be facilitated through phonemic instruction. Walpole and McKenna (2009) have explored the notion that teachers require supplementary instructional strategies to support students' reading. They have devised an Informal Decoding Inventory (IDI) to pinpoint specific phonemic areas where students need the most assistance. By employing scripted lesson plans and directly addressing these problematic areas, students' reading scores and levels are expected to improve. Further investigation into this issue is warranted because teachers often lack adequate preparation to support students who struggle with reading. While teachers may adhere to a prescribed reading curriculum, they often encounter difficulties in delivering differentiated instruction to these students. Teachers recognize the importance of bolstering students' phonemic awareness and decoding skills; yet, many programs lack a systematic process for identifying areas of difficulty. Therefore, a deeper understanding of this issue contributes in the following ways: (1) Identifying optimal practices within established comprehensive reading programs is crucial for designing interventions for struggling readers, (2) Determining the age at which students should master phonemic awareness is essential, given the prevalence of struggling readers in schools today, (3) Examining how other comprehensive reading programs were monitored and evaluated can inform the implementation of new programs in schools, and (4) Assessing the effectiveness of new programs. The study results support previous studies that have examined the importance of phonological awareness in early literacy skills and reading (Ehri, 1998; Ehri et al., 2001; NICHD, 2000; Santi et al., 2004). The findings of this study contribute to the expanding body of literature underscoring the significance of identifying early indicators of reading difficulties to intervene before students encounter

failure (Foorman et al., 1998; McCardle & Chhabra, 2004; Stanovich, 1986; Torgesen et al., 1999). Lastly, this study supports concepts from the SOR. This could encourage further studies exploring the methodologies of reading.

## Organization of Review

The literature being reviewed focused on topics including reading wars between whole language and phonics theories, SOR, and BW, including (1) themes related to BW, (2) how it is practiced, and (3) its benefits. In addition to the foundational reading practices being examined, this study included a review of the literature on the importance of teachers' perceptions, frustrations, and needs during the implementation of a comprehensive reading program. A review of the literature related to the methodological design of this study was also included.

The strategy used to locate and select the literature for this study involved researching for, but was not limited to, current peer-reviewed articles, journals, and textbooks concerning the sections mentioned above. A focus was placed on articles that provided a rich history regarding proven approaches to reading instruction. The current research study aimed to determine if BW was helping to close the reading achievement gap for students in grades three through five by examining the reading proficiency scores on state reading assessments of students in rural southwest Georgia schools.

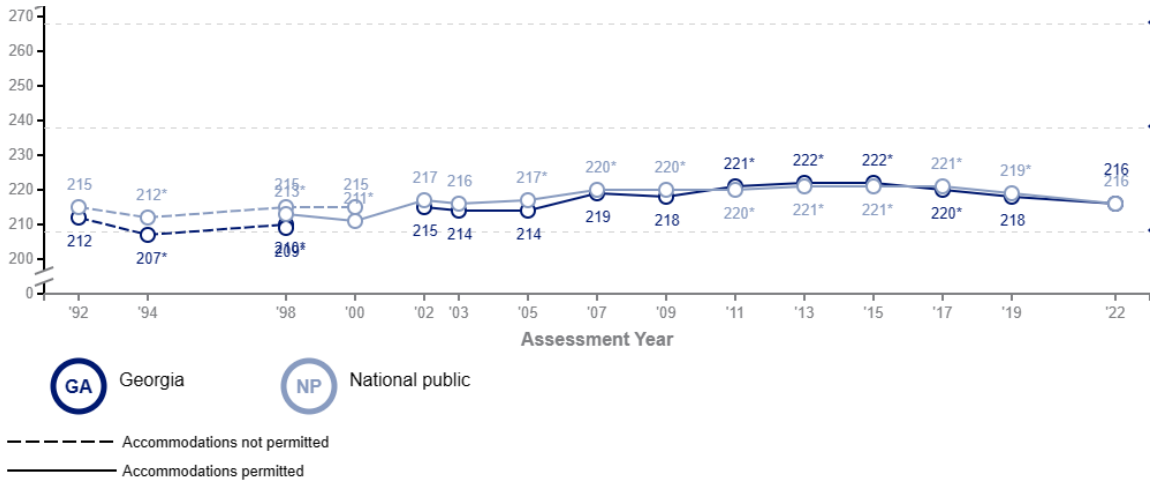
## Georgia's Reading Scores

Georgia students in the third through twelfth grades take the Georgia Milestones Assessment System test each school year. This statewide assessment is required by the Education Accountability Act (EAA) and tests students in English Language Arts and Mathematics. According to the latest Nation's Report Card (NRC) (2023), only 32.22%

of Georgia students scored proficient or higher in reading in fourth grade, which was 1.46 points lower than the national score. The numbers are significantly lower for those counties with lower socioeconomic student populations. Research indicated that students who have not achieved reading proficiency by third grade are at a higher risk of dropping out of school (Hernandez, 2011; Woodward, 2023). Scarborough (2001) noted that sixty-five to seventy-five percent of early elementary children identified as reading disabled struggle with reading throughout their academic journey. Therefore, adopting a fully comprehensive reading program and instructional practices that raise reading levels in elementary-age students is imperative. Recent scores from the NRC showed that Georgia's fourth-graders' reading scores were one point higher than the nation's average before COVID-19. However, Figure 2 illustrates that the national average reading scores for fourth-graders decreased in 2022 from 219 to 216, resulting in Georgia's and national scores being the same (NRC, 2023).

**Figure 2**

*Georgia's Fourth Grade Average Reading Scores Compared Nationally*




*Note*. Reprinted from *Georgia Overview GA* by NRC, 2023.

## Government Policies on Initiative

### *Reading Excellence Act of 1998*

Introduced by Pennsylvania Representative Bill Goodling, who served as Chair of the House Education and Workforce Committee, the Reading Excellence Act (REA) was implemented during the onset of President Clinton's second term in office (Edmondson, 2000, 2005). This legislation marked the inaugural instance of federal education policy explicitly defining reading and its associated research (as cited in Edmondson, 2005, p. 2). According to Edmondson (2005), the REA included four main goals:

> (1) Teach every child to read in their early childhood, not later than third grade; (2) Improve the reading skills of students and the instructional practices of teacher through the use of findings from reliable, replicable research in reading, including phonics; (3) Expand the number of high-quality family literacy programs; and (4) Reduce the number of children who are inappropriately referred to special education due to reading difficulties. (p. 2)

Rhett (1999) also stated that the REA provides key definitions of six dimensions of reading:

> (1) Understanding how phonemes, or speech sounds, are connected to print – phonemic awareness, (2) Ability to decode unfamiliar words – phonics, (3) Ability to read fluently, (4) Background information and vocabulary to foster reading comprehension, (5) Development of appropriate active strategies to construct meaning from print – comprehension, and (6) Development and maintenance of a motivation to read. (p. 7)

Georgia received a grant totaling $48,086,734 to support implementing the Georgia Reading Excellence Act Demonstration Sites (GA READS) initiative. This extensive three-year program encompassed enhancements in reading, tutorial support, and family literacy. It aimed to establish between 55 and 80 demonstration sites dedicated to reading research, instruction, and teacher training. These initiatives aimed to support roughly 120,000 to 175,000 children and their families, as well as to provide training for approximately 1,500 to 2,000 teachers in reading instruction based on scientifically proven research (GaDOE, 2002).

### *National Reading Panel of 2000*

Over the past 25 years, low and stagnant reading scores have been prevalent in Georgia and many parts of the nation (NAEP, 2022). At the behest of the United States Congress in 1997, the Director of the National Institute of Child Health and Human Development (NICHD) and the U.S. Secretary of Education appointed individuals to form an NRP (Cunningham, 2001). The NRP was established to assess existing knowledge and research on reading, including the efficacy of various approaches in teaching children to read (NICHD, 2000; Stone, 2019). Based on its observations, the NRP emphasized the importance of phonemic awareness and explicit, systematic phonics instruction.

### *No Child Left Behind of 2002*

As per Simpson et al. (2004), the NCLB Act was enacted on January 8, 2002, when it was signed into law by President George W. Bush. This legislation stands out as a prominent endeavor by Congress to improve student performance and reform elementary and secondary education programs in the United States. The NCLB

legislation mandates that within ten years, all students, including those with disabilities, must achieve "proficiency" on state academic assessment tests. The emphatically stated goal of NCLB "is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education, and reach, at minimum, proficiency on challenging state academic achievement standards and state academic assessments" (as cited in Cortiellia, 2006, para. 7).

According to Simpson et al. (2004), schools that excel under the guidelines of the NCLB Act may be publicly acknowledged and granted financial incentives based on their yearly progress. Conversely, schools with poor student performance may face sanctions and be subject to state takeover. The provisions outlined in the Act substantially influence both teachers and the broader public, including:

> (1) Increased accountability for desired educational outcomes, (2) Qualified personnel to staff the nation's classrooms, (3) Reliance on educational programs and practices that are supported by scientific research, (4) Expanded school district control and flexibility in using federal funding resources, and (5) Increased parental involvement and authority related to educational decisions. (Simpson et al., 2004, p. 74)

***Reading First of 2001***

The Reading First (RF) program is vital to the federal NCLB Act of 2001. It represents a substantial endeavor to modernize early reading instruction nationwide, drawing up recent advancements in scientifically based research on how children acquire reading skills (Denton, 2003; Evans, 2008). RF's primary goal is to enhance reading instruction and student performance in kindergarten through grade three. A fundamental

requirement for a successful RF proposal is the presentation of detailed plans to deliver explicit instruction in the five essential skills crucial for proficient reading: (1) phonemic awareness, (2) phonic word recognition, (3) reading fluency, (4) vocabulary development, and (5) reading comprehension (Denton, 2003).

### *Striving Readers Comprehensive Literacy Program of 2015*

The Striving Readers Comprehensive Literacy (SRCL) Program grant initiative aimed to establish a comprehensive literacy program that enhances literacy abilities, encompassing pre-literacy skills, reading, and writing, for students from infancy through grade 12. This initiative specifically targeted students who are limited-English-proficient and those with disabilities. The SRCL Program conducted grant competitions and allocated funding to schools to implement their unique literacy strategies. The funds received were used to furnish classrooms with a wide range of literacy materials. This initiative exclusively targeted Georgia schools exhibiting sustained low performance and/or a significant proportion of impoverished students (Pasquarella, 2017).

Student achievement data used the Dynamic Assessment of Basic Literacy Skills (DIBELS) for elementary grades K-5. Based on DIBELS scores (GaDOE, 2017), students were classified into three groups: (1) at or above benchmark, (2) below benchmark, or (3) well below benchmark. For students in grades 3-12, the Reading Inventory (RI), formerly known as the Scholastic Reading Inventory, created by Houghton Mifflin Harcourt, was used as an assessment of reading comprehension (Pasquarella, 2017). All assessments were administered in the fall, winter, and spring.

Georgia can choose its curriculum and program options to help increase student achievement (GaDOE, 2017, pp. 25-26). There were six main factors that districts had a choice over:

(1) BW: BW constitutes an open-source curriculum disseminated by the non-profit organization, OUR. The BW program offers a comprehensive approach, encompassing professional development, assistance with curriculum implementation, and scripted lesson plans. Developed by Sharon Walpole and Michael McKenna through thorough research, BW is an intensive ELA program characterized by authentic texts conducive to whole-group instruction. Additionally, it incorporates targeted small-group instruction, facilitated by a differentiated toolkit that supports phonemic awareness.

(2) Commercial ELA: It encompasses teacher manuals, textbooks, workbooks, and leveled readers from prominent commercial educational publishers. Common program selections include, but are not restricted to, iRead, Journeys, and Reading Wonders.

(3) Commercial Phonics: These materials primarily target the teaching of foundational word reading skills, including decoding, letter knowledge, and letter sounds.

(4) Computer-based Reading Programs: These software applications are tailored to offer a baseline assessment and differentiate activities and instruction based on students' mastery and proficiency levels.

(5) Computer-based Writing Programs: These software applications are developed to offer differentiated reading activities and instruction.

(6) Guided Reading (GR): GR entails small-group reading instruction and practice, employing books specifically chosen to match the reading abilities of children (Fountas & Pinnell, 1996, 2012).

**The Science of Reading**

The "Science of Reading (SOR)," a comprehensive teaching approach, has emerged from the integration of over 14,000 studies in psychology and neuroscience (Petscher et al., 2020), along with the insights from Hollis Scarborough's Reading Rope (IDA, 2018). This approach is underpinned by the simple view of reading theory (Gough & Tunmer, 1986), the National Reading Panel's (NRP) findings (NICHD, 2000), the conceptual framework of SOR (IDA, 2018), and scientific contributions across multiple disciplines (The Reading League, 2022). The SOR advocates for an explicit and systematic approach to imparting fundamental reading abilities (such as phonemic awareness, phonics, vocabulary, fluency, and comprehension) to foster meaning-making and reading comprehension (Ortiz, 2022). This SOR approach is rooted in scientific evidence specific to various aspects of reading instruction, which has been validated through research and peer review as effective in improving students' reading proficiency (Kupec, 2022; Lyon & Chhabra, 2004).

The SOR takes a different approach from traditional approaches by focusing on how to read words and the connection between written and spoken language (Castles et al., 2018; Snow, 2020). Moving past the rudimentary phonics approach, which pairs letters and sounds (Peng & Goodrich, 2020), it integrates various components crucial for adept reading. These include vocabulary, working memory, reading comprehension, writing abilities, phonemic awareness, graphotactic reasoning, understanding of

orthography, and a keen interest in books (Hattan & Lupo, 2020; Peng & Goodrich, 2020). The extensive field of research referred to as the SOR is firmly grounded in the concept of a reading rope, introduced over two decades ago by Dr. Hollis Scarborough (IDA, 2018). Reading text is not an innate biological skill for humans (Snow, 2020). A crucial aspect of the SOR is the connection between reading and writing, as it facilitates conveying ideas through spoken and written forms. This process plays a significant role in helping individuals transfer reading skills into their long-term memory (Kupec, 2022; Petscher et al., 2020). Ordetx (2021) explained that the term "Science of Reading" encompasses the research conducted by experts in reading, especially cognitive scientists, on the approaches to learning to read. Accumulated over twenty years, this research has played a vital role in challenging conventional reading instruction techniques based on tradition and subjective observation, and less on scientific evidence.

**Scarborough's Reading Rope**

Dr. Scarborough employed the imagery of two intertwined, multi-strand ropes to illustrate the interconnectedness of language comprehension (LC) and word recognition (WR) in the reading process. This representation underscores its relationship to the Simple View of Reading. Furthermore, a deeper examination of the rope reveals the interconnectedness of the five pillars of reading, highlighting their integral role in the reading process (Duke & Cartwright, 2021). The lower strand of the rope represents the domain of word recognition, which Scarborough defines as including phonological awareness, decoding, and sight word recognition. In contrast, the upper strand signifies the domain of language comprehension, incorporating background knowledge, vocabulary, language structures, verbal reasoning, and literacy knowledge (Scarborough,

2001). Scarborough's (2001) Reading Rope shows how each domain comprises a set of measurable subskills. It was established using five main components: (1) phonics, (2) phonemic awareness, (3) vocabulary, (4) comprehension, and (5) fluency of language comprehension. Each of these subskills has been widely researched and is known to be interrelated with the others (Moats & Tolman, 2019). Moats and Tolman (2022) indicated that each strand, if underdeveloped, could interfere with reading growth, and each should be addressed if an instruction is comprehensive. All the research that goes into creating this rope is the SOR.

## Components of Reading

### *Phonics*

Phonics involves understanding the relationship between letters and sounds, as well as how this relationship is applied in reading and writing (Fountas & Pinnell, 2013). A phoneme is identified as the smallest unit of sound in spoken language and is linked to the specific physical act or gesture required to produce that sound (Liberman & Whalen, 2000). Phonics is distinct from phonemic awareness; the former relates to printed text, whereas the latter concerns spoken words. Phonemic awareness entails the ability of children to manipulate sounds in spoken language, while phonics involves the manipulation of these sounds in written form (Herring, 2023). To decode words effectively and master phonics, one must first comprehend phonemic awareness (Beck & Juel, 1995; Torgesen et al., 2001). Phonics examines how letters correspond to sounds; it is also used as a descriptor for code-based instruction. Research consistently showed that reading instruction incorporating phonics is more beneficial than instruction with minimal or no phonics (Chapman, 2016; Snow et al., 1998; U.S. HHS, 2000). This

advantage applies to most students in regular classroom settings and intervention programs.

### *Phonemic Awareness*

Phonemic awareness is the ability to identify and differentiate between individual sounds in words (Fountas & Pinnell, 2013). It is often incorrectly confused with phonics, a reading instruction that highlights the connection between letters and sounds, as well as their use in reading and spelling. Instruction in phonemic awareness focuses on manipulating sounds in spoken language without using corresponding letters or blending sounds (Torgesen et al., 1999). According to Ehri (1991), various approaches to learning to read require phonemic awareness skills.

Furthermore, Ehri (2003) argued that both phonemic awareness and subsequent phonics instruction should be delivered systematically. Systematic instruction is characterized by teaching the major grapheme-phoneme correspondences in a specific, orderly sequence (Asfendis, 2008). Ehri (2003) described phonemic awareness as the deliberate recognition of individual speech sounds, including consonants and vowels, within spoken syllables and the ability to consciously manipulate these sounds. Phonemic awareness is essential for mastering reading and writing in any language that uses an alphabetic system (Liberman, 1999). Foorman et al. (2016) highlighted that a crucial aspect of phonemic awareness teaching is not just breaking down the sounds in spoken language but also associating these individual sounds with written letters. While it is possible to teach phonemic awareness without using written text, combining it with letters tends to enhance its effectiveness in developing phonemic awareness and facilitating the transfer to decoding and encoding (NICHD, 2000).

Training in phonemic awareness is an essential foundation for subsequent phonics instruction, as indicated by researchers such as Ehri et al. (2001), Hecht and Close (2002), and NICHD (2000), and is therefore introduced as early as kindergarten. The ability to decode print is contingent upon linking phonemes to graphemes (Fletcher et al., 2019; Juel, 1988). Furthermore, the pace of a child's reading skill development is closely tied to their phonemic awareness, making it the strongest predictor of reading proficiency (Storch & Whitehurst, 2002; Wagner & Torgesen, 1987). In their study with Thai first-graders, Tarat and Sucaromana (2014) explored the development of a balanced literacy program that focused on enhancing phonemic awareness. The primary challenge for students was linking letters to their corresponding sounds, which affected their reading and writing abilities. Phonemic awareness is crucial as it enables students to read, write, and decode both familiar and new words. This is achieved by understanding how letters correspond to sounds, including letter sounds, patterns, blends, and digraphs.

Baker et al. (2015) analyzed research involving English Language Learners from Title 1 schools, focusing on Hispanic students' difficulties in English acquisition. They discussed several essential elements, including the training provided to teachers, the rigorous implementation of the program, methods for evaluating student progress, the time dedicated to teaching, and the overall results. The importance of phonemic awareness in teaching was emphasized. While teaching poses minimal issues if students quickly grasp the concepts, challenges emerge when they consistently struggle to distinguish between letter sounds, patterns, blends, digraphs, and the fundamental decoding skills required for initial reading stages. Such struggles can lead to frustration and the inclination to give up, underscoring that for some learners, acquiring phonemic

awareness can be as challenging as learning a new language. Although gifted students often seem to better grasp phonemic awareness and a more extensive vocabulary, some may only be able to remember words without a solid phonemic base to decode unfamiliar words effectively. It is vital for teachers not to presume that just because students can swiftly recognize words during a universal screening or read a text, they do not need thorough phonemic awareness instruction. Often, there is a greater emphasis on the speed at which students read rather than on how accurately they comprehend what they read.

### *Fluency*

Walpole and McKenna (2017) defined fluency as a developmental stage characterized by swift word recognition and adult-like phrasing. This stage is understood to occur after a child begins decoding and before they can learn efficiently from print. Walpole and McKenna (2017) also noted that "fluency" sometimes broadly refers to any child's automatic skills, including tasks like naming letters or segmenting phonemes. Literacy development relies on the essential elements of phonemic awareness and phonics. Early-grade students must be engaged in a curriculum that strongly focuses on explicit phonics instruction, decoding, and recognizing letters. Studies have indicated that early instruction and mastery in these areas can prevent future academic struggles (McMaster et al., 2005).

Additionally, fluency plays a crucial role in comprehension, often serving as the primary intervention strategy for students struggling with understanding (NICHD, 2000). Snow et al. (1998) even argued that reading comprehension cannot progress beyond a basic level without fluency. In exploring strategies to develop fluency, Walpole and McKenna (2017) proposed the practice of choral reading followed by partner re-reading

new segments from grade-level texts daily, also referred to as shared reading. This approach combines the advantages of repeated and extensive reading (Rasinski et al., 2011; Walpole et al., 2017). Tierney and Readence (2005, p. 236) have asserted that choral reading serves as a "socialization tool" for teachers of all grades, enabling students to build confidence without feeling embarrassed by corrections. Numerous studies have demonstrated that repeated reading, supplemented with modeling and immediate feedback, is an effective approach for enhancing reading fluency, particularly beneficial for students with reading difficulties (Campbell, 1998; Mercer et al., 2000; Patton et al., 2010; Walker et al., 2005; Weinstein & Cooke, 1992).

### *Vocabulary*

Vocabulary entails understanding and recalling word meanings, and acquiring new vocabulary is crucial to language development (Clark & Clark, 1977). In a rapidly evolving world across various domains, there is a clear and urgent need to expand and enhance students' vocabularies. A well-established finding in research is the strong correlation between reading comprehension and vocabulary knowledge, with individual word meanings accounting for a significant portion, ranging from 50 to 60 percent, of the variance in reading comprehension (Perfetti & Adlof, 2012; Stahl & Nagy, 2005). The NRP found that vocabulary instruction had a positive impact, leading to gains in reading comprehension (NICHD, 2000). Additionally, the NRP reported findings that included recommendations to facilitate vocabulary instruction (NICHD, 2000). These suggestions also included employing read-aloud sessions, introducing vocabulary before delving into a text, offering chances to apply words in relevant contexts, and ensuring repeated encounters with vocabulary across diverse situations.

Walpole and McKenna (2017) elucidated their approach to developing BW, emphasizing the reciprocal model of vocabulary acquisition proposed by Stanovich (1986) as the basis for prioritizing reading and listening volume. According to Moats and Tolman (2022), although the reading rope suggested the significance of other factors in reading comprehension, vocabulary holds the utmost importance once students have mastered the alphabetic code. Robust vocabulary enhances proficiency in all areas of communication, including reading, writing, listening, and speaking.

### *Comprehension*

Addressing the skill of reading comprehension can be defined as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (Shanahan et al., 2010, p. 5). This element is crucial as it enables students to extract meaning from interconnected text, granting them access to more text-based knowledge and educational opportunities (Beattie, 2018). It necessitates students reading full trade books, teachers conducting read-aloud sessions, and reinforcing comprehension through discussions (Pressley et al., 1998).

Walpole and McKenna (2017) proposed that while fluent reading does not guarantee sufficient comprehension, they relied on Walter Kintsch's construction-integration theory to prioritize offering background knowledge, vocabulary, and text structure support. This approach aimed at empowering students to construct meaning from the text of the day, rather than focusing solely on mastering a specific set of comprehension strategies. Moats and Tolman (2022) explained a concern sometimes expressed about phonics instruction and that it may interfere with comprehension, turn students off reading, or inhibit them from "real" reading. No research evidence supports

the concern, especially when the program is comprehensive and the instruction is appropriately paced (Foorman et al., 2016). Gains made because of such instruction are typically maintained and generalized to better reading proficiency overall, and good phonics skills are usually associated with better comprehension (Moats & Tolman, 2022). As students progress, text comprehension is increasingly accounted for by language comprehension, background knowledge, and the upper strands of the Reading Rope (Torgesen, 2005; Vellutino et al., 2007). Walpole and McKenna (2017) recommended emphasizing the effectiveness of reading instruction, including explicit teaching of comprehension strategies, vocabulary acquisition, and strategies for deciphering unfamiliar words. They also highlighted the importance of fluency development within multifaceted instructional models and decoding skills, particularly for multisyllabic words.

**Bookworms**

Ehri (2010) elucidated that Walpole's BW program is structured to assist students in decoding the alphabetic code, enhancing reading fluency, and ultimately achieving comprehension of texts. The core process involves associating phonemes (speech sounds) with graphemes (letters or groups of letters) and solidifying them in memory. Through this approach, finding proficiency in phonemic awareness, phonics, and fluency equips students with the cognitive capacity to focus on understanding the content of the text. Howell (2019) noted that back in 2014, the Seaford school district ranked lowest in English Language Arts (ELA) and Math based on assessments conducted by the Delaware Department of Education. The situation was not much better in the Laurel

school district, with only 32 percent of students proficient in English Language Arts (ELA) and 20 percent proficient in Mathematics.

However, fast forward five years, and the scenario has drastically changed. Both Seaford and Laurel school districts are now thriving and have shown the most impressive gains in proficiency since implementing the BW program. Last year, the Laurel school district showed the most improvement compared to any other district in the state, while the Seaford district now surpasses the state average in reading and writing. Walpole et al. (2019) outlined that narrowing the achievement gap among school districts is influenced by various factors, some of which are not directly under the control of teachers and administrators. However, in Seaford, enhancements in English Language Arts proficiency at the elementary level were aligned with the adoption of the BW program. This program, an open-access curriculum developed by the nonprofit OUR (2022b), provided K-5 teachers with comprehensive lesson plans and online resources. The success observed in the Seaford school district prompted the Laurel school district to revise its curriculum, with district leaders already stating that the implementation was successful.

Walpole et al. (2019) further stated that BW is more than just a curriculum of texts and lesson plans; it embodies a teaching philosophy founded on a simple premise: the more students read, the better readers they will become. This philosophy is implemented by integrating three 45-minute lessons within the school day, comprising shared reading, interactive read-aloud or writing, and small-group skills sessions tailored to students' needs. Both fiction and nonfiction books are utilized to foster students’ word recognition, vocabulary, and comprehension skills.

### *Relevant Studies Related to Bookworms*

In a longitudinal study, upper elementary students using Bookworms ($n$ = 8,806) demonstrated an average of 4.9 additional months of growth on the MAP (Measure of Academic Progress) assessments compared to their progress under the district's instructional-level guided reading curriculum (as cited in The Reading League, 2024, para.4). Students receiving special education support and those with the lowest performance levels showed the most significant growth. Because of its focus on both knowledge building and the Science of Reading (SOR), numerous leading literacy experts have recognized Bookworms as a best-in-class program (Knowledge Matters Campaign, n.d.). Most recently, a group of reading scientists featured the curriculum as one of six recommended knowledge-building curricula as part of the Knowledge Matters Campaign (Knowledge Matters Campaign, n.d.).

The simplicity of the BW's structure makes the program accessible for teachers to internalize literacy research. It also enables them to provide systematic instruction and practice for students that promote rapid learning about the world while nurturing a deep appreciation of reading and writing. In 2016, there was a notable increase in the percentage of students achieving reading proficiency at grade level, specifically among third-, fourth-, and fifth-graders, following just one year of BW implementation (Walpole & McKenna, 2017). Additionally, the Delaware Department of Education acknowledged two schools in the district for their exceptional growth in reading performance (Walpole & McKenna, 2017).

Nacrelli (2018) examined BW to determine if its components and resources provided evidence of a tiered approach. The study also sought to determine if it

influenced student reading performance and proficiency. Narcrelli used a *t*-test to compare students' scores prior to and after the implementation of BW. The findings of Nacrelli's study suggested that BW implementation had a statistically significant effect on reading performance on the MAP assessments. Nacrelli (2018) also observed a significant difference between the average MAP scores in 2016 ($M = 187$, $SD = 4.69$) and 2017 ($M = 197$, $SD = 4.65$); $t(13) = 13.73$. With a $p$-value of $< 0.00001$, the result held statistical significance at $p \leq 0.05$. The finding indicated that the BW implementation improved reading performance in grade 3.

### *Small Group Skill Lessons*

The BW differentiated instructional manual helps teachers navigate a multiple-entry skills block, using oral reading fluency and phonics assessment data to ensure students receive additional direct instruction in the skills they need. The curriculum incorporates a systematic foundational skills block centered on phonics, with unique skill-based groupings, complemented by frequent progress monitoring and customized instruction for each group. The instructional procedures are clear and straightforward, making them easy for teachers to implement. Teachers may already be familiar with the concept of differentiation, which involves offering varied products, processes, or content (Tomlinson, 1999). Research suggested that interventions yield optimal results when delivered in small group settings, ideally scheduled for four to five days per week, lasting twenty to forty-five minutes each (McCardle & Chhabra, 2004).

### *Shared Reading*

Shared Reading is the heart of BW reading instruction and practice. Teachers will recognize that shared reading is a structured, scripted approach for mastering word and

world knowledge through explicit instruction and incidental exposure to words in rich, contextualized settings. Shared reading combines several structured instructional routines to build fluency and comprehension every day. There is a quick dose of work with words followed by a hefty dose of reading with the teacher and with a peer. Then, a discussion follows to keep up with the author's meaning and craft, followed by a closing anchor chart and meaningful writing assignments.

It requires 45 minutes of time and anticipates that students are grouped heterogeneously by performance and in a full-inclusion environment for students with disabilities and students learning English. The list below provides the instructional sequence employed each day. The sequence stays the same. What changes every day is the text segment to be read.

1) The teacher will invite students to share their written responses from the previous day.
2) The teacher will teach two new vocabulary words, highlighting their spelling structure through syllable types, meanings, parts of speech, and transformations of spelling and meaning in other parts of speech.
3) The teacher will set a comprehension-oriented purpose for reading.
4) The teacher will lead students in a choral reading of a set text segment, pausing once and only once to model a comprehension strategy.
5) The teacher will engage students in a brief discussion of the first reading purpose.
6) The teacher will set a second reading purpose.

7) Students will reread with their set partner, either chorally or alternating pages, until the teacher calls time.
8) Teachers will engage students in a brief discussion of the second reading purpose.
9) The teacher will engage students in a lengthier discussion guided by inferential questions.
10) The teacher will bring closure by updating a graphic organizer or anchor chart.
11) The teacher will assign written words and a text-based writing assignment to be completed during the differentiated instruction segment.

Shared reading is an instructional routine where students can chorally read with their teacher as she models appropriate tone, fluency, and expression. Holdaway (1982) referred to shared reading as a "shared book experience." Shared reading is an ideal setting for teachers to help students develop the skills they will need to decode words independently and enhance their comprehension skills (Eldridge et al., 1996). Shared reading has been recognized as both motivating and enjoyable, with anecdotal evidence and student feedback supporting its effectiveness in enhancing reading comprehension (Allen, 2002; Hollimon, 2008). Research indicated that the amount of reading for enjoyment is positively associated with reading performance and predicted by motivation (Baker & Wigfield, 1999; Cox & Guthrie, 2001; Guthrie et al., 1999).

***Differentiated Instruction***

Reflecting on the evolution of schools reveals that differentiation has been a long-standing practice in education. Tomlinson (2001) described differentiation as the

customization of instruction to suit the unique needs of each student, emphasizing qualitative aspects and informed by assessment results. It incorporates a variety of teaching approaches, including whole-class instruction, small-group instruction, and individualized instruction, to provide diverse learning opportunities and accommodate individual needs. According to Tomlinson et al. (2003), differentiation is a systematic method for developing curriculum and teaching approaches that cater to students with different academic abilities.

To differentiate in a shared reading session, the teacher chose students for partner reading and pulled a group who were not ready for partner reading. This grouping change gave students a greater opportunity to understand the book and the questions being asked. It also provided a safe place to discuss and come up with an answer together. Bonanno (2022) also found that the students had more pride in finishing their work and wanted to share it. Over time, the groups became smaller as they were more willing to try answering questions more independently. Success in program implementation has also been observed through the utilization of peer-assisted learning strategies (Mathes et al., 2001).

The differentiation block within the BW curriculum constitutes a form of content differentiation, yet it significantly deviates from the typical guided reading model (Fountas & Pinnell, 1996). During this third through fifth-grade model, there is a 45-minute period in which the teacher can serve three different groups, with lesson plans entirely matched to their needs. Students have 15 minutes with the teacher and 30 minutes to complete their written response to Shared Reading, typically consisting of a text-based response and a word study or vocabulary task. When they finish those tasks,

they will engage in self-selected reading from the classroom library (OUR, 2022c). OUR (2022c) mentioned that, due to the attention BW has gained, programs must include both knowledge-building and the SOR. Numerous leading literacy experts have recognized BW as a best-in-class program (Knowledge Matters Campaign, n.d.).

### *Bookworms Benefits*

Scripted reading programs are instructional materials commercially developed, mandating teachers to adhere to a scripted format during lesson delivery (Demko, 2010). Griffith (2008) elucidated that contemporary reading classrooms often witness the displacement of teacher-created reading lessons by scripted reading programs. This substitution alters classroom dynamics, reducing teacher-led instruction and increasing focus on transferring knowledge to students to enhance reading comprehension. OUR (2022a) acknowledged BW, this nationally recognized curriculum, was designed to ensure students develop a lifelong love of reading while learning to read. It is suggested that BW positively impacts student achievement by helping teachers understand and apply research around the SOR. OUR (2022a) boasted about the following benefits of the curriculum:

1) BW is structurally different from any other curriculum on the market.
2) It is rooted in research and has proven to deliver student achievement in the most struggling districts.
3) It is recognized by literacy experts and reading scientists as a best-in-class program.
4) It is structurally composed of three 45-minute instructional blocks: English Language Arts, Shared Reading, and Differentiated Instruction. Each block is

consistent in layout and structure across modules, units, lessons, and grade levels.

5) "The Shared Reading Block" consists of grade-level reading instruction, interactive read-aloud with high-leverage vocabulary instruction, and explicit instruction of grammar and language standards.
6) "Differentiated Instruction" is a multiple-entry skills block in which teachers use oral reading fluency and phonics assessment data to ensure students get additional direct instruction in the skills they need.
7) BW distills a research-based foundational skills block centered on phonics. Its unique skill-based groupings are complemented by frequent progress monitoring and customized instruction for each group. Instructional protocols are explicit and simple for teachers to follow.

**Teacher Perceptions**

The secondary purpose of this study was to examine teachers' perceptions, frustrations, and needs during the implementation of BW. Their perceptions could provide insight for other site leaders, educational stakeholders, and policymakers. Merriam (1991) asserted that research oriented towards discovery, insight, and comprehension, from the participants' viewpoint, holds the most potential for substantially enhancing the educational knowledge base and practices. Furthermore, Merriam (1998) emphasized that the primary focus should be on comprehending the phenomenon of interest through the lens of the participants rather than that of the researchers.

## Summary

This literature review aimed to explore the historical governmental policies that led to the creation of BW. Based on the legislative overview of historical initiatives identified in this study, accountability falls on all schools to ensure that children succeed academically in reading. The NRP identified five key components of a successful reading program to help educators implement effective reading instruction. Those components are identified as phonemic awareness, phonics, fluency, vocabulary, and comprehension (NICHD, 2000).

Although many research studies have indicated that BW should be an influential program for students in grades K-5, there is a lack of research on teachers' perceptions of this program and its influence on students. Further empirical research should be conducted to determine the effect of the BW implementation on reading performance using different state-standardized assessments. BW appears to be a favorable reading program. However, more research is needed to establish it as a worthwhile and successful reading program.

# Chapter III

## Methodology

This study examined the effectiveness of the BW program in one rural school district in Southwest Georgia in improving reading scores on state-mandated tests. It also sought to gather teachers' perceptions of the implementation of BW. The responses to a teacher survey, along with students' reading performance scores on the Georgia Milestones Assessment System (GMAS), were examined. Also collected were teacher manuals, shared reading lessons, small group skills lessons, and differentiated instruction Kits to help me understand the BW implementation. To that end, the study included the following questions:

1. To what extent did participation in the Bookworms program increase third-fifth grade elementary-aged students' reading performance Lexile scores as measured by the GMAS standardized assessment screener using reading performance scores during the school years 2020-2023?

2. To what extent did the Bookworms program have a greater impact on student growth across gender subgroups?

3. To what extent did the Bookworms program have a greater impact on student growth across ethnic subgroups?

4. To what extent did the Bookworms program have a greater impact on student growth within learner service subgroups (i.e., regular education learners, gifted learners, Early Intervention Program learners, and special education learners)?

5. What were the perceptions of teachers of grades three through five who implemented Bookworms for the 2020-2023 school years regarding the program's influence on students' reading performance as measured by a teacher survey?

This chapter outlines the methodology employed in the study. It begins with an overview of the research design and the rationale behind its selection. The subsequent section delves into the details of the population, sample, and sampling procedures. Following this, the instruments used for data collection are described. Lastly, it expounds on quantitative and qualitative data analysis procedures.

**Research Design**

This case study examined the effects of BW on the reading performance of third through fifth-grade students. This case study investigated a sample of 128 third graders from Cohort 1 in a rural Title 1 school district in Southwest rural Georgia. This study used this cohort as they progressed through third, fourth, and fifth grade during the school years 2020-2023.

An advantage of employing case study data collection is the ability to leverage diverse sources of evidence (Yin, 2003, p. 97). Yin (2004) outlined six potential data sources applicable to case studies: (1) documentation, (2) archival records, (3) interviews, (4) direct observations, (5) participant observation, and (6) artifacts. In this study, data were collected through archival records of student reading performance and responses from an online survey of teacher perceptions. Each data source offers unique advantages for informing the data collection process and facilitating the convergence of evidence (Yin, 2003).

## Research Setting and Participants

### *Research Setting*

Cherokee Lee School District (CLSD) is located in Beaumont, Georgia. This district has approximately 972 students each year, from kindergarten through fifth grade. The population comprises 54.42% African Americans, 11.73% Hispanic, and 33.85% White students. The entire school district received free breakfast and lunch. There are an estimated eight teachers who teach third through fifth grade in the two schools within this district. This district was chosen because of its BW implementation in reading since 2018. However, due to COVID-19 in 2020, there was a gap in the test scores. That is why the only data collected would be the Lexile scores from one cohort, beginning in third grade during the 2020-2021 school year, as they progress to fifth grade, and ending in the 2022-2023 school year.

### *Participant Selection*

**Student Participants**. To participate, students must have been enrolled in the district for all three years (2020-2021, 2021-2022, and 2022-2023). If students were unenrolled at any point during the three-year period and/or transferred to a different district or enrolled after the full-time equivalent (FTE) count, their GMAS scores would not be considered for this study. However, since the study consisted of two elementary schools within one district, students' scores would continue to be calculated and examined if they only transferred to another school within the district, as they were all mandated to implement BW. Data from 150 student participants were included.

**Teacher Participants**. Due to various factors, such as teachers leaving the profession or transferring to other districts, there were only an estimated eight eligible

third- through fifth-grade teachers across the two schools in this district who met the criteria to take the survey. This was a much smaller sample size than originally anticipated and differs from initial expectations. The criteria for participation included: (1) they taught in CLSD during the school years 2020- 2023, and (2) they taught in grades three through five as English Language Arts teachers. All eligible teacher participants were digitally surveyed and asked to answer 30 questions to help me understand their perceptions of BW implementation and their experiences teaching the curriculum. Demographic data included the years of teaching experience of the teacher participants, the grade level taught, and the highest educational degree earned. Individual participants' information was not disclosed; however, a research agreement was in place to ensure confidentiality. Teachers did not include names or other identifying information in their responses to the survey questions. Due to these measures being taken, no risk to individual participants was present.

## Description of Program

This study took place in CLSD in the southeast region of Georgia. This district was selected based on its implementation of Walpole's comprehensive curriculum, known as BW, which began in 2018. This study sought to track one cohort of students from grades 3 through 5 and provide statistical evidence from the GMAS to support the effectiveness of the BW implementation.

### *Intervention*

According to OUR (2022c), BW works because it is (1) evidence-based pedagogy, (2) designed for differentiation, (3) built to increase vocabulary acquisition, (4) created around full texts on multiple topics, and (5) it has a straightforward toolkit.

They further elaborated that the curriculum comprises straightforward routines. These research-based practices empower both teachers and students to concentrate on developing fundamental skills alongside fluency, vocabulary, comprehension, and knowledge (OUR, 2022c).

The toolkit offers teacher-friendly approaches for tailoring instruction to meet the individual needs of students. It incorporates screening and diagnostic assessments to ensure every student receives the necessary support to meet or exceed grade-level standards. Additionally, the program includes built-in support for intervention and remediation. Teachers can utilize reading diagnostic data to sort students into small groups for targeted intervention and remediation. BW differentiates instruction at the foundational skills level, rather than the text level, to help accelerate students' reading growth. The program is built around whole texts. Students can read various themes and topics by building knowledge and learning vocabulary simultaneously. Ultimately, this program aims to optimize vocabulary development by promoting incidental vocabulary acquisition and ensuring students are exposed to a high volume of words through daily listening, reading, and speaking activities. This program consists of three daily blocks: English Language Arts, Shared Reading, and Differentiated Instruction. These blocks have forty-five-minute segments that can be arranged in any order.

**English Language Arts**. The first segment is the English Language Arts segment. As an added component during the 45-minute segment, teachers can provide focused grammar instruction and have the students create a written response about what they have read, along with what the teacher reads. Walpole and McKenna (2017) defined the English Language Arts block as combining read-aloud, grammar, and writing

instruction. They mentioned that the teacher-led read-aloud sessions provide opportunities to model comprehension strategies, foster active student participation, facilitate meaningful discussions, and enhance vocabulary development (Walpole & McKenna, 2017). The selected textbooks are intentionally challenging, aiming to elevate students' oral language skills and expand their background knowledge. Walpole and McKenna (2017) explained that grammar instruction uses sentences from the read-aloud to reveal the nuances of word choice and order that inform good writing.

**Shared Reading**. The second block is known as the Shared Reading Block. Walpole et al. (2011) state that shared reading is the heart of BW reading instruction and practice. For teachers, it is a simple block to plan and implement. For students, it offers consistency and provides concentrated exposure to knowledge and skills that develop progressively within the context of complex texts. Walpole et al. (2011) explained that teachers would recognize that Shared Reading is a structured (not scripted) approach for building word and world knowledge through explicit instruction and incidental exposure. In the first section of the read-aloud, the teacher reads an above-level text to the students. The difference in shared reading is that the students are reading these on-grade-level texts and practicing what the teacher has modeled in relation to fluency, vocabulary, and comprehension.

In the Word Study segment of the Shared Reading module, focus is placed on both spelling and word comprehension. This curriculum entails a single set of words for all students, consistent weekly instruction, and a traditional spelling/vocabulary test every five days. In Shared Reading and ELA, Walpole et al. (2011) explained that she and her team have designed lesson plans that maximize student time, reading complex text, and

built supports through instruction in language development, word study, spelling, grammar, text structure, and genre-based writing strategy so students can write about what they read. When Walpole et al. (2011) created BW, they first reviewed the Lexile bands. The bands provided guidelines for the best books for each grade level. OUR (2022c) detailed that students enhance their vocabulary through purposeful instruction, encompassing reading and direct instruction.

***Outline for Shared Reading***. There is a very regimented outline for the Shared Reading portion of the curriculum. During the Spelling or Vocabulary routine, the teacher presents a new set of words, spelling patterns with syllable types, and sorting procedures, or the teacher may teach the syllable types and definitions. During this time, students only participate orally. Following that are the Pair-Share Responses. Students can pull out their journals or workbooks and quickly share their writing from the day prior with a partner. They are not expected to read it word for word if they do not wish to; they can paraphrase it. Once the Spelling or Vocabulary is finished, the teacher begins with the next segment of Text Engagement. During this time, the teacher establishes the first purpose for reading the text. Then, there is a choral reading, during which the first purpose is discussed, and the teacher then demonstrates the partner's re-reading of the text. The first focus can be done orally, or the teacher can use a display. Students listen to the teacher as he/she outlines the segment.

Next, the teacher reads aloud while the students sit close enough to a partner to hear him/her read. Students can read at the same voice level as the teacher or whisper read the text. Students are allowed to keep track of their place in the text; however, they are not allowed to track each word. The teacher moves around the groups while reading

to establish a connection with individuals and student pairs. The teacher interrupts the reading to interject a comprehension strategy but does not ask questions at this time. This is not the time for student engagement. The modeling occurs quickly, and the choral reading resumes immediately following the teacher's reasoning. Once the choral reading portion has been completed, the teacher opens the floor for discussion based on probing questions from the teacher. Afterward, the teacher sets a second purpose for the partner to reread. While students are either reading a section chorally or alternating reading page by page, the teacher walks around to ensure students stay on track and are actively engaged. Once the students have completed that passage, the teacher asks discussion questions for the partners.

Following the reading of the passage, the teacher holds a discussion. The teacher asks a series of literal and inferential questions, adding follow-up questions if necessary. The students can answer the questions orally to the teacher or with their partners. The teacher can bring closure to the Shared Reading segment by creating an anchor chart or adding one created the day before. The anchor chart focuses on the content and structure of the text. Finally, the teacher assigns work for the students to complete later. Usually, students have a Word Study assignment and/or a text-based writing prompt. Students can complete this work in their workbooks or journals if they do not have workbooks.

**Differentiated Instruction**. The teacher uses empirical data gathered from decoding inventories, Dynamic Indicators of Basic Early Literacy Skills (DIBELS), comprehension assessments, and more to determine which groups the students would fit better in. The teacher can provide a more targeted approach to learning during these small groups. BW is comprised of differentiated Instruction, which has a multiple-entry skills

block. The design of that time enables both diagnostically driven instruction in foundational skills and extension of text access for students with proficient foundational skills. While BW does not include Tier 3 interventions, time is allotted to it in the schedule. The last block is the Differentiated Instruction (DI) block. There is an entire kit dedicated to this block. The DI block produces initial assessments of foundational skills and progress monitoring approximately every three weeks.

The DI block is scripted for students who need basic foundational skills and is structured once those skills are mastered. DI is a multiple-entry skills intervention informed by research evidence – what some refer to as the SOR. The kit provides scripted lessons for the following areas: (1) Basic Alphabet Knowledge, (2) Using Letter Sounds, (3) Using Letter Patterns, (4) Dictated Sentences (for kindergarten only), (5) Blends and Digraphs, (6) R-Controlled Vowels, (7) Vowel-Consonant, (8) Vowel Teams, (9) Fluency and Comprehension, and (10) Vocabulary and Comprehension (Wright et al., 2022). During the rotations of the DI Kit, the students have the opportunity to create Super Sentences independently. They are structured supports for creating a new sentence-level context for vocabulary words. These sentences provide extensive practice in planning a great sentence by helping students think about anchoring with a subject and verb and then deciding how to expand with details.

### *Instructional Materials Used*

The following instructional materials were used in this BW program.

**Teacher Manual**. The Teacher Manual offers a comprehensive overview of the segments to be taught, providing instructional strategies, differentiation, and assessment tools. The manual is segmented into modules, each containing units. OUR (2022c)

explained that the Module Overview helps teachers visualize the pre-planned connections between knowledge, text, and skills. It also reminds teachers to take advantage of those opportunities that arise naturally. Examining the overviews throughout the progression of the units provides valuable insights and helps connect with the module's goals.

**ELA Lesson Plans**. The English Language Arts block consists of genre-based writing instruction, interactive read-aloud sessions with high-leverage vocabulary instruction, and explicit instruction on grammar and language standards. Within the ELA block, the Interactive Read Aloud, which accounts for about half of the block, involves the teacher using an engaging book to expose students to rich language, develop comprehension skills, expand vocabulary, and build knowledge (Santoro et al., 2008; Teale, 2003). Reading aloud to students should be a consistent practice throughout elementary school, not limited to the primary grades, as its benefits endure even after students have mastered decoding (Cunningham, 2005).

**Shared Reading Lesson Plans**. Shared Reading refers to an interactive reading activity where students collectively read a book or text under the guidance of a teacher. During this activity, the teacher explicitly models the skills of proficient readers, including fluency and expression (Fountas & Pinnell, 1996). This block encompasses grade-level reading instruction, spelling instruction, and the development of foundational skills. The above components are broken down even further after reading through the Grades 3–5 BW manual. According to the free scripted manuals provided through this curriculum, each lesson is structured in a way that follows the same order each day, with slight variations as the week progresses.

**Student Workbooks**. The student workbook supports the assignments from the Shared Reading Lesson Plans. Students are presented with the same daily prompts as they encountered during the time with the teacher. One activity found in the student workbooks is a writing sort. During this sort, students have two columns on their paper, one column labeled with short vowels and the second column with long vowels. Students sort the vocabulary words for that shared reading story into the correct category. Following that activity, a page in the workbook is provided for students to submit a written response. This response asks students to write two sentences using two of the word study words in each. The workbook also provides a space for students to write and review the word study words for that week. Students are given a spelling test or word study assessment every five days. There are 13 words of the teacher's choice and two challenge words. For any student who scores 11 or fewer correct answers on the assessment, the teacher uses the Spelling Tool to analyze the student's spelling performance and determine the student's skill progression over time. Since this study utilizes archival data, the student workbook samples, which include students' work, are no longer available.

## Instrumentation

### *GMAS*

The Georgia Milestones Assessment System (GMAS) is mandated for all public school students in Georgia, starting in third grade. At the end of each school year, students are required to take the GMAS end-of-grade test. Archival data from state reading assessments administered during the 2020-2023 school years were used in the

current study, providing a year-to-year comparison. Georgia Milestones reports student achievement into four levels (GeorgiaTestPrep.com, 2020):

1) "Beginning Learners: Proficiency in the course is not demonstrated. Students require substantial academic support.
2) Developing Learners: Partial proficiency in the course is demonstrated. Students require additional academic support.
3) Proficient Learners: Proficiency in the course is demonstrated. The students are prepared for the next grade level or course and are on track for college and career readiness.
4) Distinguished Learners: Advanced proficiency in the course is demonstrated. The students are well prepared for the next grade level or course and are prepared for college and career readiness." (sect. 9)

**Lexile Measures**. A Lexile measure gauges reading proficiency, aligning a student's ability with the complexity of text material. It represents the book level at which a student can comprehend 75% of the content. This comprehension level, as identified by experts, strikes a balance between comfort and challenge for the reader (GeorgiaTestPrep.com, 2020). Lexile scores are determined by students' accuracy in answering questions aligned with grade-level standards. These scores are calculated considering vocabulary knowledge and sentence complexity (Lupo et al., 2019). The Lexile scale spans from 200L to 1700L; however, students might achieve a Lexile reading below 200L for specific reading materials, denoted by the code BR, indicating "beginning reader" (GeorgiaTestPrep.com, 2020).

### *Teacher Survey*

A 30-item survey was developed to examine teachers' perceptions of BW curriculum implementation and its effects on student learning (see Appendix A). It contains (1) three eligibility questions, (2) three demographic questions, (3) 13 open-ended questions, and (4) 11 4-point Likert scale questions. The teachers must meet a set of criteria to take the survey: (1) have taught during the school years 2020-2023, (2) taught in grades three through five, and (3) taught the ELA content area to participate in the study. They were asked to answer three demographic questions: their years of teaching experience, the grade level at which they taught, and the highest level of education they had received. The open-ended questions provided qualitative data on teacher perceptions of the BW program, while the Likert-scale questions provided quantitative data related to BW implementation and student learning.

Collecting both quantitative and qualitative data helps with data triangulation. The credibility of this study is strengthened by confirming evidence from various sources that pinpoint essential themes (Creswell, 2007). Merriam and Tisdell (2017) emphasized that employing diverse data sources, such as surveys with open-ended and Likert scale questions, alongside other sources like assessment scores or relevant artifacts, can enhance the trustworthiness of the results.

## Data Collection Procedure

### *Student Reading Performance*

Local access to student reading performance data was granted by the Superintendent of the CLSD (see Appendix B). International Review Board (IRB) approval was also obtained through Valdosta State University (see Appendix C). After

receiving approvals, the Assistant Superintendent collected and submitted all data to me in a spreadsheet format, including GMAS data and student identification numbers, to maintain student privacy throughout the research process. The data only included the reading segment of the GMAS. All identifiable information pertaining to the students was removed to protect participants' confidentiality. The 2020-2023 GMAS administration occurred long before this study was conceptualized, which prevented me from having an influence on the data.

### *Teacher Survey*

An invitation email was sent out to all teachers, which included a Qualtrics survey link. Protocols for securing data, maintaining the anonymity of teacher participants, and criteria for participation were outlined in the email (see Appendix D). A consent statement was displayed on the first page of the survey (see Appendix A). If any teacher was willing to fill out the survey and met the criteria and qualifications, he or she might move on to the question page of the survey. If not, he or she might exit the survey.

In appreciation of the teachers' participation, they filled out a separate form to provide their names and email addresses once the survey had been completed and returned. If the teachers participated and provided their contact information, they were contacted and emailed an Amazon gift card for $10. To make it even more enticing to complete the survey, those who provided their contact information were entered into a drawing for a $25 Amazon gift card. Since the surveys were electronically administered and returned, the gift cards could also be reciprocated in the same manner.

The survey results were compiled on a jump drive to protect the identities of all teacher participants. All documents and files were assigned a password to protect the

data, and the portable jump drive was securely locked to provide limited access. All survey respondents were assigned an ID number to protect their identity and maintain confidentiality.

## Ethical Considerations

Maintaining the confidentiality of the participants in my study was critically important. Protecting their privacy is essential to safeguard their vulnerability and anonymity (Giancola, 2025). To ensure confidentiality in my study, no names were used in data reporting. In reporting the quantitative aspects of this study, data were presented for groups without using individual names or disclosing personal data. During the data collection phase, students' ID numbers were used in an Excel document; however, that document was secured, password-protected, and not shared with anyone. In reporting the qualitative aspects of this study, data were presented using Teacher ID numbers without referencing individual names or disclosing personal information.

Data storage is a critical ethical concern for researchers, and this issue becomes even more prominent with the use of cloud-based data management systems (Bloomberg & Volpe, 2019). All data files were stored in two password-protected locations to prevent loss or damage during the study. Once the study was complete and the dissertation successfully defended, all data would be removed from computer storage and transferred to a password-protected flash drive. This flash drive will be kept locked for three years after the study report is completed.

## Data Analysis

### *Lexile Scores*

Georgia employs college-ready and career-ready grade-level stretch bands to assess students' proficiency in reading, comprehension, and performance at their respective grade levels. Lexile scores are derived from students' reading passages within these stretch bands and their accurate responses to grade-level standards-based questions. Descriptive statistics, including the mean, mode, median, and standard deviation of Lexile scores on the GMAS, were presented to analyze and interpret the results (Spriestersbach et al., 2009). Paired *t*-tests were conducted between grades three and four and then four and five to determine if any differences from grade to grade exist to show the effect of BW implementation for RQ1. Independent *t*-tests were used to compare the growth in Lexile scores between gender subgroups from one grade to the next for RQ2. ANOVA tests were used to compare growth in Lexile scores across ethnic subgroups from one grade to the next for RQ3. ANOVA tests were used to compare the growth in Lexile scores across learner service subgroups from grade to grade for RQ4. Additional chi-squared of independence analyses were conducted for RQ1-RQ4 to see if the distribution of students across Lexile stretch bands changed significantly from grade to grade in each demographic subgroup.

### *Likert-Scale Questions from Teacher Survey*

The survey contains 11 4-point Likert scale questions. The Likert-scale questions gave quantitative data related to BW implementation and student learning. Teachers must indicate their perceptions of the impact of BW implementation on five essential reading skills, including phonic, phonemic awareness, fluency, vocabulary, comprehension, and overall reading performance. Their perceptions of three blocks (e.g., English Language Arts, Shared Reading, and Differentiated Instruction) and resources were also examined.

Because only three valid responses were available for data analysis, reporting numerical results was not meaningful. Therefore, the Likert-scale responses were analyzed qualitatively to gain a deeper understanding of teachers' levels of agreement with the provided statements.

### *Open-ended Questions from Teacher Survey*

The survey contains 13 open-ended questions. The open-ended questions provided qualitative data about teacher perceptions of the BW program, including professional development associated with the BW program as well as the aspects of implementing the program, the benefits of the resources used, the limitations, inside and outside factors that could affect the program, how the program could be improved, and finally, how has the BW program influenced students' reading performance overall. Creswell (2007) asserted that qualitative data analysis involves initial preparation and organization of data, followed by data reduction through categorization using coding techniques, and finally, representation of the data through figures, tables, or discussion. Data would be coded and analyzed to identify themes, providing a thorough understanding of teachers' perceptions of the implemented BW curriculum. The data would be analyzed with the help of a second coder. Inter-coder reliability would be established at the beginning of the coding process.

## Validity & Reliability

### *Validity*

Theoretical validity encompasses understanding participants' perspectives through open-ended inquiries and acknowledging the influence of the researcher's theoretical framework. Employing terminology widely accepted in the educational realm

strengthens the substantiation of assertions and mitigates risks to theoretical validity. Having measurable counts of events rather than vague descriptive terms reduces threats to descriptive validity (Maxwell, 1992). A limitation of the qualitative aspect of this study is its subjective nature, which poses a potential threat to overall construct validity. Maxwell (1992) outlined interpretive validity, also referred to as research bias, wherein data may be selectively chosen or interpretations subjectively shaped to align with the researcher's expectations.

**Internal Validity**. Gay et al. (2012) described the following types of validity — interpretive, theoretical, and evaluative —as essential considerations for qualitative researchers. Nacrelli (2018) elaborated on descriptive validity, emphasizing the importance of factual and accurate data. Interpretive validity pertains to the researcher's perspective in reporting and analyzing data. Theoretical validity involves aligning data analysis with established theories and principles. Evaluative validity ensures objectivity and lack of bias in reporting, analyzing, and evaluating data. One way to address the validity issues in this research design is by employing a triangulation strategy. Gay et al. (2012, p. 393) defined triangulation as the use of diverse methods, data collection techniques, and sources to comprehensively understand the subject under investigation and validate the information.

Creswell (2012) defined triangulation as:

> …the process of corroborating evidence from different individuals, types of data, or methods of data collection in descriptions and themes in qualitative research. The inquirer examines each information source and finds evidence to support a theme. This ensures that the study will be accurate because the information draws

on multiple sources of information, individuals, and processes." (p. 259)

To generate more reliable findings, data from student reading performance scores and teacher survey responses were collected. This approach increases the likelihood that other schools or districts can utilize the findings of this study to implement these effective practices in their academic programs.

**External Validity**. External validity threats can include any influences that limit the generalization and/or replication of the results. There are seven threats Gay et al. (2012) have identified to external validity: (1) pre-test treatment, (2) multiple treatment interference, (3) selection treatment interaction, (4) specificity of variables, (5) experimenter effects, (6) reactive arrangements, and (7) treatment diffusion.

The pre-test in this study will consist of students' GMAS Lexile scores in May 2021. Multiple treatment interference was not a threat in this study, as the BW was the only program implemented. The instruction quality could be impacted by teacher effectiveness, potentially leading to limitations. However, all teachers were encouraged to implement BW with fidelity, strengthening any claim that improvements in students' GMAS Lexile scores could only be attributed to the reading program.

Only students in grades 3-5 were selected to participate in this study, ensuring that the selection-treatment interaction was not threatened. The participants were not randomly selected for this study. Students were selected based on their enrollment and participation in the BW during the school years 2020-2023. Based on the parameters of this study, the variables were clearly defined, with the dependent variable being reading performance, as measured by GMAS Lexile scores, and the independent variable being the implementation of the BW Program. Since this was not the first year BW had been

implemented, the reactive arrangements may not compromise the validity of this study. Finally, the experimenter's effects did not threaten validity because the researcher collected archival data and was employed by this district. The researcher had no stake in this study's results other than reporting its findings. To address any threats and concerns regarding the threat to validity, one could temporarily conclude that the study is accurate and trustworthy with all facts. The findings may also be considered applicable for recreating this study in other school districts willing to implement the BW to assist students in improving reading Lexile scores based on the GMAS assessment.

Yin (2003) explained that "any finding or conclusion in a case study is likely to be much more convincing and accurate if it is based on several sources of information, followed by a corroboratory mode" (p. 98). True triangulation happens when the facts or events in the case study provide higher construct validity, supported by multiple sources of information (Yin, 2003). The findings of this study would gain validity through triangulation. Bogdan and Biklen (2011) defined triangulation as the utilization of multiple data sources in a study, which was superior to relying on a single source. This approach would enhance the depth and comprehensiveness of understanding regarding the phenomena under investigation.

***Reliability***

Reliability is defined as the degree to which an experiment, test, instrument, or measuring procedure consistently produces identical results across repeated trials (Howell et al., 2005). A reliable instrument should consistently and accurately measure a specific concept or phenomenon (Royse et al., 2010).

**Reliability of GMAS**. To be deemed valid for a specific purpose, the utilization of a test must be underpinned by reliable measurement. Cronbach's alpha coefficient is one indicator of reliability (Cronbach, 1951). This coefficient quantifies the consistency of test scores by comparing the variance of true scores to the total variance of observed scores. Cronbach's Alpha assesses the internal consistency across responses to a set of items gauging an underlying trait, computed using the formula developed by Crocker and Algina (1986). The mean reliability coefficients and minimum and maximum values across different forms and administrations of the GA Milestones Assessment are categorized by subject area, typically ranging from 0.88 to 0.94. The reliabilities observed during the 2021-2022 GA Milestones assessment remain consistent across various forms and administrations, indicating that the assessments demonstrate adequate reliability for their intended use.

**Reliability of Teacher Survey**. Prior to emailing the survey, it was field-tested by three teachers who did not participate in the study to enhance the validity of the collected responses. The field test aimed to verify the survey questions for quality and potentially eliminate confusion before participants completed the survey. Feedback given by the field test teachers allowed changes to be made to the survey, ensuring the validity of the questions and the alignment with the overarching research questions. The survey questions were designed to elicit the participants' experiences, perceptions, and factors influencing their teaching practices. Dissertation committee members examined the questions to ensure each question is clear, succinct, and meets the criteria to answer the research questions.

**Inter-coder Reliability**. As Creswell (2009) suggested, inter-coder reliability is not about coding the exact same passage of text but rather about whether another coder would assign the same or similar code to it (p. 191). Inter-coder reliability is a quantitative measure of agreement among different coders regarding how to code the same data (Kurasaki, 2000; O'Connor & Joffe, 2020). Inter-coder reliability was implemented to cross-check codes and determine the accuracy of coding the data at the beginning, thereby providing reliability in the findings. A comparison of how another person interprets the same data set helps gain insight into coding variations and provides a type of analytical triangulation (Campbell, 2018). Creswell (2009) stated that comparisons should be consistent 80% of the time. The plan was to engage in the survey coding process with a second coder at the beginning of the coding process. The remaining data would be independently coded once the inter-coder reliability has been established.

## Summary

In this study, a case study design was employed to collect both quantitative and qualitative data to understand the effect of BW implementation on student reading performance and teacher perception. Data collected included (1) 3$^{rd}$ through 5$^{th}$-grade students' GMAS reading performance results from the 2020-2023 school years, and (2) a 30-item teacher survey containing open-ended and Likert-scale questions. Throughout all aspects of this study, including data collection and analysis, I demonstrated high ethical principles to protect participants and report my findings accurately. The study's findings help school administrators and other stakeholders make informed decisions regarding professional development and instructional materials related to reading.

# Chapter IV

## Findings

Chapter 4 reports the study results, guided by the research questions, along with a detailed explanation of the results. This study was designed to assess the impact of the comprehensive reading program implemented at Cherokee Lee School District on students' reading proficiency. Specifically, the research aimed to analyze the student reading performance from grade 3 to grade 5, using the state-administered Georgia Milestones summative assessment. The performance of specific subgroups identified by the state, such as gender, ethnicity, and learner service distinction, was also analyzed. Additionally, the perceptions of teachers in grades three through five who implemented Bookworms during the 2020-2023 school years regarding the program's influence on students' reading performance were examined.

To address the research questions 1-4 and evaluate the program's effectiveness, descriptive and inferential statistical methods were employed in the analysis. The findings derived from these statistical procedures are presented and discussed in the following section, providing insight into the extent of the program's impact on reading proficiency. Limited results of teacher perception of the BW program's implementation on student reading performance were presented to answer RQ5.

The following research questions guided the study:

1. To what extent did participation in the Bookworms program increase third-fifth grade elementary-aged students' reading performance (Lexile scores) as measured by the

GMAS standardized assessment screener using reading performance scores during the school years 2020-2023?

2. To what extent did the Bookworms program have a greater impact on student growth across gender subgroups?

3. To what extent did the Bookworms program have a greater impact on student growth across ethnic subgroups?

4. To what extent did the Bookworms program have a greater impact on student growth across learner service subgroups (i.e., regular education learners, gifted learners, Early Intervention Program learners, and special education learners)?

5. What were the perceptions of teachers of grades three through five who implemented Bookworms for the 2020-2023 school years regarding the program's influence on students' reading performance as measured by a teacher survey?

## Descriptive Data

### *Student Data*

Student data were collected from the courses of the 2021-2023 school years and involved third, fourth, and fifth-grade students from Cherokee Lee School District in south Georgia. The original dataset included scores from 150 students. However, some of the students did not have data entries for all three years. Thus, 21 students were omitted from the final data analysis. As a result, the final sample consisted of 129 students whose Lexile scores were available for all three years (Grade 3 to Grade 5).

As shown in Table 1, the distribution by gender was 52.7% ($n$ = 68) females and 47.3% ($n$ = 61) males. This student group comprised individuals from four ethnic backgrounds: African American, Hispanic, Multi-racial, and White. There were 71

African American students, representing 55% of the total student body. Hispanic students represented the next largest ethnic subgroup, comprising 16 students, which accounted for 12.4% of the total. The multi-racial demographic comprised four students, or 3.1% of student participants. Finally, 38 students were white, making up 29.5% of the student group.

In addition, as shown in Table 1, upon closer examination of the 128 students, this dataset can also be broken down by the learner service they received. Of the 129 students, 13.2% ($n$ = 17) were regular education learners, 15.5% ($n$ = 20) were classified as students receiving gifted services, and 62.8% ($n$ = 81) received EIP (Early Intervention Program) services. EIP is a state-funded program assisting K-5 students who are not meeting grade-level expectations. Finally, 8.5% ($n$ = 11) of students received special education services.

In terms of overall mean Lexile scores by grade level, the mean score of Grade 3 was 497.25 ($SD$ = 213.04), for Grade 4 was 705.62 ($SD$ = 218.45), and for Grade 5 was 860.93 ($SD$ = 187.58). Students demonstrated growth in their Lexile mean scores as they progressed from 3rd to 5th grade. When comparing mean Lexile scores between male and female students, females had slightly higher mean scores than males as they progressed from Grade 3 to Grade 5 (see Table 2).

Among the four ethnic subgroups, the multi-racial students had the lowest performance in Grade 3 ($M$ = 453.75, $SD$ = 262.91); however, they showed the highest performance in Grade 4 ($M$ = 835.00, $SD$ = 218.63), and continued to progress into Grade 5 ($M$ = 983.75, $SD$ = 176.56). In addition, African American students had the second lowest performance in Grade 3 ($M$ = 455.14, $SD$ = 183.39), continuing to have the lowest

performance in both Grade 4 ($M$ = 666.90, $SD$ = 187.67) and Grade 5 ($M$ = 824.79, $SD$ = 160.61).

Additionally, among students receiving various learning services, gifted students performed the highest in Grade 3 ($M$ = 786.00, $SD$ = 219.74), and continued to show the highest performance in Grades 4 ($M$ = 992.75, $SD$ = 184.03) and Grade 5 ($M$ = 1136.75, $SD$ = 150.14). Students who received special education services had the lowest performance from Grade 3 ($M$ = 357.73, $SD$ = 129.97) to Grade 5 ($M$ = 674.55, $SD$ = 166.76).

**Table 1**

*Demographic Information of Student Participants*

| Demographics | *N* | *%* |
|---|---|---|
| Gender: | | |
| Male | 61 | 47.3% |
| Female | 68 | 52.7% |
| Ethnicity: | | |
| Asian/Pacific Islander | 0 | 0% |
| African American | 71 | 55.0% |
| Hispanic | 16 | 12.4% |
| Native American/Alaskan Native | 0 | 0% |
| White/non-Hispanic | 38 | 29.5% |
| Multi-racial | 4 | 3.1% |
| Learner Service Distinction: | | |
| Regular Education | 17 | 13.2% |
| Gifted | 20 | 15.5% |
| EIP | 81 | 62.8% |
| Special Education | 11 | 8.5% |

**Table 2**

*Mean Lexile Scores from Grade 3 to Grade 5 by Demographics*

| | Grade 3 | | Grade 4 | | Grade 5 | |
|---|---|---|---|---|---|---|
| Demographics | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Gender: | | | | | | |
| Male | 477.87 | 206.40 | 687.95 | 218.30 | 846.15 | 191.28 |
| Female | 514.63 | 218.89 | 721.47 | 218.99 | 874.19 | 184.59 |
| Ethnicity: | | | | | | |
| African American | 455.14 | 183.39 | 666.90 | 187.67 | 824.79 | 160.61 |
| Hispanic | 561.88 | 218.43 | 775.94 | 293.62 | 935.31 | 194.95 |
| White/non-Hispanic | 553.29 | 244.54 | 734.74 | 227.90 | 884.21 | 218.85 |
| Multi-racial | 453.75 | 262.91 | 835.00 | 218.63 | 983.75 | 176.56 |
| Learner Service Distinction: | | | | | | |
| Regular Education | 531.47 | 105.90 | 808.53 | 139.62 | 934.12 | 96.08 |
| Gifted | 786.00 | 219.74 | 992.75 | 184.03 | 1136.75 | 150.14 |
| EIP | 437.72 | 171.58 | 642.72 | 155.26 | 802.78 | 131.38 |
| Special Education | 357.73 | 129.97 | 487.73 | 235.16 | 674.55 | 166.76 |

### *Teacher Data*

The response rate to the teacher survey was very low. Only eight teachers completed the survey; however, two respondents did not meet the requirement of teaching Grades 3 to 5, and three respondents provided only background information without answering any other survey questions. As a result, only three valid responses were available for the data analysis.

As shown in Table 3, Teacher 1 has 11-15 years of teaching experience, teaches Grade 5, and holds a Master's degree. Teacher 2 has 7-10 years of teaching experience, teaches Grade 4, and also holds a Master's degree. Teacher 3 has over 20 years of teaching experience, teaches Grade 3, and holds a Bachelor's degree. Although the survey response rate was low, it is good that teachers from all grade levels were represented. Teachers' years of experience span from moderate (seven years) to extensive (20+ years), indicating a range of teaching experience. In addition, two teachers have

Master's degrees, while one holds a Bachelor's, suggesting some variation in educational attainment.

**Table 3**

*Demographic Information of Teacher Participants*

| Teacher # | Year of Teaching | Grade Level Taught | Education Level |
|---|---|---|---|
| 1 | 11-15 years | Gade 5 | Master's Degree |
| 2 | 7-10 years | Grade 4 | Master's Degree |
| 3 | More than 20 years | Grade 3 | Bachelor's Degree |

## Data Analysis for Research Question One

The purpose of the first research question was to understand whether participation in the Bookworms program increased third-fifth grade elementary-aged students' reading performance (Lexile scores) as measured by the GMAS standardized assessment screener during the school years 2020-2023. To answer this question, paired *t*-tests were used to determine whether the growth in Lexile scores from Grade 3 (Year 2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significant. Additional chi-squared tests of independence were conducted to see if the distribution of students across Lexile stretch bands changed significantly from grade to grade. Lexile stretch bands are grade-specific ranges of reading difficulty. Students' reading scores are categorized into three performance levels: (1) "Below"– did not meet their grade-level band, (2) "Within" – met the grade-level band, or (3) "Above" – exceeded the grade-level band.

### *Lexile Scores*

Table 4 displays the comparison results on the growth from grade to grade. A paired samples t-test was conducted to compare Lexile mean scores in Grade 3 ($M$ =

497.25, *SD* = 213.04) and Grade 4 (*M* = 705.62, *SD* = 218.45). There was a significant increase in mean scores from Grade 3 to Grade 4, $t(128) = 14.39$, $p < .001$, $d = 1.267$. The same pattern was observed from Grade 4 (*M* = 705.62, *SD* = 218.45) to Grade 5 (*M* = 860.93, *SD* = 187.58). The mean score increased significantly, $t(128) = 12.70$, $p < .001$, $d = 1.118$. Of course, the overall growth from Grade 3 (*M* = 497.25, *SD* = 213.04) to Grade 5 (*M* = 860.93, *SD* = 187.58) was also significant, $t(128) = 27.05$, $p < .001$, $d = 2.381$. Although no control group was available for comparison in this study, this cohort of students demonstrated significant growth in Lexile mean scores from Grade 3 to Grade 5, showing a potential positive impact of the Bookworms program on student reading performance.

**Table 4**

*Paired t-test Results of Lexile Mean Scores from Grade to Grade*

| Comparison | *MD* | *SD* | *t* | *df* | *Sig.* | *Cohen's d* |
|---|---|---|---|---|---|---|
| Grade 4-Grade 3 | 208.37 | 164.42 | 14.39 | 128 | <.001 | 1.267 |
| Grade 5-Grade 4 | 155.31 | 138.93 | 12.70 | 128 | <.001 | 1.118 |
| Grade 5-Grade 3 | 363.68 | 152.73 | 27.05 | 128 | <.001 | 2.381 |

### *Lexile Stretch Bands*

The chi-squared tests of independence were conducted to see if the distribution of students across Lexile stretch bands changed significantly from grade to grade. The analysis compared student reading performance within the bands from Grade 3 to Grade 4, again from Grade 4 to Grade 5, and then an overall comparison from Grade 3 to Grade 5. This helped determine whether students made meaningful progress in reading performance over time.

**Grade 3 to Grade 4 Growth**. First, the crosstabulation results revealed noticeable shifts in Lexile stretch band from Grade 3 to Grade 4 (see Table 5). Among the 81 students who were categorized as "Below" the stretch band in Grade 3, 13 students moved up to "Within" and 5 to "Above" the stretch band, while 63 remained in the "Below" category in Grade 4. Of the 31 students who were "Within" stretch band in Grade 3, 11 showed improvement by moving to "Above" or maintaining their stretch band (10 students). However, 10 students declined to the "Below" category in Grade 4. In addition, 16 out of 17 students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 4, with only one declining to the "Within" category, suggesting strong consistency among high performers. Overall, 32 students reached the "Above" category in Grade 4, compared to only 17 in Grade 3, indicating a growth in higher-level readers over time. Also, the number of students who performed "Below" the stretch band decreased from 81 in Grade 3 to 73 in Grade 4. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands, $\chi^2(4) = 69.84$, $p < .001$, suggesting that students' reading proficiency level changed significantly from Grade 3 to Grade 4.

**Table 5**

*Crosstabulation of Grade 3 * Grade 4 Stretch Band*

| | | Grade 4 | | | |
|---|---|---|---|---|---|
| Grade 3 --> Grade 4 | | Below | Within | Above | Total |
| Grade 3 | Below | 63 | 13 | 5 | 81 |
| | Within | 10 | 10 | 11 | 31 |
| | Above | 0 | 1 | 16 | 17 |
| | Total | 73 | 24 | 32 | 129 |

**Grade 4 to Grade 5 Growth**. Second, the crosstabulation results revealed noticeable shifts in Lexile stretch band from Grade 4 to Grade 5 (see Table 6). Among the 73 students who were categorized as "Below" the stretch band in Grade 4, 16 students moved up to "Within" and 8 to "Above" the stretch band, while 49 remained in the "Below" category in Grade 5. Of the 24 students who were "Within" the stretch band in Grade 4, 12 showed improvement by moving to "Above" or maintaining their stretch band (five students). However, seven students fell into the "Below" category in Grade 5. In addition, 28 out of 32 students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, only three declined to the "Within" category, and one declined to the "Below" category, suggesting strong consistency in high performers. Overall, 48 students reached the "Above" category in Grade 5, compared to only 32 in Grade 4, indicating a growth in higher-level readers over time. Also, the number of students who performed "Below" the stretch band decreased from 73 in Grade 4 to 57 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands, $\chi^2(4) = 60.41$, $p < .001$, suggesting that students' reading proficiency level changed significantly from Grade 4 to Grade 5.

**Table 6**

*Crosstabulation of Grade 4 * Grade 5 Stretch Band*

| | | Grade 5 | | | |
|---|---|---|---|---|---|
| Grade 4 --> Grade 5 | | Below | Within | Above | Total |
| Grade 4 | Below | 49 | 16 | 8 | 73 |
| | Within | 7 | 5 | 12 | 24 |
| | Above | 1 | 3 | 28 | 32 |
| | Total | 57 | 24 | 48 | 129 |

**Grade 3 to Grade 5 Growth**. Third, the crosstabulation results revealed noticeable shifts in Lexile stretch band from Grade 3 to Grade 5 (see Table 7). Among the 81 students who were categorized as "Below" the stretch band in Grade 3, 17 students moved up to "Within" and 13 to "Above" the stretch band, while 51 remained in the "Below" category in Grade 5. Of the 31 students who were "Within" the stretch band in Grade 3, 18 showed improvement by moving to "Above" or maintaining their stretch band (seven students). However, six students fell into the "Below" category in Grade 5. In addition, 17 out of 17 students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 48 students reached the "Above" category in Grade 5, compared to only 17 in Grade 3, indicating a growth in higher-level readers over time. Also, the number of students who performed "Below" the stretch band decreased from 81 in Grade 3 to 57 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and exile stretch bands, $\chi^2(4) = 53.36$, $p < .001$, suggesting that students' reading proficiency level changed significantly from Grade 3 to Grade 5.

**Table 7**

*Crosstabulation of Grade 3 * Grade 5 Stretch Band*

| | | Grade 5 | | | |
|---|---|---|---|---|---|
| Grade 3 --> Grade 5 | | Below | Within | Above | Total |
| Grade 3 | Below | 51 | 17 | 13 | 81 |
| | Within | 6 | 7 | 18 | 31 |
| | Above | 0 | 0 | 17 | 17 |
| | Total | 57 | 24 | 48 | 129 |

## Data Analysis for Research Question Two

The purpose of Research Question 2 was to determine the extent to which the Bookworms program had a greater impact on student growth across gender subgroups. Independent *t*-tests were used to determine whether the growth in Lexile mean scores from Grade 3 (Year 2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significantly different between males and females. Additional chi-squared tests of independence were conducted to see if the distribution of students across Lexile stretch bands changed significantly within each gender subgroup from grade to grade. Lexile stretch bands are grade-specific ranges of reading difficulty used to categorize students' reading performance as "Below," "Within," or "Above" their expected grade-level band.

### *Lexile Scores*

Table 8 presents the comparison results of mean growth scores in Lexile from grade to grade by gender. Although the demographic data showed that females had slightly higher Lexile mean scores than males as they progressed from Grade 3 to Grade 5 (see Table 2), the growth from grade to grade was not significantly different between these two gender subgroups (see Table 9). First, an independent samples *t*-test was conducted to compare the growth in Lexile mean scores from Grade 3 to Grade 4 between male and female students. The mean growth score for female students ($M$ = 206.84, $SD$ = 147.04) was slightly lower than that of male students ($M$ = 210.08, $SD$ = 183.09), but the difference was not statistically significant, $t(127) = .11$, $p = .911$, $d = .020$. Same patterns were observed from Grade 4 to Grade 5, $t(127) = .22$, $p = .824$, $d = .039$, and overall growth from Grade 3 to Grade 5, $t(127) = .32$, $p = .748$, $d = .057$.

Although females scored slightly higher than males on Lexile mean scores in Grades 3 through 5, the amount of growth in mean scores from one grade to the next was not significantly different between the two groups. In other words, the growth rates of the gender subgroups did not differ significantly, even though their mean scores varied slightly.

**Table 8**

*Mean Growth Scores in Lexile from Grade to Grade by Gender*

| | Male | | Female | |
|---|---|---|---|---|
| Comparison | *M* | *SD* | *M* | *SD* |
| Grade 3 | 477.87 | 206.40 | 514.63 | 218.89 |
| Grade 4 | 687.95 | 218.30 | 721.47 | 218.99 |
| Growth - | 210.08 | 183.09 | 206.84 | 147.04 |
| | | | | |
| Grade 4 | 687.95 | 218.30 | 721.47 | 218.99 |
| Grade 5 | 846.15 | 191.28 | 874.19 | 184.59 |
| Growth - | 158.20 | 145.28 | 152.72 | 134.02 |
| | | | | |
| Grade 3 | 477.87 | 206.40 | 514.63 | 218.89 |
| Grade 5 | 846.15 | 191.28 | 874.19 | 184.59 |
| Growth - | 368.28 | 151.54 | 359.56 | 154.79 |

**Table 9**

*Independent t-test Results of Lexile Mean Growth Scores by Gender*

| Growth | *t* | *df* | *Sig* | *Cohen's d* |
|---|---|---|---|---|
| Grade 3-Grade 4 | .11 | 127 | .911 | .020 |
| Grade 4-Grade 5 | .22 | 127 | .824 | .039 |
| Grade 3-Grade 5 | .32 | 127 | .748 | .057 |

### *Lexile Stretch Bands*

After comparing the differences in mean growth scores between male and female students, the detailed changes within each gender subgroup were examined, particularly the changes in Lexile stretch band from grade to grade, through chi-squared tests of

independence. The analysis compared student reading performance within the bands from Grade 3 to Grade 4, again from Grade 4 to Grade 5, and then an overall comparison from Grade 3 to Grade 5. This helped determine whether male and female students made meaningful progress in reading performance over time.

**Grade 3 to Grade 4 Growth**. For male students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 10). Among the 40 male students who were categorized as "Below" the stretch band in Grade 3, six students moved up to "Within" and four to "Above" the stretch band, while 30 remained in the "Below" category in Grade 4. Of the 13 male students who were "Within" the stretch band in Grade 3, five showed improvement by moving to "Above" or maintaining their stretch band (four students) in Grade 4. However, four students fell into the "Below" category in Grade 4. In addition, seven out of eight male students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 4, with only one declining to the "Within" category, suggesting strong consistency in high performers. Overall,16 male students reached the "Above" category in Grade 4, compared to only eight in Grade 3, indicating a growth in higher-level readers over time. Also, the number of male students who performed "Below" the stretch band decreased from 40 in Grade 3 to 34 in Grade 4. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for male students, $\chi^2(4) = 26.29$, $p < .001$, suggesting that male students' reading proficiency level changed significantly from Grade 3 to Grade 4.

For female students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 10). Among the 41

female students who were categorized as “Below” the stretch band in Grade 3, seven students moved up to “Within” and one to “Above” the stretch band, while 33 remained in the “Below” category in Grade 4. Of the 18 female students who were “Within” the stretch band in Grade 3, six showed improvement by moving to “Above” or maintaining their stretch band (six students) in Grade 4. However, six students fell into the “Below” category in Grade 4. In addition, nine out of nine female students who were in the “Above” category in Grade 3 remained in the same stretch band in Grade 4, suggesting strong consistency in high performers.

**Table 10**

*Crosstabulation of Grade 3 * Grade 4 Stretch Band by Gender*

| Gender | Grade 3 → Grade 4 | | Grade 4 | | | |
|---|---|---|---|---|---|---|
| | | | Below | Within | Above | Total |
| Male | Grade 3 | Below | 30 | 6 | 4 | 40 |
| | | Within | 4 | 4 | 5 | 13 |
| | | Above | 0 | 1 | 7 | 8 |
| | | Total | 34 | 11 | 16 | 61 |
| Famale | Grade 3 | Below | 33 | 7 | 1 | 41 |
| | | Within | 6 | 6 | 6 | 18 |
| | | Above | 0 | 0 | 9 | 9 |
| | | Total | 39 | 13 | 16 | 68 |

Overall, 16 female students reached the “Above” category in Grade 4, compared to only nine in Grade 3, indicating a growth in higher-level readers over time. Also, the number of female students who performed “Below” the stretch band decreased from 41 in Grade 3 to 39 in Grade 4. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for female students, $\chi^2(4) = 45.37$, $p < .001$, suggesting that female students’ reading proficiency level changed significantly from Grade 3 to Grade 4.

**Grade 4 to Grade 5 Growth**. For male students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 11). Among the 34 male students who were categorized as "Below" the stretch band in Grade 4, six students moved up to "Within" and three to "Above" the stretch band, while 25 remained in the "Below" category in Grade 5. Of the 11 male students who were "Within" the stretch band in Grade 4, seven showed improvement by moving to "Above" or maintaining their stretch band (one student) in Grade 5. However, three students fell into the "Below" category in Grade 5. In addition, 15 out of 16 male students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, with only one declining to the "Within" category, suggesting strong consistency in high performers. Overall, 25 male students reached the "Above" category in Grade 5, compared to only 16 in Grade 4, indicating a growth in higher-level readers over time. Also, the number of male students who performed "Below" the stretch band decreased from 34 in Grade 4 to 28 in Grade 5. The result of a chi-square test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for male students, $\chi^2(4) = 35.90$, $p < .001$, suggesting that male students' reading proficiency level changed significantly from Grade 4 to Grade 5.

For female students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 11). Among the 39 female students who were categorized as "Below" the stretch band in Grade 4, 10 students moved up to "Within" and five to "Above" the stretch band, while 24 remained in the "Below" category in Grade 5. Of the 13 female students who were "Within" the stretch band in Grade 4, five showed improvement by moving to "Above" or maintaining

their stretch band (four students) in Grade 5. However, four students fell into the "Below" category in Grade 5. In addition, 13 out of 16 female students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, with two declining to the "Within" category and one declining to the "Below" category, suggesting strong consistency in high performers. Overall, 23 female students reached the "Above" category in Grade 5, compared to only 16 in Grade 4, indicating a growth in higher-level readers over time. Also, the number of female students who performed "Below" the stretch band decreased from 39 in Grade 4 to 29 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for female students, $\chi^2(4) = 25.66$, $p < .001$, suggesting that female students' reading proficiency level changed significantly from Grade 4 to Grade 5.

**Table 11**

*Crosstabulation of Grade 4 * Grade 5 Stretch Band by Gender*

| | | | Grade 5 | | | |
|---|---|---|---|---|---|---|
| Gender | Grade 4 → Grade 5 | | Below | Within | Above | Total |
| Male | Grade 4 | Below | 25 | 6 | 3 | 34 |
| | | Within | 3 | 1 | 7 | 11 |
| | | Above | 0 | 1 | 15 | 16 |
| | | Total | 28 | 8 | 25 | 61 |
| Famale | Grade 4 | Below | 24 | 10 | 5 | 39 |
| | | Within | 4 | 4 | 5 | 13 |
| | | Above | 1 | 2 | 13 | 16 |
| | | Total | 29 | 16 | 23 | 68 |

**Grade 3 to Grade 5 Growth**. For male students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 12). Among the 40 male students who were categorized as "Below" the stretch

band in Grade 3, six students moved up to “Within” and seven to “Above” the stretch band, while 27 remained in the “Below” category in Grade 5. Of the 13 male students who were “Within” the stretch band in Grade 3, 10 showed improvement by moving to “Above” or maintaining their stretch band (two students) in Grade 5. However, one male student fell into the “Below” category in Grade 5. In addition, eight out of eight male students who were in the “Above” category in Grade 3 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 25 male students reached the “Above” category in Grade 5, compared to only eight in Grade 3, indicating a growth in higher-level readers over time. Also, the number of male students who performed “Below” the stretch band decreased from 40 in Grade 3 to 28 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for male students, $\chi^2(4) = 29.36$, $p < .001$, suggesting that male students’ reading proficiency level changed significantly from Grade 3 to Grade 5.

For female students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 12). Among the 41 female students who were categorized as “Below” the stretch band in Grade 3, 11 students moved up to “Within” and 6 to “Above” the stretch band, while 24 remained in the “Below” category in Grade 5. Of the 18 female students who were “Within” the stretch band in Grade 3, eight showed improvement by moving to “Above” or maintaining their stretch band (five students) in Grade 5. However, five female students fell into the “Below” category in Grade 5. In addition, nine out of nine female students who were in the “Above” category in Grade 3 remained in the same stretch band in Grade

5, suggesting strong consistency in high performers. Overall, 23 female students reached the "Above" category in Grade 5, compared to only nine in Grade 3, indicating a growth in higher-level readers over time. Also, the number of female students who performed "Below" the stretch band decreased from 41 in Grade 3 to 29 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for female students, $\chi^2(4) = 26.36$, $p < .001$, suggesting that female students' reading proficiency level changed significantly from Grade 3 to Grade 5.

**Table 12**

*Crosstabulation of Grade 3 * Grade 5 Stretch Band by Gender*

| | | | Grade 5 | | | |
|---|---|---|---|---|---|---|
| Gender | Grade 3 → Grade 5 | | Below | Within | Above | Total |
| Male | Grade 3 | Below | 27 | 6 | 7 | 40 |
| | | Within | 1 | 2 | 10 | 13 |
| | | Above | 0 | 0 | 8 | 8 |
| | | Total | 28 | 8 | 25 | 61 |
| Famale | Grade 3 | Below | 24 | 11 | 6 | 41 |
| | | Within | 5 | 5 | 8 | 18 |
| | | Above | 0 | 0 | 9 | 9 |
| | | Total | 29 | 16 | 23 | 68 |

**Data Analysis for Research Question Three**

The purpose of Research Question 3 was to determine the extent to which the Bookworms program had a greater impact on student growth across ethnic subgroups. ANOVA tests were used to determine whether the growth in Lexile mean scores from Grade 3 (Year 2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significantly different across ethnic subgroups. Additional chi-squared tests of

independence were conducted to see if the distribution of students across Lexile stretch bands changed significantly within each ethnic subgroup from grade to grade. Lexile stretch bands are grade-specific ranges of reading difficulty used to categorize students' reading performance as "Below," "Within," or "Above" their expected grade-level band.

***Lexile Scores***

Table 13 presents the comparison results of mean growth scores in Lexile from grade to grade by ethnicity. Although, as previously discussed in Table 2, the ethnic subgroups had varying Lexile scores, the growth from grade to grade was not significantly different across ethnic subgroups (see Tables 13 and 14). First, Levene's test for equality of variances on the mean growth score from Grade 3 to Grade 4 was not significant, $F(3, 125) = .12$, $p = .948$, suggesting that the assumption of homogeneity of variances was met. A one-way ANOVA revealed no significant difference in mean growth scores from Grade 3 to Grade 4 across ethnic subgroups, $F(3, 125) = 1.87$, $p = .139 > .05$, $\eta^2 = .043$. Second, the same patterns were observed from Grade 4 to Grade 5. Levene's test for equality of variances on the mean growth score from Grade 4 to Grade 5 was not significant, $F(3, 125) = 1.42$, $p = .241$, suggesting that the assumption of homogeneity of variances was met. A one-way ANOVA revealed no significant difference in mean growth scores from Grade 4 to Grade 5 across ethnic subgroups, $F(3, 125) = .04$, $p = .990 > .05$, $\eta^2 = .001$. Third, the results from Grade 3 to Grade 5 followed the same pattern. Levene's test for equality of variances on the mean growth score from Grade 3 to Grade 5 was not significant, $F(3, 125) = .16$, $p = .920$, suggesting that the assumption of homogeneity of variances was met. A one-way ANOVA revealed no significant difference in mean growth scores from Grade 3 to Grade 5 across ethnic

subgroups, $F(3, 125) = 2.29$, $p = .082 > .05$, $\eta^2 = .052$. Even though the ethnic subgroups had varying Lexile scores, the amount of growth in mean scores from one grade to the next was not significantly different between them. In other words, the growth rates of the ethnic subgroups did not differ significantly, even though their mean scores varied slightly.

**Table 13**

*Mean Growth Scores in Lexile from Grade to Grade by Ethnicity*

| | AA | | Hispanic | | White | | Multi-racial | |
|---|---|---|---|---|---|---|---|---|
| Compare. | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Grade 3 | 455.14 | 183.39 | 561.88 | 218.43 | 553.29 | 244.54 | 453.75 | 262.91 |
| Grade 4 | 666.90 | 187.67 | 775.94 | 293.62 | 734.74 | 227.90 | 835.00 | 218.63 |
| Growth - | 211.76 | 159.73 | 214.06 | 132.01 | 181.45 | 178.33 | 381.25 | 171.04 |
| | | | | | | | | |
| Grade 4 | 666.90 | 187.67 | 775.94 | 293.62 | 734.74 | 227.90 | 835.00 | 218.63 |
| Grade 5 | 824.79 | 160.61 | 935.31 | 194.95 | 884.21 | 218.85 | 983.75 | 176.56 |
| Growth - | 157.89 | 128.88 | 159.38 | 154.29 | 149.47 | 159.53 | 148.75 | 48.02 |
| | | | | | | | | |
| Grade 3 | 455.14 | 183.39 | 561.88 | 218.43 | 553.29 | 244.54 | 453.75 | 262.91 |
| Grade 5 | 824.79 | 160.61 | 935.31 | 194.95 | 884.21 | 218.85 | 983.75 | 176.56 |
| Growth - | 369.65 | 158.50 | 373.44 | 122.73 | 330.92 | 144.48 | 530.00 | 156.26 |

**Table 14**

*ANOVA Results of Lexile Mean Growth Scores by Ethnicity*

| Compare. | *F* | $df_{Between}$ | $df_{Within}$ | *p* | *η2* |
|---|---|---|---|---|---|
| Grade 3-Grade 4 | 1.87 | 3 | 125 | .139 | .043 |
| Grade 4-Grade 5 | .04 | 3 | 125 | .990 | .001 |
| Grade 3-Grade 5 | 2.29 | 3 | 125 | .082 | .052 |

### *Lexile Stretch Bands*

After comparing the differences in mean growth scores across ethnic subgroups, I examined the detailed changes within each ethnic subgroup, particularly the changes in Lexile stretch band from one grade to the next, using chi-squared tests of independence.

The analysis compared student reading performance within the bands from Grade 3 to Grade 4, again from Grade 4 to Grade 5, and then an overall comparison from Grade 3 to Grade 5. This helped determine whether each ethnic subgroup made meaningful progress in reading performance over time.

**Grade 3 to Grade 4 Growth**. For African-American students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 15). Among the 49 African-American students who were categorized as "Below" the stretch band in Grade 3, seven students moved up to "Within" and one to "Above" the stretch band, while 41 remained in the "Below" category in Grade 4. Of the 17 African-American students who were "Within" the stretch band in Grade 3, five showed improvement by moving to "Above" or maintaining their stretch band (six students) in Grade 4. However, six students declined to be categorized as "Below". In addition, five out of five African-American students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 4, suggesting strong consistency in high performers. Overall, 11 African-American students reached the "Above" category in Grade 4, compared to only five in Grade 3, indicating a growth in higher-level readers over time. Also, the number of African-American students who performed "Below" the stretch band decreased from 49 in Grade 3 to 47 in Grade 4. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for African-American students, $\chi^2(4) = 42.95$, $p < .001$, suggesting that African-American students' reading proficiency level changed significantly from Grade 3 to Grade 4.

For Hispanic students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 15). Among the eight Hispanic students who were categorized as “Below” the stretch band in Grade 3, one student moved up to “Above” the stretch band, while seven remained in the “Below” category in Grade 4. Of the three Hispanic students who were “Within” the stretch band in Grade 3, two showed improvement by moving to “Above” the stretch band in Grade 4. However, one student declined to be categorized as “Below”. In addition, four out of five Hispanic students who were in the “Above” category in Grade 3 remained in the same stretch band in Grade 4, with one declining to the “Within” category, suggesting strong consistency in high performers. Overall, seven Hispanic students reached the “Above” category in Grade 4, compared to only five in Grade 3, indicating a growth in higher-level readers over time. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for Hispanic students, $\chi^2(4) = 10.76$, $p = .029 < .05$, suggesting that Hispanic students’ reading proficiency level changed significantly from Grade 3 to Grade 4.

For White students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 15). Among the 21 White students who were categorized as “Below” the stretch band in Grade 3, six students moved up to “Within” and one to “Above” the stretch band, while 14 remained in the “Below” category in Grade 4. Of the 11 White students who were “Within” the stretch band in Grade 3, four showed improvement by moving to “Above” or maintaining their stretch band (four students) in Grade 4. However, three students declined to be categorized as “Below”. In addition, six out of six White students who were in the

"Above" category in Grade 3 remained in the same stretch band in Grade 4, suggesting strong consistency in high performers. Overall, 11 White students reached the "Above" category in Grade 4, compared to only six in Grade 3, indicating a growth in higher-level readers over time. Also, the number of White students who performed "Below" the stretch band decreased from 21 in Grade 3 to 17 in Grade 4. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for White students, $\chi^2(4) = 22.65$, $p < .001$, suggesting that White students' reading proficiency level changed significantly from Grade 3 to Grade 4.

For Multi-Racial students, there are only four students in this subgroup. The crosstabulation results revealed shifts in Lexile stretch bands within the "Below" and "Above" categories from Grade 3 to Grade 4 (see Table 15). Among the three Multi-Racial students who were categorized as "Below" the stretch band in Grade 3, two students moved up to "Above" the stretch band, while one remained in the "Below" category in Grade 4. In addition, the only Multi-Racial student categorized in the "Above" stretch band in Grade 3 remained in the same category in Grade 4, suggesting strong consistency in high performers. Overall, three Multi-Racial students reached the "Above" category in Grade 4, compared to only one in Grade 3, indicating a growth in higher-level readers over time. Also, the number of Multi-Racial students who performed "Below" the stretch band decreased from three in Grade 3 to one in Grade 4. The result of a chi-squared test of independence indicated no statistically significant relationship between grade level and Lexile stretch bands for Multi-Racial students, $\chi^2(1) = .44$, $p = .505 > .05$, suggesting that Multi-Racial students' reading proficiency level did not change significantly from Grade 3 to Grade 4.

**Grade 4 to Grade 5 Growth**. For African-American students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 16). Among the 47 African-American students who were categorized as "Below" the stretch band in Grade 4, 11 students moved up to "Within" and five to "Above" the stretch band, while 31 remained in the "Below" category in Grade 5. Of the 13 African-American students who were "Within" the stretch band in Grade 4, seven showed improvement by moving to "Above" or maintaining their stretch band (three students) in Grade 5. However, three students declined to be categorized as "Below". In addition, 10 out of 11 African-American students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, with one declining to the "Within" category, suggesting strong consistency in high performers.

Overall, 22 African-American students reached the "Above" category in Grade 5, compared to only 11 in Grade 4, indicating a growth in higher-level readers over time. Also, the number of African-American students who performed "Below" the stretch band decreased from 47 in Grade 4 to 34 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for African-American students, $\chi^2(4) = 32.26$, $p < .001$, suggesting that African-American students' reading proficiency level changed significantly from Grade 4 to Grade 5.

**Table 15**

*Crosstabulation of Grade 3 * Grade 4 Stretch Band by Ethnicity*

| Gender | Grade 3 → Grade 4 | | Grade 4 | | | |
|---|---|---|---|---|---|---|
| | | | Below | Within | Above | Total |
| AA | Grade 3 | Below | 41 | 7 | 1 | 49 |
| | | Within | 6 | 6 | 5 | 17 |
| | | Above | 0 | 0 | 5 | 5 |
| | | Total | 47 | 13 | 11 | 71 |
| Hispanic | Grade 3 | Below | 7 | 0 | 1 | 8 |
| | | Within | 1 | 0 | 2 | 3 |
| | | Above | 0 | 1 | 4 | 5 |
| | | Total | 8 | 1 | 7 | 16 |
| White | Grade 3 | Below | 14 | 6 | 1 | 21 |
| | | Within | 3 | 4 | 4 | 11 |
| | | Above | 0 | 0 | 6 | 6 |
| | | Total | 17 | 10 | 11 | 38 |
| Multi-racial | Grade 3 | Below | 1 | 0 | 2 | 3 |
| | | Within | 0 | 0 | 0 | 0 |
| | | Above | 0 | 0 | 1 | 1 |
| | | Total | 1 | 0 | 3 | 4 |

For Hispanic students, the crosstabulation results revealed shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 16); however, these shifts were not statistically significant. Among the eight Hispanic students who were categorized as "Below" the stretch band in Grade 4, two students moved up to "Within' and two moved up to "Above" the stretch band, while four remained in the "Below" category in Grade 5. The only Hispanic student who was "Within" the stretch band in Grade 4 moved to "Above" the stretch band in Grade 5. In addition, six out of seven Hispanic students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, with one declining to the "Within" category, suggesting strong consistency in high performers. Overall, nine Hispanic students reached the "Above" category in Grade 5, compared to only seven in Grade 4, indicating a growth in higher-level readers over time.

The result of a chi-squared test of independence indicated no statistically significant relationship between grade level and Lexile stretch bands for Hispanic students, $\chi^2(4) = 7.24$, $p = .124 > .05$, suggesting that Hispanic students' reading proficiency level did not change significantly from Grade 4 to Grade 5.

For White students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 16). Among the 17 White students who were categorized as "Below" the stretch band in Grade 4, three students moved up to "Within" and one to "Above" the stretch band, while 13 remained in the "Below" category in Grade 5. Of the 10 White students who were "Within" the stretch band in Grade 4, four showed improvement by moving to "Above" or maintaining their stretch band (two students) in Grade 5. However, four students declined to be categorized as "Below". In addition, nine out of 11 White students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, with one declining to the "Within" category and one declining to the "Below" category, suggesting strong consistency in high performers. Overall, 14 White students reached the "Above" category in Grade 5, compared to only 11 in Grade 4, indicating a growth in higher-level readers over time. Conversely, the number of White students who performed "Below" the stretch band increased from 17 in Grade 4 to 18 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for White students, $\chi^2(4) = 17.51$, $p = .002 < .05$, suggesting that White students' reading proficiency level changed significantly from Grade 4 to Grade 5.

For Multi-Racial students, there are only four students in this subgroup. The crosstabulation results revealed no shifts in Lexile stretch bands within the "Below" and

"Above" categories from Grade 4 to Grade 5 (see Table 16). However, the chi-squared test result was statistically significant, $\chi^2(1) = 4.00$, $p = .046 < .05$, possibly due to low expected counts in some cells. The only Multi-Racial student who was categorized as "Below" the stretch band in Grade 4, remained in the same category in Grade 5. In addition, the three Multi-Racial students categorized in the "Above" stretch band in Grade 4 remained in the same category in Grade 5, suggesting strong consistency in high performers.

**Table 16**

*Crosstabulation of Grade 4 * Grade 5 Stretch Band by Ethnicity*

| | | | Grade 5 | | | |
|---|---|---|---|---|---|---|
| Gender | Grade 4 → Grade 5 | | Below | Within | Above | Total |
| AA | Grade 4 | Below | 31 | 11 | 5 | 47 |
| | | Within | 3 | 3 | 7 | 13 |
| | | Above | 0 | 1 | 10 | 11 |
| | | Total | 34 | 15 | 22 | 71 |
| Hispanic | Grade 4 | Below | 4 | 2 | 2 | 8 |
| | | Within | 0 | 0 | 1 | 1 |
| | | Above | 0 | 1 | 6 | 7 |
| | | Total | 4 | 3 | 9 | 16 |
| White | Grade 4 | Below | 13 | 3 | 1 | 17 |
| | | Within | 4 | 2 | 4 | 10 |
| | | Above | 1 | 1 | 9 | 11 |
| | | Total | 18 | 6 | 14 | 38 |
| Multi-racial | Grade 4 | Below | 1 | 0 | 0 | 1 |
| | | Within | 0 | 0 | 0 | 0 |
| | | Above | 0 | 0 | 3 | 3 |
| | | Total | 1 | 0 | 3 | 4 |

**Grade 3 to Grade 5 Growth**. For African-American students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 17). Among the 49 African-American students who were categorized as "Below" the stretch band in Grade 3, 12 students moved up to "Within" and five to

"Above" the stretch band, while 32 remained in the "Below" category in Grade 5. Of the 17 African-American students who were "Within" the stretch band in Grade 3, 12 showed improvement by moving to "Above" or maintaining their stretch band (three students) in Grade 5. However, two students fell into the "Below" category. In addition, five out of five African-American students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 22 African-American students reached the "Above" category in Grade 5, compared to only five in Grade 3, indicating a growth in higher-level readers over time. Also, the number of African-American students who performed "Below" the stretch band decreased from 49 in Grade 3 to 34 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for African-American students, $\chi^2(4) = 34.67$, $p < .001$, suggesting that African-American students' reading proficiency level changed significantly from Grade 3 to Grade 5.

For Hispanic students, the crosstabulation results revealed shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 17); however, these shifts were not statistically significant. Among the eight Hispanic students who were categorized as "Below" the stretch band in Grade 3, two students moved up to "Within" and two moved up to "Above" the stretch band, while four remained in the "Below" category in Grade 5. Of the three Hispanic students who were "Within" the stretch band in Grade 3, two showed improvement by moving to "Above" or maintaining their stretch band (one student) in Grade 5. In addition, five out of five Hispanic students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 5, suggesting

strong consistency in high performers. Overall, nine Hispanic students reached the "Above" category in Grade 5, compared to only five in Grade 3, indicating a growth in higher-level readers over time. The result of a chi-squared test of independence indicated no statistically significant relationship between grade level and Lexile stretch bands for Hispanic students, $\chi^2(4) = 8.59$, $p = .072 > .05$, suggesting that Hispanic students' reading proficiency level did not change significantly from Grade 3 to Grade 5.

For White students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 17). Among the 21 White students who were categorized as "Below" the stretch band in Grade 3, three students moved up to "Within" and four to "Above" the stretch band, while 14 remained in the "Below" category in Grade 5. Of the 11 White students who were "Within" the stretch band in Grade 3, four showed improvement by moving to "Above" or maintaining their stretch band (three students) in Grade 5. However, four students declined to be categorized as "Below". In addition, six out of six White students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 14 White students reached the "Above" category in Grade 5, compared to only six in Grade 3, indicating a growth in higher-level readers over time. Also, the number of White students who performed "Below" the stretch band decreased from 21 in Grade 3 to 18 in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for White students, $\chi^2(4) = 14.97$, $p = .005 < .05$, suggesting that White students' reading proficiency level changed significantly from Grade 3 to Grade 5.

For Multi-Racial students, there are only four students in this subgroup. The crosstabulation results revealed shifts in Lexile stretch bands within the "Below" category from Grade 3 to Grade 5 (see Table 17). Among the three Multi-Racial students who were categorized as "Below" the stretch band in Grade 3, two students moved up to "Above" the stretch band, while one remained in the "Below" category in Grade 5. In addition, the only Multi-Racial student categorized in the "Above" stretch band in Grade 3 remained in the same category in Grade 5, suggesting strong consistency in high performers.

**Table 17**

*Crosstabulation of Grade 3 * Grade 5 Stretch Band by Ethnicity*

| | | | Grade 5 | | | |
|---|---|---|---|---|---|---|
| Gender | Grade 3 → Grade 5 | | Below | Within | Above | Total |
| AA | Grade 3 | Below | 32 | 12 | 5 | 49 |
| | | Within | 2 | 3 | 12 | 17 |
| | | Above | 0 | 0 | 5 | 5 |
| | | Total | 34 | 15 | 22 | 71 |
| Hispanic | Grade 3 | Below | 4 | 2 | 2 | 8 |
| | | Within | 0 | 1 | 2 | 3 |
| | | Above | 0 | 0 | 5 | 5 |
| | | Total | 4 | 3 | 9 | 16 |
| White | Grade 3 | Below | 14 | 3 | 4 | 21 |
| | | Within | 4 | 3 | 4 | 11 |
| | | Above | 0 | 0 | 6 | 6 |
| | | Total | 18 | 6 | 14 | 38 |
| Multi-racial | Grade 3 | Below | 1 | 0 | 2 | 3 |
| | | Within | 0 | 0 | 0 | 0 |
| | | Above | 0 | 0 | 1 | 1 |
| | | Total | 1 | 0 | 3 | 4 |

Overall, three Multi-Racial students reached the "Above" category in Grade 5, compared to only one in Grade 3, indicating a growth in higher-level readers over time. Also, the number of Multi-Racial students who performed "Below" the stretch band

decreased from three in Grade 3 to one in Grade 5. The result of a chi-squared test of independence indicated no statistically significant relationship between grade level and Lexile stretch bands for Multi-Racial students, $\chi^2(1) = .44$, $p = .505 > .05$, suggesting that Multi-Racial students' reading proficiency level did not change significantly from Grade 3 to Grade 5.

**Data Analysis for Research Question Four**

The purpose of Research Question 4 was to determine the extent to which the Bookworms program had a greater impact on student growth across learner service subgroups. ANOVA tests were used to determine whether the growth in Lexile mean scores from Grade 3 (Year 2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significantly different across learner service subgroups. Additional chi-squared tests of independence were conducted to see if the distribution of students across Lexile stretch bands changed significantly within each learner service subgroup from grade to grade. Lexile stretch bands are grade-specific ranges of reading difficulty used to categorize students' reading performance as "Below," "Within," or "Above" their expected grade-level band.

***Lexile Scores***

Table 18 displays the comparison results on the mean growth scores in Lexile from grade to grade by learner service. Although, as previously discussed in Table 2, the learner service subgroups had varying Lexile scores, the growth from grade to grade was not significantly different across learner service subgroups (see Tables 18 and 19). First, Levene's test for equality of variances on the mean growth score from Grade 3 to Grade 4

was not significant, $F(3, 125) = 2.24$, $p = .087$, suggesting that the assumption of homogeneity of variances was met. A one-way ANOVA revealed no significant difference in mean growth scores from Grade 3 to Grade 4 across learner service subgroups, $F(3, 125) = 1.87$, $p = .138 > .05$, $\eta^2 = .043$.

**Table 18**

*Mean Growth Scores in Lexile from Grade to Grade by Learner Service*

| | Regular | | Gifted | | EIP | | Special | |
|---|---|---|---|---|---|---|---|---|
| Compare. | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Grade 3 | 531.47 | 105.90 | 786.00 | 219.74 | 437.72 | 171.58 | 357.73 | 129.97 |
| Grade 4 | 808.53 | 139.62 | 992.75 | 184.03 | 642.72 | 155.26 | 487.73 | 235.16 |
| Growth - | 277.06 | 131.77 | 206.75 | 142.64 | 205.00 | 158.29 | 130.00 | 253.52 |
| Grade 4 | 808.53 | 139.62 | 992.75 | 184.03 | 642.72 | 155.26 | 487.73 | 235.16 |
| Grade 5 | 934.12 | 96.08 | 1136.75 | 150.14 | 802.78 | 131.38 | 674.55 | 166.76 |
| Growth - | 125.59 | 154.74 | 144.00 | 139.10 | 160.06 | 124.33 | 186.82 | 212.81 |
| Grade 3 | 531.47 | 105.90 | 786.00 | 219.74 | 437.72 | 171.58 | 357.73 | 129.97 |
| Grade 5 | 934.12 | 96.08 | 1136.75 | 150.14 | 802.78 | 131.38 | 674.55 | 166.76 |
| Growth - | 402.65 | 112.60 | 350.75 | 156.67 | 365.06 | 152.54 | 316.82 | 200.37 |

**Table 19**

*ANOVA Results of Lexile Mean Growth Scores by Learner Service*

| Compare. | *F* | $df_{Between}$ | $df_{Within}$ | *p* | *η2* |
|---|---|---|---|---|---|
| Grade 3-Grade 4 | 1.87 | 3 | 125 | .138 | .043 |
| Grade 4-Grade 5 | .52 | 3 | 125 | .671 | .012 |
| Grade 3-Grade 5 | .76 | 3 | 125 | .519 | .018 |

Second, the same patterns were observed from Grade 4 to Grade 5. Levene's test for equality of variances on the mean growth score from Grade 4 to Grade 5 was not significant, $F(3, 125) = 2.20$, $p = .091$, suggesting that the assumption of homogeneity of variances was met. A one-way ANOVA revealed no significant difference in mean growth scores from Grade 4 to Grade 5 across learner service subgroups, $F(3, 125) = .52$, $p = .671 > .05$, $\eta^2 = .012$. Third, the results from Grade 3 to Grade 5 followed the same

pattern. Levene's test for equality of variances on the mean growth score from Grade 3 to Grade 5 was not significant, $F(3, 125) = 1.72$, $p = .166$, suggesting that the assumption of homogeneity of variances was met. A one-way ANOVA revealed no significant difference in mean growth scores from Grade 3 to Grade 5 across learner service subgroups, $F(3, 125) = .76$, $p = .519 > .05$, $\eta^2 = .018$. Even though the learner service subgroups had varying Lexile scores, the amount of growth in mean scores from one grade to the next was not significantly different between them. In other words, the growth rates of the learner service subgroups did not differ significantly, even though their mean scores varied slightly.

### *Lexile Stretch Bands*

After comparing the differences in mean growth scores across learner service subgroups, I examined the detailed changes within each learner service subgroup, particularly the changes in Lexile stretch band from one grade to the next, using chi-squared tests of independence. The analysis compared student reading performance within the bands from Grade 3 to Grade 4, again from Grade 4 to Grade 5, and then an overall comparison from Grade 3 to Grade 5. This helped determine whether each learner service subgroup made meaningful progress in reading performance over time.

**Grade 3 to Grade 4 Growth**. For Regular Education students, the crosstabulation results revealed shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 20); however, these shifts were not statistically significant. Among the 10 Regular Education students who were categorized as "Below" the stretch band in Grade 3, four students moved up to "Within" and one to "Above" the stretch band, while five remained in the "Below" category in Grade 4. Of the six Regular Education students

who were “Within” the stretch band in Grade 3, two showed improvement by moving to “Above” or maintaining their stretch band (four students) in Grade 4. In addition, the only Regular Education student who was in the “Above” category in Grade 3 remained in the same stretch band in Grade 4, suggesting strong consistency in high performers. Overall, four Regular Education students reached the “Above” category in Grade 4, compared to only one in Grade 3, indicating a growth in higher-level readers over time. Also, the number of Regular Education students who performed “Below” the stretch band decreased from 10 in Grade 3 to five in Grade 4. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for Regular Education students, $\chi^2(4) = 8.08$, $p = .089 > .05$, suggesting that Regular Education students’ reading proficiency level did not change significantly from Grade 3 to Grade 4.

For Gifted students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 20). Among the three Gifted students who were categorized as “Below” the stretch band in Grade 3, one student moved up to “Within” the stretch band and one to “Above” the stretch band, while one remained in the “Below” category in Grade 4. Of the five Gifted students who were “Within” the stretch band in Grade 3, four showed improvement by moving to “Above” or maintaining their stretch band (one student) in Grade 4. In addition, 12 out of 12 Gifted students who were in the “Above” category in Grade 3 remained in the same stretch band in Grade 4, suggesting strong consistency in high performers. Overall, 17 Gifted students reached the “Above” category in Grade 4, compared to only 12 in Grade 3, indicating a growth in higher-level readers over time. The result of a chi-squared test

of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for Gifted students, $\chi^2(4) = 10.27$, $p = .036 < .05$, suggesting that Gifted students' reading proficiency level changed significantly from Grade 3 to Grade 4.

For EIP students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 4 (see Table 20). Among the 58 EIP students who were categorized as "Below" the stretch band in Grade 3, seven students moved up to "Within" and two to "Above" the stretch band, while 49 remained in the "Below" category in Grade 4. Of the 19 EIP students who were "Within" the stretch band in Grade 3, five showed improvement by moving to "Above" or maintaining their stretch band (five students) in Grade 4. However, nine students declined to be categorized as "Below". In addition, three out of four EIP students who were in the "Above" category in Grade 3 remained in the same stretch band in Grade 4, with one declining to the "Within" category, suggesting strong consistency in high performers. Overall, 10 EIP students reached the "Above" category in Grade 4, compared to only four in Grade 3, indicating a growth in higher-level readers over time. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for EIP students, $\chi^2(4) = 27.23$, $p < .001$, suggesting that EIP students' reading proficiency level changed significantly from Grade 3 to Grade 4.

For Special Education students, the crosstabulation results revealed shifts in Lexile stretch bands within the "Below" category from Grade 3 to Grade 4 (see Table 20); however, the shift was not statistically significant. Among the 10 Special Education students who were categorized as "Below" the stretch band in Grade 3, one student moved up to "Within" the stretch band and one to "Above" the stretch band, while eight

remained in the "Below" category in Grade 4. Additionally, the only Special Education student categorized in the "Within" stretch band in Grade 3 was reclassified to the "Below" category in Grade 4. The number of Special Education students who performed "Below" the stretch band decreased from 10 in Grade 3 to nine in Grade 4. The result of a chi-squared test of independence indicated no statistically significant relationship between grade level and Lexile stretch bands for Special Education students, $\chi^2(2) = .44$, $p = .885 > .05$, suggesting that Special Education students' reading proficiency level did not change significantly from Grade 3 to Grade 4.

**Table 20**

*Crosstabulation of Grade 3 * Grade 4 Stretch Band by Learner Service*

| | | | Grade 4 | | | |
|---|---|---|---|---|---|---|
| Gender | Grade 3 → Grade 4 | | Below | Within | Above | Total |
| Regular | Grade 3 | Below | 5 | 4 | 1 | 10 |
| | | Within | 0 | 4 | 2 | 6 |
| | | Above | 0 | 0 | 1 | 1 |
| | | Total | 5 | 8 | 4 | 17 |
| Gifted | Grade 3 | Below | 1 | 1 | 1 | 3 |
| | | Within | 0 | 1 | 4 | 5 |
| | | Above | 0 | 0 | 12 | 12 |
| | | Total | 1 | 2 | 17 | 20 |
| EIP | Grade 3 | Below | 49 | 7 | 2 | 58 |
| | | Within | 9 | 5 | 5 | 19 |
| | | Above | 0 | 1 | 3 | 4 |
| | | Total | 58 | 13 | 10 | 81 |
| Special | Grade 3 | Below | 8 | 1 | 1 | 10 |
| | | Within | 1 | 0 | 0 | 1 |
| | | Above | 0 | 0 | 0 | 0 |
| | | Total | 9 | 1 | 1 | 11 |

**Grade 4 to Grade 5 Growth**. For Regular Education students, the crosstabulation results revealed shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 21); however, these shifts were not statistically significant. Among

the five Regular Education students who were categorized as “Below” the stretch band in Grade 4, one student moved up to “Within” and two to “Above” the stretch band, while two remained in the “Below” category in Grade 5. Of the eight Regular Education students who were “Within” the stretch band in Grade 4, five showed improvement by moving to “Above” or maintaining their stretch band (two students) in Grade 5. However, one student declined to the “Below” category. In addition, the four Regular Education students in the “Above” category in Grade 4, three of whom remained in the same stretch band in Grade 5, with one declining to the “Within” category, suggesting strong consistency in high performers. Overall, 10 Regular Education students reached the “Above” category in Grade 5, compared to only four in Grade 4, indicating a growth in higher-level readers over time. Also, the number of Regular Education students who performed “Below” the stretch band decreased from five in Grade 4 to three in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for Regular Education students, $\chi^2(4) = 2.78$, $p = .596 > .05$, suggesting that Regular Education students’ reading proficiency level did not change significantly from Grade 4 to Grade 5.

For Gifted students, the crosstabulation results revealed shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 21). The chi-squared test could not be performed because all students from each category in Grade 4 moved to the “Above” category in Grade 5, resulting in more than six cells with zero counts. The only Gifted student who was categorized as “Below” the stretch band in Grade 4 moved up to “Above” the stretch band in Grade 5. The two Gifted students who were categorized as “Within” the stretch band in Grade 4 moved up to “Above” the stretch band in Grade 5.

In addition, 17 out of 17 Gifted students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 20 Gifted students reached the "Above" category in Grade 5, compared to only 17 in Grade 4, indicating a growth in higher-level readers over time.

For EIP students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 4 to Grade 5 (see Table 21). Among the 58 EIP students who were categorized as "Below" the stretch band in Grade 4, 15 students moved up to "Within" and five to "Above" the stretch band, while 38 remained in the "Below" category in Grade 5. Of the 13 EIP students who were "Within" the stretch band in Grade 4, five showed improvement by moving to "Above" or maintaining their stretch band (three students) in Grade 5. However, five students declined to be categorized as "Below". In addition, seven out of 10 EIP students who were in the "Above" category in Grade 4 remained in the same stretch band in Grade 5, with two declining to the "Within" category, and one declining to the "Below" category, suggesting strong consistency in high performers. Overall, 17 EIP students reached the "Above" category in Grade 5, compared to only 10 in Grade 4, indicating a growth in higher-level readers over time. Also, the number of EIP students who performed "Below" the stretch band decreased from 58 in Grade 5 to 44 in Grade 4. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for EIP students, $\chi^2(4) = 23.26$, $p < .001$, suggesting that EIP students' reading proficiency level changed significantly from Grade 4 to Grade 5.

**Table 21**

*Crosstabulation of Grade 4 * Grade 5 Stretch Band by Learning Service*

| Gender | Grade 4 → Grade 5 | | Grade 5 | | | |
|---|---|---|---|---|---|---|
| | | | Below | Within | Above | Total |
| Regular | Grade 4 | Below | 2 | 1 | 2 | 5 |
| | | Within | 1 | 2 | 5 | 8 |
| | | Above | 0 | 1 | 3 | 4 |
| | | Total | 3 | 4 | 10 | 17 |
| Gifted | Grade 4 | Below | 0 | 0 | 1 | 1 |
| | | Within | 0 | 0 | 2 | 2 |
| | | Above | 0 | 0 | 17 | 17 |
| | | Total | 0 | 0 | 20 | 20 |
| EIP | Grade 4 | Below | 38 | 15 | 5 | 58 |
| | | Within | 5 | 3 | 5 | 13 |
| | | Above | 1 | 2 | 7 | 10 |
| | | Total | 44 | 20 | 17 | 81 |
| Special | Grade 4 | Below | 9 | 0 | 0 | 9 |
| | | Within | 1 | 0 | 0 | 1 |
| | | Above | 0 | 0 | 1 | 1 |
| | | Total | 10 | 0 | 1 | 11 |

For Special Education students, the crosstabulation results revealed a shift in Lexile stretch bands within the "Within" category from Grade 4 to Grade 5 (see Table 21). This shift altered the expected distribution of students across the stretch band, which likely contributed to the statistically significant chi-squared result, $\chi^2(2) = 11.00$, $p = .004 < .05$. The significance may be due to uneven movement and lower expected frequencies in certain cells. The nine Special Education students who were categorized as "Below" the stretch band in Grade 4 remained in the same category in Grade 5. Additionally, the only Special Education student categorized in the "Within" stretch band in Grade 4 was reclassified to the "Below" category in Grade 5. The only Special Education student categorized in the "Above" stretch band in Grade 4 remained in the same category in

Grade 5. The number of Special Education students who performed "Below" the stretch band increased from 9 in Grade 4 to 10 in Grade 5.

**Grade 3 to Grade 5 Growth**. For Regular Education students, the crosstabulation results revealed shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 22); however, these shifts were not statistically significant. Among the 10 Regular Education students who were categorized as "Below" the stretch band in Grade 3, three students moved up to "Within" and four to "Above" the stretch band, while three remained in the "Below" category in Grade 5. Of the six Regular Education students who were "Within" the stretch band in Grade 3, five showed improvement by moving to "Above" or maintaining their stretch band (one student) in Grade 5. In addition, the only Regular Education student in the "Above" category in Grade 3 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 10 Regular Education students reached the "Above" category in Grade 5, compared to one in Grade 3, indicating a growth in higher-level readers over time. Also, the number of Regular Education students who performed "Below" the stretch band decreased from 10 in Grade 3 to three in Grade 5. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch bands for Regular Education students, $\chi^2(4) = 4.14$, $p = .388 > .05$, suggesting that Regular Education students' reading proficiency level did not change significantly from Grade 3 to Grade 5.

For Gifted students, the crosstabulation results revealed shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 22). The chi-squared test could not be performed because all students from each category in Grade 3 moved to the "Above"

category in Grade 5, resulting in more than six cells with zero counts. The three Gifted students who were categorized as “Below” the stretch band in Grade 3 moved up to “Above” the stretch band in Grade 5. The five Gifted students who were categorized as “Within” the stretch band in Grade 3 moved up to “Above” the stretch band in Grade 5. In addition, 12 out of 12 Gifted students who were in the “Above” category in Grade 3 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 20 Gifted students reached the “Above” category in Grade 5, compared to only 12 in Grade 3, indicating a growth in higher-level readers over time.

For EIP students, the crosstabulation results revealed noticeable shifts in Lexile stretch band categories from Grade 3 to Grade 5 (see Table 22). Among the 58 EIP students who were categorized as “Below” the stretch band in Grade 3, 14 students moved up to “Within” and five to “Above” the stretch band, while 39 remained in the “Below” category in Grade 5. Of the 19 EIP students who were “Within” the stretch band in Grade 3, eight showed improvement by moving to “Above” or maintaining their stretch band (six students) in Grade 5. However, five students declined to be categorized as “Below”. In addition, four out of four EIP students who were in the “Above” category in Grade 3 remained in the same stretch band in Grade 5, suggesting strong consistency in high performers. Overall, 17 EIP students reached the “Above” category in Grade 5, compared to only four in Grade 3, indicating a growth in higher-level readers over time. Also, the number of EIP students who performed “Below” the stretch band decreased from 58 in Grade 5 to 44 in Grade 3. The result of a chi-squared test of independence indicated a statistically significant relationship between grade level and Lexile stretch

bands for EIP students, $\chi^2(4) = 28.22$, $p < .001$, suggesting that EIP students' reading proficiency level changed significantly from Grade 3 to Grade 5.

**Table 22**

*Crosstabulation of Grade 3 * Grade 5 Stretch Band by Learning Service*

| | | | Grade 5 | | | |
|---|---|---|---|---|---|---|
| Gender | Grade 3 → Grade 5 | | Below | Within | Above | Total |
| Regular | Grade 3 | Below | 3 | 3 | 4 | 10 |
| | | Within | 0 | 1 | 5 | 6 |
| | | Above | 0 | 0 | 1 | 1 |
| | | Total | 3 | 4 | 10 | 17 |
| Gifted | Grade 3 | Below | 0 | 0 | 3 | 3 |
| | | Within | 0 | 0 | 5 | 5 |
| | | Above | 0 | 0 | 12 | 12 |
| | | Total | 0 | 0 | 20 | 20 |
| EIP | Grade 3 | Below | 39 | 14 | 5 | 58 |
| | | Within | 5 | 6 | 8 | 19 |
| | | Above | 0 | 0 | 4 | 4 |
| | | Total | 44 | 20 | 17 | 81 |
| Special | Grade 3 | Below | 9 | 0 | 1 | 10 |
| | | Within | 1 | 0 | 0 | 1 |
| | | Above | 0 | 0 | 0 | 0 |
| | | Total | 10 | 0 | 1 | 11 |

For Special Education students, the crosstabulation results revealed a shift in Lexile stretch bands within the "Below" and "Within" categories from Grade 3 to Grade 5 (see Table 22); however, the shift was not statistically significant. Among the 10 Special Education students who were categorized as "Below" the stretch band in Grade 3, one student moved up to "Above" the stretch band, while nine remained in the "Below" category in Grade 5. In addition, the only Special Education student categorized in the "Within" stretch band in Grade 3 declined to the "Below" category in Grade 5. The result of a chi-squared test of independence indicated no statistically significant relationship between grade level and Lexile stretch bands for Special Education students, $\chi^2(1) = .11$,

$p = .740 > .05$, suggesting that Special Education students' reading proficiency level did not change significantly from Grade 3 to Grade 5.

**Data Analysis for Research Question Five**

The purpose of Research Question 5 was to understand the perceptions of teachers of grades three through five who implemented Bookworms for the 2020-2023 school years regarding the program's influence on students' reading performance as measured by a teacher survey. Survey data were used to answer this research question. The survey contains 30 questions. Questions 1-3 were asked to determine eligibility to complete the survey. Questions 4-6 requested demographic information from the teachers who responded to the survey, including their years of teaching experience, the grade level they taught, and the educational degree they hold. As previously discussed in the descriptive data section, the response rate to the teacher survey was very low. Only three valid responses were usable; however, teachers from all grade levels were represented. Their years of experience ranged from moderate (seven years) to extensive (over 20 years), indicating a breadth of teaching experience. Additionally, two teachers held Master's degrees, while one held a Bachelor's, reflecting some variation in educational attainment.

Questions 7-19 were open-ended questions asking for more specific information about teacher perceptions of different aspects of the Bookworms program; Questions 20-30 were Likert-scale questions asking for teacher perceptions of Bookworms program implementation and student learning. Because only three valid responses were available for data analysis, reporting numerical results was not meaningful. Therefore, the Likert-scale responses were analyzed qualitatively to gain a deeper understanding of teachers' levels of agreement with the provided statements. Detailed responses to the Likert-scale

questions were provided. Based on responses to the Likert-scale questions, teachers' perceptions of Bookworms' impact on student learning were mixed. Teacher 1 (T1) agreed with only two out of 11 items, Teacher 2 (T2) agreed with seven items, and Teacher 3 (T3) agreed with five items (see Appendix E). Several themes were generated based on the responses, including (1) Professional training on Bookworms, (2) Resources that Bookworms offered, (3) Factors for Bookworms implementation, and (4) Bookworms' impact on Student learning.

### *Professional Training on Bookworms*

Regarding professional training on Bookworms, T1 and T3 disagreed that they had received adequate training to implement the English Language Arts portion of Bookworms. T3 mentioned that "In our district, we did not have a specific Bookworms professional development. We were trained in-house by our academic coach." Teacher 1 (T1) also addressed a similar concern regarding professional training, "[The] District literacy coordinator trained herself on how to use Bookworms. Reading teachers were not professionally trained on what Bookworms does and how to use the program. Teachers were trained by three different personnel from the board office. Each one told the teachers different things to do and not to do."

Teachers 2 and 3 (T2 and T3) reported using the Professional Learning series (PLs) to review in-house training materials or student data. Among the materials, all teachers agreed that they were provided with specific guidelines for implementing Bookworms Shared Reading; however, Teachers 1 and 3 (T1 and T3) strongly disagreed that there were clear guidelines for implementing Bookworms Differentiated Instruction. Although only three teachers responded to the survey, the responses suggested that the

professional training was insufficient and that the guidelines for implementing differentiated instruction were unclear.

***Resources that Bookworms Offered***

Basically, all teachers agreed that the resources provided by Bookworms were appropriate for the lesson. T2 repeatedly mentioned that among the resources provided, the vocabulary portion was the most helpful. T3 recommended the shared reading portion. T3 stated, "The benefit of the Shared Reading portion is [that] students have access to wonderful books that they are able to use in the classroom. Having access to a whole set of books is a great hands-on experience for students."

They did highlight the limitations of the provided resources, which may hinder the implementation of Bookworms. Firstly, the guidelines for effectively utilizing resources were not clear. T1 mentioned the difficulties of using the resources twice. T1 stated, "I feel the resources can be difficult to use because they can be vague in how to implement and use [them] effectively. The teacher is left guessing on how to use most resources. This difficulty can make the program hard to use because you simply are not sure what to do." Teacher 1 (T1) also noted that novice teachers may have difficulty using the resource.T1 stated, "Resources do not fully explain how to use/implement them. A first-year teacher would be lost."

Second, Teacher 2 (T2) discussed the books included in the provided resources, noting that while they were suitable for students reading at grade level, they were not appropriate for those reading below grade level. T2 stated, "It is great for students on grade level. Not so much for those way below grade level. Some of the books are too

high for our students and it moves so fast. it's difficult to scaffold for our lower performing students."

Third, students may read too many books in quick succession. It would be more helpful to reduce the number of books and explore them more in-depth, aligning with state standards. T2 reiterated, "We read too many books back to back. When we could cut down on the number of books we read and dig deeper into the books with our state standards."

Lastly, T3 discussed the additional instructions or supplemental materials, such as phonics, grammar, worksheets, and assessments, that needed to be added. T3 stated, "Students are reviewing phonics and expected to learn multisyllabic words. There needs to be specific phonics instruction in the lower grades. The writing curriculum bounces around. The language portion of the writing is weak. Students need specific grammar instruction." T3 also mentioned, "I would like to see additional resources for teachers, such as worksheets or assessments that go along with each book and standard."

***Factors for Bookworms' Implementation***

In addition to problems related to insufficient professional training, unclear guidance on differentiated instruction, and limitations of the provided resources, two additional factors may influence the implementation of Bookworms. The first factor concerns the insufficient time available to cover all the Bookworms resources, as previously discussed by Teachers 2, regarding students reading too many books in quick succession. When T2 was asked about the challenges of implementing Bookworms, he/she mentioned again that the most challenging part was "the students' core reading

because this takes a lot of time when you have many students not reading on grade level." Teacher 1 (T1) expressed the same concern. T1 stated that,

> Having the time in the classroom to fully implement Bookworms. Why: There is just too much content within Bookworms. There is a lot there, and not all of it can be used or implemented. For example, I have only 45 minutes to teach reading, and I have to push to just get through my lesson. Bookworms tells you that 45 minutes is all you need, but what they assume is that all students are on grade level for reading, which simply is not the case.

The second factor is related to the scripted Bookworms curriculum. A scripted curriculum can limit teachers' flexibility and creativity, making it difficult for them to create an engaging or enjoyable learning experience. Teachers 1 and 2 (T1 and T2) disagreed that the resources provided by Bookworms increased student engagement. T2 explained, "Bookworms is scripted, and this makes it challenging to make learning fun when it's scripted." T3 also elaborated, "…to follow the script can be a challenge and does not allow the teacher to have the freedom to make decisions for what may be best for that particular class."

***Bookworms' Impact on Student Learning***

Unlike the positive student learning outcomes identified in the quantitative data, the teachers expressed reservations toward the impact of Bookworms on student learning. Teacher 1 (T1) generally disagreed with the idea that Bookworms has a positive impact on student learning. He/she "has seen little growth," and considered that Bookworms had "very little influence" on students' reading performance. Compared to T1, Teachers 2 and 3 (T2 and T3) were more positive and agreed that Bookworms helped enhance students'

vocabulary and comprehension skills. This echoed T2's endorsement of the vocabulary component, describing it as "a great focus." T2 also agreed that Bookworms has increased students' overall reading achievement. Teachers expressed a desire for additional support to help improve student achievement while implementing Bookworms. As previously discussed, they recommended scaling back the program and reducing the number of books to prevent students from being overwhelmed. As T1 mentioned, "Scale back the program to focus on skills, and so it is not so overwhelming." T2 also echoed the same suggestions, "slow down on the number of books."

They also recommended granting teachers greater autonomy to engage students more effectively and noted that adding supplemental resources would be beneficial. T2 stated, "…give teachers autonomy to teach it their style and not have scripted texts." T3 mentioned that "I would like to see additional resources for teachers, such as worksheets or assessments that go along with each book and standard."

**Summary**

***Research Question One***

The purpose of the first research question was to understand whether participation in the Bookworms program increased third-fifth grade elementary-aged students' reading performance (Lexile scores) as measured by the GMAS standardized assessment screener during the school years 2020-2023. Paired *t*-tests and chi-squared tests of independence were conducted to analyze the results for this question. Paired *t*-test results indicated that although no control group was available for comparison in this study, this cohort of students demonstrated significant growth in Lexile mean scores from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall growth from Grade 3 to Grade 5, showing a

potential positive impact of the Bookworms program on student reading performance (see Appendix F). The chi-squared tests of independence results showed students' reading proficiency level changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 (see Appendix F). Noticeable patterns were consistently observed in the crosstabulation results from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2) a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time (see Appendix G).

***Research Question Two***

The purpose of the second Research Question was to determine the extent to which the Bookworms program had a greater impact on student growth across gender subgroups. Independent *t*-tests and chi-squared tests of independence were conducted to analyze the results for this question. Independent *t*-tests indicated that even though females scored slightly higher than males on Lexile mean scores in Grades 3 through 5, the amount of growth in mean scores from Grade 3 to Grade 4, Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 was not significantly different between them (see Appendix F). In other words, the growth rates of the gender subgroups did not differ significantly, even though their mean scores varied slightly. The chi-squared tests of independence results indicated that male and female students' reading proficiency level changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 (see Appendix F). Noticeable patterns were consistently observed in the crosstabulation results across gender subgroups from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2)

a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time (see Appendix G).

***Research Question Three***

The purpose of the third Research Question was to determine the extent to which the Bookworms program had a greater impact on student growth across ethnic subgroups. ANOVA tests and chi-squared tests of independence were conducted to analyze the results for this question. ANOVA results indicated that although the ethnic subgroups had varying Lexile scores, the growth from Grade 3 to Grade 4, Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 was not significantly different across ethnic subgroups (see Appendix F). In other words, the growth rates of the ethnic subgroups did not differ significantly, even though their mean scores varied slightly. The chi-squared tests of independence results indicated that African-American and White students' reading proficiency level changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 (see Appendix F). The reading proficiency level of Hispanic students also changed significantly from Grade 3 to Grade 4. Noticeable patterns were consistently observed in the crosstabulation results across ethnic subgroups from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2) a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time, with a few exceptions among Hispanic students (from Grade 3 to Grade 4), White and Multi-Racial students (from Grade 4 to Grade 5) (see Appendix G).

### *Research Question Four*

The purpose of the fourth Research Question was to determine the extent to which the Bookworms program had a greater impact on student growth across learner service subgroups. ANOVA tests and chi-squared tests of independence were conducted to analyze the results for this question. ANOVA results indicated that although the learner service subgroups had varying Lexile scores, the growth from Grade 3 to Grade 4, Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 was not significantly different across learner service subgroups (see Appendix F). In other words, the growth rates of the learner service subgroups did not differ significantly, even though their mean scores varied slightly. The chi-squared tests of independence results indicated that EIP students' reading proficiency level changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5. Gifted students' reading proficiency level also changed significantly from Grade 3 to Grade 4 (see Appendix F). Noticeable patterns were consistently observed in the crosstabulation results across learner service subgroups from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2) a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time, with a few exceptions among EIP students (from Grade 3 to Grade 4) and Special Education students (from Grade 3 to Grade 4, from Grade 4 to Grade 5 and from Grade 3 to Grade 5) (see Appendix G).

### *Research Question Five*

Regarding professional training on Bookworms, T1 and T3 disagreed that they had received adequate training to implement the English Language Arts portion of Bookworms. Teachers 2 and 3 (T2 and T3) reported using the Professional Learning

series (PLs) to review in-house training materials or student data. Among the materials, all teachers agreed that they were provided with specific guidelines for implementing Bookworms Shared Reading; however, Teachers 1 and 3 (T1 and T3) strongly disagreed that there were clear guidelines for implementing Bookworms Differentiated Instruction. Although only three teachers responded to the survey, the responses suggested that the professional training was insufficient and that the guidelines for implementing differentiated instruction were unclear.

Furthermore, all teachers agreed that the resources provided by Bookworms were appropriate for the lesson. T2 repeatedly mentioned that among the resources provided, the vocabulary portion was the most helpful. T3 recommended the shared reading portion. Teachers also highlighted the limitations of the provided resources, which may hinder the implementation of Bookworms. Firstly, the guidelines for effectively utilizing resources were not clear. T1 mentioned the difficulties of using the resources twice. Teacher 1 (T1) also noted that novice teachers may struggle to utilize the resource. Second, Teacher 2 (T2) discussed the books included in the provided resources, noting that while they were suitable for students reading at grade level, they were not appropriate for those reading below grade level. Third, students may read too many books in quick succession. It would be more helpful to reduce the number of books and explore them more deeply while aligning them with the state standards. Lastly, T3 discussed the additional instructions or supplemental resources, such as phonics, grammar, worksheets, and assessments, that needed to be incorporated.

In addition to problems related to insufficient professional training, unclear guidance on differentiated instruction, and limitations of the provided resources, two

additional factors may influence the implementation of Bookworms. The first factor concerns the insufficient time available to cover all of the Bookworms resources, especially when there are many students who are not reading at grade level. As seen in the student data, the number of students below the Lexile stretch band exceeds those in the "Within" and "Above" categories. The second factor is related to the scripted Bookworms curriculum. A scripted curriculum can limit teachers' flexibility and creativity, making it difficult for them to create an engaging or enjoyable learning experience. Teachers 1 and 2 (T1 and T2) disagreed that the resources provided by Bookworms increased student engagement.

Unlike the positive student learning outcomes identified in the quantitative data, the teachers expressed reservations toward the impact of Bookworms on student learning. Teacher 1 (T1) generally disagreed with the idea that Bookworms has a positive impact on student learning. Compared to T1, Teachers 2 and 3 (T2 and T3) were more positive and agreed that Bookworms helped enhance students' vocabulary and comprehension skills. This echoed T2's endorsement of the vocabulary component, describing it as "a great focus." T2 also agreed that Bookworms has increased students' overall reading performance.

Teachers expressed a desire for additional support to help improve student reading performance while implementing the Bookworms program. As previously discussed, they recommended scaling back the program and reducing the number of books to prevent overwhelming students. They also recommended granting teachers greater autonomy to engage students more effectively and noted that adding supplemental resources would be beneficial.

# Chapter V

## Conclusions, Implications, and Recommendations

Chapter 5 includes an overview of the study and a discussion of the results. These discussions help connect the findings back to the research questions and the literature reviewed in earlier chapters. Additionally, implications for practice, recommendations for future research, and conclusions are presented.

### Overview of the Study

Preparing young children for reading is important, as early literacy skills lay the foundation for further academic success. Moats and Tolman (2022) explained that during second and third grade, as students develop decoding skills to enhance word recognition and engage in regular reading practice, they typically strengthen their reading abilities and improve fluency. Usually, their reading speed advances from approximately 60 words correct per minute (WCPM) by the conclusion of first grade to about 120 WCPM in oral reading by the culmination of third grade (Hasbrouck & Tindal, 2006). Failure to achieve this milestone may result in reading being too slow and inefficient to effectively support sustained comprehension during passage reading (Moats & Tolman, 2022). Numerous researchers have found that children who experience reading difficulties in their early years are likely to face ongoing challenges with reading and writing as they progress through school, increasing their risk of eventually dropping out (Alexander et al., 1997; Ramey & Ramey, 1998).

Walpole (2022) reported that a surprisingly large number of elementary students in the United States struggle with reading. Approximately 33% of fourth-grade students struggle to reach a basic level of reading proficiency, and the majority continue to lack proficiency in reading upon completing high school. Furthermore, the study by Conner et al. (2014) revealed that children who struggle with reading are at higher risk of grade retention, dropping out of school, early parenthood, and involvement in the juvenile justice system. Walpole (2022) continued by saying that children who have grown up in a home with rich vocabulary have a more substantial advantage than those who grow up in language-poor households, leading to significant deficits that cannot be fully addressed through phonics alone. Reading is not hierarchical or sequential like math; it is more cumulative. It is a complex developmental task intricately linked to several other developmental accomplishments, including attention, memory, language, and motivation (Snow et al., 1998).

To tackle the reading challenges in the early stages of student development, Bookworms (BW) developed by Sharon Walpole and Michael McKenna (2009), can be used to assist students in decoding the alphabetic code, enhancing reading fluency, and ultimately achieving comprehension of texts (Ehri, 2010). This program encompasses the SOR at its core. Chu (2022) stated that the Science of Reading (SOR) encompasses evidence-based practices (EBPs) that synthesize research findings on effective teaching practices in reading. EBPs are activities, strategies, and interventions derived from or informed by objective evidence, typically from educational research or metrics of school, teacher, and student performance (Great Schools Partnership, 2016, para. 1). Several themes emerged when examining the EBPs behind Bookworms (BW). These include but

are not limited to (1) Phonemic Awareness, (2) Phonics, (3) Fluency, (4) Vocabulary, and (5) Comprehension.

After partnering with Open-Up Resources (OUR), Walpole and McKenna (2009) utilized their action research data and input from teachers implementing the program to refine, polish, and compile a more cohesive and comprehensive curriculum (OUR, 2022a). They included the spelling and writing portions in the curriculum in addition to advanced vocabulary and comprehension. They promoted equity in K-12 education by providing districts and schools with open access to excellent, highly-rated curricula (OUR, 2022a). The new BW program features simple, repetitive, evidence-based instructional routines and comprehensive lesson plans for whole-group, small-group, and differentiated instruction.

The current case study aimed to investigate the effectiveness of the BW program in raising student reading scores for students progressing from third to fifth grade, attending two public elementary schools in a rural school district. The school district was using reading achievement assessment data from the Georgia Milestones Assessment System (GMAS), including Lexile scores. The data were compiled from the school years 2020-2021, 2021-2022, and 2022-2023. In addition to the BW program's impact on student academic performance, this study also examined the perceptions of the teachers who taught the program. A 30-item teacher survey was created to gain both quantitative and qualitative data from the teachers' responses. The teachers must meet a set of criteria to take the survey: (1) have taught during the school years 2020-2023, (2) taught in grades three through five, and (3) taught the ELA content area. The survey contains (1) three eligibility questions, (2) three demographic questions about their years of teaching

experience, grade level taught, and the highest level of education received, (3) 13 open-ended questions about teacher perceptions of the BW program, and (4) 11 4-point Likert scale questions related to BW implementation and student learning. The collected quantitative and qualitative data were used to answer five research questions:

1. To what extent did participation in the Bookworms program increase third-fifth grade elementary-aged students' reading achievement (Lexile scores) as measured by the GMAS standardized assessment screener using reading performance scores during the school years 2020-2023?

2. To what extent did the Bookworms program have a greater impact on student growth across gender subgroups?

3. To what extent did the Bookworms program have a greater impact on student growth across ethnic subgroups?

4. To what extent did the Bookworms program have a greater impact on student growth across learner service subgroups related to (i.e., regular education learners, gifted learners, Early Intervention Program learners, and special education learners)?

5. What were the perceptions of teachers of grades three through five who implemented Bookworms for the 2020-2023 school years regarding the program's influence on students' reading achievement as measured by a teacher survey?

To answer the first question, paired *t*-tests were used to determine whether the growth in Lexile scores from Grade 3 (Year 2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significant. To answer the second question, independent *t*-tests were used to determine whether the growth in Lexile mean scores from Grade 3 (Year

2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significantly different between males and females. To answer the third question, ANOVA tests were used to determine whether the growth in Lexile mean scores from Grade 3 (Year 2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significantly different across ethnic subgroups. To answer the fourth question, ANOVA tests were used to determine whether the growth in Lexile mean scores from Grade 3 (Year 2021) to Grade 4 (Year 2022), from Grade 4 (Year 2022) to Grade 5 (Year 2023), and the overall growth from Grade 3 (Year 2021) to Grade 5 (Year 2023) was significantly different across learner service subgroups. Additional chi-squared tests of independence were conducted to see if the distribution of students across Lexile stretch bands changed significantly within each demographic subgroup from grade to grade for RQ1-RQ4. To answer the fifth question, the data were coded and analyzed to emerge themes that thoroughly understood teachers' perceptions of the implemented BW curriculum. The detailed results are presented in Chapter 4 with a summary at the end. The next section presents a discussion of the results.

## Discussions and Findings

### *Research Question One*

The purpose of the first research question was to understand whether participation in the Bookworms program increased third-fifth grade elementary-aged students' reading performance (Lexile scores) as measured by the GMAS standardized assessment screener during the school years 2020-2023. Paired *t*-tests and chi-squared tests of independence

were conducted to analyze the results for this question. The paired *t*-test results indicated that this cohort of students demonstrated significant growth in Lexile mean scores from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall growth from Grade 3 to Grade 5, showing a potential positive impact of the Bookworms program on student reading performance. The results from chi-squared tests of independence also showed that students' reading proficiency levels changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5. Noticeable patterns were consistently observed in the crosstabulation results from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2) a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time.

Although this study did not include a control group for comparing student reading performance, the results from the paired *t*-test, chi-squared tests, and crosstabulation revealed a potential positive impact of the Bookworms program on student reading performance. The findings aligned with previous studies, confirming the positive impact of the Bookworms program on student reading performance (Nacrelli, 2018; OUR, 2022a; Walpole & McKenna, 2017).

***Research Question Two***

The purpose of the second Research Question was to determine the extent to which the Bookworms program had a greater impact on student growth across gender subgroups. Independent *t*-tests and chi-squared tests of independence were conducted to analyze the results for this question. Independent *t*-tests indicated that even though females scored slightly higher than males on Lexile mean scores in Grades 3 through 5,

the amount of growth in mean scores from Grade 3 to Grade 4, Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 was not significantly different between them. In other words, although the mean scores varied slightly, the growth rates of the gender subgroups did not differ significantly. The results from chi-squared tests of independence also indicated that the reading proficiency levels of male and female students changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5. Noticeable patterns were consistently observed in the crosstabulation results across gender subgroups from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2) a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time.

Even though females scored slightly higher than males on Lexile mean scores in Grades 3 through 5, the results from the independent *t*-test, chi-squared tests, and crosstabulation revealed that gender was probably not a factor influencing growth in reading performance during the implementation of the Bookworms program. The Bookworms program seemed to benefit both gender subgroups and address their distinct reading needs. These findings highlighted the Bookworms program's potential to support diverse learners regardless of gender.

***Research Question Three***

The purpose of the third Research Question was to determine the extent to which the Bookworms program had a greater impact on student growth across ethnic subgroups. ANOVA tests and chi-squared tests of independence were conducted to analyze the results for this question. ANOVA results indicated that although the ethnic subgroups had varying Lexile scores, the growth from Grade 3 to Grade 4, Grade 4 to Grade 5, and

overall, from Grade 3 to Grade 5 was not significantly different across ethnic subgroups. In other words, although the mean scores varied slightly, the growth rates of the ethnic subgroups did not differ significantly. The results from chi-squared tests of independence also indicated that the reading proficiency levels of African-American and White students changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5. Hispanic students' reading proficiency level also changed significantly from Grade 3 to Grade 4. Noticeable patterns were consistently observed in the crosstabulation results across ethnic subgroups from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2) a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time, with a few exceptions among Hispanic students (from Grade 3 to Grade 4), White and Multi-Racial students (from Grade 4 to Grade 5).

Although African American students had the second-lowest performance in Grade 3, they continued to have the lowest performance in both Grade 4 and Grade 5. The results from the ANOVA tests, chi-squared tests, and crosstabulation revealed that ethnicity was probably not a factor influencing growth in reading performance during the implementation of the Bookworms program. The Bookworms program seemed to benefit all ethnic subgroups and address their distinct reading needs. These findings highlighted the Bookworms program's potential to support diverse learners regardless of ethnicity.

***Research Question Four***

The purpose of the fourth Research Question was to determine the extent to which the Bookworms program had a greater impact on student growth across learner service subgroups. ANOVA tests and chi-squared tests of independence were conducted to

analyze the results for this question. ANOVA results indicated that although the learner service subgroups had varying Lexile scores, the growth from Grade 3 to Grade 4, Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5 was not significantly different across learner service subgroups. In other words, although the mean scores varied slightly, the growth rates of the learner service subgroups did not differ significantly. The results from chi-squared tests of independence indicated that EIP students' reading proficiency level changed significantly from Grade 3 to Grade 4, from Grade 4 to Grade 5, and overall, from Grade 3 to Grade 5. Gifted students' reading proficiency level also changed significantly from Grade 3 to Grade 4. Noticeable patterns were consistently observed in the crosstabulation results across learner service subgroups from grade to grade, including (1) higher-level readers demonstrated consistent performance across grades, (2) a growth in higher-level readers over time, and (3) the number of lower-level readers decreased over time, with a few exceptions among EIP students (from Grade 3 to Grade 4) and Special Education students (from Grade 3 to Grade 4, from Grade 4 to Grade 5 and from Grade 3 to Grade 5).

According to the descriptive data, gifted students performed the highest in Grade 3, and this trend continued in Grades 4 and 5. Conversely, students who received special education services had the lowest performance from Grade 3 to Grade 5. Despite slight variations in mean scores, the results from the ANOVA tests showed that the growth rates of the learner service subgroups did not differ significantly. It meant learner service was probably not a factor influencing growth in reading performance during the implementation of the Bookworms program. The results from chi-squared tests and crosstabulation revealed that the Bookworms program seemed to benefit all learner

service subgroups and address their distinct reading needs, particularly for the EIP students. EIP is a state-funded program that supports K-5 students who are not meeting grade-level expectations. In addition, the impact of the Bookworms program on the Special Education students was not particularly obvious, according to crosstabulation. That conflicted with the longitudinal study by May et al. in 2024 (as cited in The Reading League, 2024, para.4), which found that students receiving special education support and those with the lowest academic performance showed the most growth on the Measure of Academic Progress (MAP) assessments. This finding suggests a need for future research.

***Research Question Five***

Although the survey response rate was low, only three responses were valid for data analysis. It is good that teachers from all grade levels were represented. Teachers' years of experience span from moderate (seven years) to extensive (20+ years), indicating a range of teaching experience. In addition, two teachers have Master's degrees, while one holds a Bachelor's, suggesting some variation in educational attainment. Several themes were generated based on the responses, including (1) Professional training on Bookworms, (2) Resources that Bookworms offered, (3) Factors for Bookworms implementation, and (4) Bookworms' impact on Student learning.

Regarding professional training on Bookworms, T1 and T3 disagreed that they had received adequate training to implement the English Language Arts portion of Bookworms. Teachers 2 and 3 (T2 and T3) reported using the Professional Learning series (PLs) to review in-house training materials or student data. Among the materials, all teachers agreed that they were provided with specific guidelines for implementing Bookworms Shared Reading; however, Teachers 1 and 3 (T1 and T3) strongly disagreed

that there were clear guidelines for implementing Bookworms Differentiated Instruction. Although only three teachers responded to the survey, the responses suggested that the professional training was insufficient and that the guidelines for implementing differentiated instruction were unclear. Didion et al. (2020) conducted a meta-analytic review of published and unpublished research from 1975 to 2017, which yielded 28 studies on the effect of teacher professional development on student reading performance. The results of their study indicated that teacher professional development has a moderate, significant, and positive average effect on student reading performance. Insufficient professional training could possibly hinder teachers' implementation of reading programs, potentially leading to negative impacts on student performance. Also, Tomlinson (2001) described differentiation as the customization of instruction to meet the unique needs of each student, emphasizing qualitative aspects and being informed by assessment results. Bookworms program incorporates a variety of teaching approaches, including whole-class, small-group, and individualized instruction, to provide diverse learning opportunities and adaptability. As seen in the student data, the number of students below the Lexile stretch band exceeds that in the "Within" and "Above" categories. Differentiated instruction was crucial to ensure that students at all reading levels received support. This echoed T1 and T2's discussions about the appropriateness of resources and the need for additional time to serve students whose reading skills are below grade level. Thus, the lack of specific guidelines on differentiated instruction is an issue worthy of attention.

Furthermore, all teachers agreed that the resources provided by Bookworms were appropriate for the lesson. T2 repeatedly mentioned that among the resources provided,

the vocabulary portion was the most helpful. T3 recommended the shared reading portion. Teachers also highlighted the limitations of the provided resources, which may hinder the implementation of Bookworms. First of all, the guidelines for effectively using resources were not clear. T1 mentioned twice about the difficulties of using the resources. Teacher 1 (T1) also noted that novice teachers may have difficulty using the resource. Teachers mentioned the difficulties in using available resources but did not provide specific details. Clear guidelines on effective resource use and best practices are essential. Without such guidelines, providing exemplary lesson plans or co-teaching demonstrations could model best practices to help teachers better adopt the Bookworms program and use its resources more effectively (Friend, 2016). Second, Teacher 2 (T2) discussed the books included in the provided resources, noting that while they were suitable for students reading at grade level, they were not appropriate for those reading below grade level. This reflects a lack of differentiated instruction and raises concerns about the appropriateness of the available resources in the Bookworms program. As previously discussed, the number of students performing below the Lexile stretch band exceeds that in the "Within" and "Above" categories, highlighting the need to provide resources that address the full spectrum of student reading needs. Third, students may read too many books in quick succession. It would be more helpful to reduce the number of books and explore them more deeply while aligning them with the state standards. Slowing down instruction and allowing students adequate time to absorb information is vital for deep learning and long-term memory retention. While students are rushed through a large amount of content at once, their short-term memory becomes overloaded (Sweller, 1988). They may struggle to process new information, make meaningful

connections, retain it, and apply it to new contexts. Lastly, T3 discussed the additional instructions or supplemental resources, such as phonics, grammar, worksheets, and assessments, that needed to be added. Teachers need to engage in thorough discussions about students' actual needs based on their reading levels and be provided with supplemental resources to support effective implementation.

In addition to problems related to insufficient professional training, unclear guidance on differentiated instruction, and limitations of the provided resources, two additional factors may influence the implementation of Bookworms. The first factor concerns the insufficient time available to cover all of the Bookworms resources, especially when there are many students who are not reading at grade level. As previously discussed, the number of students below the Lexile stretch band exceeds that in the "Within" and "Above" categories. This echoes concerns about the need for time to process new information and the appropriateness of the resources provided. It is especially important when working with many students who are reading below grade level. When students are rushed through a large amount of content at once, their short-term memory can become overloaded (Sweller, 1988). The second factor is related to the scripted Bookworms curriculum. Bookworms is a scripted reading program that includes commercially developed instructional materials, requiring teachers to follow a scripted format during lesson delivery (Demko, 2010). While a scripted reading program offers benefits such as reducing the burden of teacher-led planning and increasing focus on knowledge transfer to enhance reading comprehension (Griffith, 2008), it also has limitations. These include limiting teachers' flexibility and creativity, which may hinder their ability to provide students with engaging and enjoyable learning experiences. As

previously discussed, Teachers 1 and 2 (T1 and T2) disagreed that the resources provided by Bookworms increased student engagement.

Unlike the positive student learning outcomes identified in the quantitative data, the teachers expressed reservations toward the impact of Bookworms on student learning. Teacher 1 (T1) generally disagreed with the idea that Bookworms has a positive impact on student learning. Compared to T1, Teachers 2 and 3 (T2 and T3) were more positive and agreed that Bookworms helped enhance students' vocabulary and comprehension skills. This echoed T2's endorsement of the vocabulary component, describing it as "a great focus." T2 also agreed that Bookworms has increased students' overall reading achievement. Teachers expressed a desire for additional support to help improve student reading performance while implementing the Bookworms program. As previously discussed, they recommended scaling back the program and reducing the number of books to prevent students from being overwhelmed. They also recommended granting teachers greater autonomy to engage students more effectively and noted that adding supplemental resources would be beneficial. These suggestions were addressed earlier in the discussion.

**Implications for Practice**

There are several implications based on the findings of the study:

Firstly, the findings from the student data revealed a potential positive impact of the Bookworms program on student reading performance, highlighting its potential to support diverse learners, regardless of gender and ethnicity. Regarding the learner service students received, the Bookworms program seemed to benefit all learner service subgroups and address their distinct reading needs, particularly for the EIP students. It is

worth noting that, based on the crosstabulation results, the proficiency level changes for Special Education students were not particularly evident, highlighting the need for future examination of the relationship between the BW implementation and this group of students.

Although the survey response rate was low, only three responses were valid for data analysis. Teachers indicated that professional training was insufficient and that the guidelines for implementing differentiated instruction were unclear. Insufficient professional training may hinder teachers' implementation of reading programs, potentially leading to negative impacts on student performance. Thus, it is vital to provide teachers with appropriate professional training so they know how to better implement the Bookworms program. Also, as seen in the student data, the number of students below the Lexile stretch band exceeds those in the "Within" and "Above" categories. Thus, specific guidelines of differentiated instruction are needed to ensure that students at all reading levels are supported.

Furthermore, teachers mentioned that the guidelines for effectively using resources were unclear. Novice teachers may struggle to utilize the resource. Clear guidelines on effective resource use and best practices are essential. Without such guidelines, providing exemplary lesson plans or co-teaching demonstrations could model best practices to help teachers better adopt the Bookworms program and use its resources more effectively (Friend, 2016).

Teachers also addressed concerns about the appropriateness of the available resources in the Bookworms program. As shown in the student data, the number of students performing below the Lexile stretch band exceeds those in the "Within" and

“Above” categories, highlighting the need to provide resources that address the full spectrum of student reading needs.

In addition, students may read too many books in quick succession. It would be more helpful to reduce the number of books and explore them more deeply while aligning them with the state standards. Slowing down instruction and allowing students adequate time to absorb information is vital for deep learning and long-term memory retention. While students are rushed through a large amount of content at once, their short-term memory becomes overwhelmed (Sweller, 1988). It would prevent them from processing new information, making meaningful connections, retaining it, and applying it to new contexts.

Teachers also need to engage in thorough discussions about students’ actual needs based on their reading levels. They should be provided with additional instructions or supplemental resources to support effective implementation. These include phonics and grammar instruction, as well as worksheets and assessments..

Moreover, teachers are concerned about the insufficient time available to cover all of the Bookworms resources, especially when there are many students who are not reading at grade level. As seen in the student data, the number of students below the Lexile stretch band exceeds that in the “Within” and “Above” categories. When students are rushed through a large amount of content at once, their short-term memory can become overloaded (Sweller, 1988). This may hinder students’ ability to absorb new information, make meaningful connections, remember what they have learned, and use it in different situations.

Teachers are also concerned about the scripted Bookworms curriculum. While a scripted program offers benefits such as reducing the burden of teacher-led planning and increasing focus on knowledge transfer to enhance reading comprehension (Griffith, 2008), it also has limitations. These include limiting teachers' flexibility and creativity, hindering their ability to provide students with engaging and enjoyable learning experiences. Allowing more flexibility in the curriculum arrangement helps resolve this issue.

Unlike the positive student learning outcomes identified in the quantitative data, the teachers expressed reservations toward the impact of Bookworms on student learning. Teachers 2 and 3 (T2 and T3) only agreed that Bookworms helped enhance students' vocabulary and comprehension skills. T2 also agreed that Bookworms has increased students' overall reading achievement. They expressed a desire for additional support to help improve student reading performance while implementing Bookworms: (1) scaling back the program, (2) reducing the number of books to prevent overwhelming students, (3) granting teachers greater autonomy to engage students more effectively, and (4) incorporating supplemental resources would be beneficial.

**Recommendations for Future Research**

There are several recommendations for future research:

First, the response rate to the teacher survey was very low. Future research may use a different approach to gather qualitative data, such as classroom observations. This could provide deeper insights into how teachers implement the program and interact with students in real time. It also helps reduce issues related to memory recall, as in this study, where teachers were asked to respond to survey questions about their experiences that

occurred several years ago. Recalling the exact details of those experiences with Bookworms' implementation can be difficult.

As shown in the student data, the Bookworms program had no evident impact on the reading performance of the special education subgroup. Future research could investigate this area to gain a deeper understanding of the reading needs of students with special education needs. Such research could also inform the development of differentiated instructions and targeted resources to support their learning more effectively.

**Conclusions**

The current study aimed to investigate the effectiveness of the BW program in improving reading performance among 150 students transitioning from third to fifth grade, who attended two public elementary schools in a rural school district. The school district used Lexile scores from the Georgia Milestones Assessment System (GMAS). The data were compiled from the school years 2020-2021, 2021-2022, and 2022-2023. In addition to the BW program's impact on student reading performance, this study also examined the perceptions of the teachers who taught the program. A 30-item survey was created to gain both quantitative and qualitative data from the teachers' responses. Paired *t*-tests, independent *t*-tests, ANOVA, and chi-squared tests of independence were conducted to analyze the quantitative data. Qualitative data were coded and analyzed to generate themes that helped understand teachers' perceptions of the Bookworms program.

The results revealed a potential positive impact of the Bookworms program on student reading performance, highlighting its potential to support diverse learners

regardless of gender and ethnicity. Regarding the learner service students received, the Bookworms program seemed to benefit all learner service subgroups and address their distinct reading needs, particularly for the EIP students. The impact of the Bookworms program on the reading performance of the special education subgroup was not evident. Unlike the positive student learning outcomes identified in the quantitative data, the teachers expressed reservations toward the impact of Bookworms on student learning. Teachers 2 and 3 (T2 and T3) agreed that Bookworms helped enhance students' vocabulary and comprehension skills. T2 also agreed that Bookworms has increased students' overall reading achievement.

Teachers emphasized the needs of (1) sufficient professional training, (2) specific guidelines on differentiated instruction, (3) specific guidelines for effectively using resources, (4) enough time for implementation, (5) appropriate resources to address the full spectrum of student reading needs, (6) scaling back the program and reduce the number of books and (7) incorporating additional instructions or supplemental resources, such as phonics, grammar, worksheets, and assessments, (8) allowing some flexibility from the scripted Bookworms curriculum, to support effective program implementation.

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# Appendix A:

# Teacher Survey

**Teacher Survey**

Dear Teachers,

My name is Autumn Miller. I am a doctoral student in the Department of Leadership, Technology, & Workforce Development at Valdosta State University. I want to invite you to participate in a survey for a research project titled "Teachers Perceptions and the Effects of the Bookworms Curriculum Instruction on Third through Fifth Grade Students' Academic Performance on the Georgia Milestones Assessment." The research aims to understand your perception of Bookworms curriculum implementation. There are no known risks if you decide to participate in this research; there are no costs to you for participating in the research as well. No one, including the researcher, can associate your responses with your identity. There is no question about identifiable private information in this research; all data received will remain confidential. Only the researcher and Valdosta State University Institutional Review Board will have access to the research materials. The information you provide will form the basis for future research and may be used in scholarly publications. The information collected will help educators learn more about Bookworms curriculum. Your participation in this research is voluntary, and you may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer.

In appreciation of your participation, you will fill out a separate form to provide your names and e-mails once the survey has been completed and returned. I will contact you and email you an Amazon gift card for $10. Your contact information will also be entered into a drawing for a $25 Amazon gift card.

Questions regarding the purpose or procedures of the research should be directed to Autumn Miller at amoverstreet@valdosta.edu. This research has been exempted from Institutional Review Board (IRB) review in accordance with Federal regulations. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the IRB Administrator at 229-253-2947 or irb@valdosta.edu.

You must be at least 18 years of age to participate in this study. If you agree to participate in this research, please click "Agree" to start the survey. Your selection serves as your voluntary agreement to participate in this research and your certification that you are 18 or older.

**Agreement to Participate**: By clicking the "agree" button, I am indicating that I am 18 years of age or older and I agree to participate in this research.

Electronic Consent: Do you agree to participate in this research?
□Yes, I agree to participate.
□No, I declined to participate.

**Section 1: Eligibility**

1.Did you teach in your current district anytime during the school years 2020-2021, 2021-2022, or 2022-2023?
□ Yes
□ No
2.If yes, did you teach 3rd, 4th, or 5th grade ELA?
□ Yes
□ No
3.Did you implement Bookworms curriculum instruction to students during the years 2020-2021, 2021-2022, or 2022-2023?
□ Yes
□ No

**Section 2: Demographics**

4.How many years have you been teaching?
a.0-3 years
b.4-6 years
c.7-10 years
d.11-15 years
e.16-20 years
f.More than 20 years

5.Which grade level do you teach?
a.Grade 3
b.Grade 4
c.Grade 5

6.What is the highest level of education you have received?
a.Bachelor's Degree
b.Master's Degree
c.Specialist Degree
d.Doctorate Degree

**Section 3: Teacher Perceptions of Bookworms Curriculum Implementation**

7.What parts of the Bookworms professional development were beneficial to you and why?
8.What parts of the Bookworms professional development could be improved and why?
9.What aspects of implementing Bookworms are least challenging? Why?
10.What aspects of implementing Bookworms are most challenging? Why?
11.How would you describe the process of implementing the Bookworms program or its resources?
12.What do you feel is beneficial about each of these resources you use?

13. What, if any, are the limitations or weaknesses associated with each of the resources you use in the program?
14. What inside factors were there that potentially affected the implementation of Bookworms and why?
15. What outside factors were there that potentially affected the implementation of Bookworms and why?
16. In your opinion, what support(s) did you receive when implementing Bookworms?
17. How has Bookworms influenced student's reading achievement on the GMAS?
18. How has Bookworms influenced student's reading achievement overall?
19. What suggestions or ideas do you have for additional support(s) to help increase student achievement?

**Section 4: Bookworms Curriculum Implementation and Student Learning**

The following questions will use a 4-point Likert Scale Response. You will need to choose one of the following: Strongly Disagree, Disagree, Agree, or Strongly Agree.

| Likert Scale Responses | Strongly Disagree | Disagree | Agree | Strongly Agree |
|---|---|---|---|---|
| 20. The implementation of Bookworms has increased students' phonic skills. | | | | |
| 21. The implementation of Bookworms has increased students' phonemic awareness. | | | | |
| 22. The implementation of Bookworms has increased students' fluency skills. | | | | |
| 23. The implementation of Bookworms has increased students' vocabulary skills. | | | | |
| 24. The implementation of Bookworms has increased students' comprehension skills. | | | | |
| 25. The implementation of Bookworms has increased students' overall reading achievement. | | | | |
| 26. I was provided with adequate training to implement the English Language Arts portion of Bookworms. | | | | |
| 27. I was provided with specific guidelines on how to implement Bookworms Shared Reading. | | | | |
| 28. I was provided with specific guidelines on how to implement Bookworms Differentiated Instruction. | | | | |
| 29. The resources provided by Bookworms have increased student engagement. | | | | |
| 30. The resources provided by Bookworms were appropriate for the lesson. | | | | |

## Appendix B:

## Permission Letter from the Superintendent

# Permission Letter from the Superintendent

**Teachers Perceptions and The Effects of the Bookworms Curriculum Instruction on Third through Fifth Grade Students' Academic Performance on the Georgia Milestones Assessment**

I am a doctoral candidate at Valdosta State University. I am seeking permission to conduct research in the Brooks County Public School District elementary schools. The purpose of this case study is to look at the effects the Bookworms curriculum has had on students' Lexile scores during the years of 2020 – 2023 academic years as well as gather teachers' perceptions about the program and its implementation. If you grant permission and this study receives full approval from the institutional review board at VSU, I will collect archival data following one cohort as they progress from third to fifth grade and collect survey data from teachers who are willing to participate. All archival data and survey data will be stored digitally on a password-protected device. All names of the school, teachers, and students will be protected throughout the entire process. The only other individual that will have access to the data is Dr. E-Ling Hsiao, the dissertation chair.

There are no known risks associated with this study. The teachers who choose to participate will be provided with a consent to participate form. In that form, they will be informed they are able to voluntarily withdraw from the study at any time without any consequences. In appreciation of volunteering their time, I will give each participant a gift card in the amount of $10 to Amazon. Once all surveys have been completed, I will have a drawing for a $25 gift card to Amazon.

If you agree to allow me to conduct this study, please sign at the bottom of this letter. Your signature indicates that you grant permission to me to conduct this study as outlined above and have full knowledge of the purpose of the study and all details regarding the data collection process and storage procedures that will be used. A copy of this consent form will be given to you for your records. If you have any questions regarding this study, please contact me at autumnmiller@lowndes.k12.ga.us.

Autumn Miller

Autumn Miller, Valdosta State University, Doctoral Candidate

District official granting permission

Dr. Vickie Reed, Superintendent, Brooks County Public School System

Signature

12/4/23

Date

## Appendix C:

## IRB Approval

# IRB Approval

***Institutional Review Board (IRB)***
***for the Protection of Human Research Participants***

**PROTOCOL EXEMPTION REPORT**

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**Protocol Number:** 04519-2024

**Responsible Researcher(s):** Autumn Miller

**Supervising Faculty:** Dr. E-Ling Hsiao

**Dissertation Research Member:** Dr. E-Ling Hsiao

**Project Title:** *Perceptions and Implementation Factors of the Bookworms Curriculum on Third through Fifth Grade Students' Reading Performance.*

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**INSTITUTIONAL REVIEW BOARD DETERMINATION:**

This research protocol is **exempt** from Institutional Review Board (IRB) oversight under 45 CFR 46.101(b) of the federal regulations, **category 2**. If the nature of the research changes such that exemption criteria no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research study.

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**ADDITIONAL COMMENTS:**

- *Participants must sign the VSU Participant Payment Log upon receipt of a gift card. It is permissible for participants to digitally sign the form (i.e. docusign). The participant payment log may be emailed to the participant for signature. Participants must email their signed payment log sheet to the researcher. Participant payment log sheets are subject to audit and must be kept with research data for the required 3-years.*
- *Exempt protocol guidelines **permit** the recording of interview/focus group sessions provided recordings are made to create an accurate transcript. Exempt guidelines **prohibit** the collection, storage, and/or sharing of recordings. Therefore, upon creation of the transcript, the recorded interview/focus group session must be deleted from all recording and storage devices used.*
- *In keeping with established consent guidelines, audio/video recordings must include the researcher reading aloud the consent statement, confirming participant understanding, and establishing their willingness to take part in the interview. Participants must be provided with a copy of the research statement. The transcript must document the researcher reading and obtaining consent.*
- *Pseudonym lists must be kept in a separate, secure file from corresponding name lists.*
- *Upon completion of the research study all data (e.g. data, pseudonym list, email list, transcript, payment logs, etc.) must be securely maintained (e.g. locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a **minimum of 3 years**. At the end of the required time, collected data must be permanently destroyed.*

☒ ***Please submit any documents you revise to the IRB Administrator at tmwright@valdosta.edu to ensure an updated record of your exemption.***

---

*Elizabeth W. Olphie* 05.27.2024

Elizabeth W. Olphie, IRB Administrator Date

***Thank you for submitting an IRB application.***
***Please direct questions to irb@valdosta.edu or 229-259-5045.***

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*Revised: 06.02.16*

## Appendix D:

## Invitation E-Mail

## Invitation E-Mail

Dear Teachers,

My name is Autumn Miller. I am a doctoral student in the Department of Leadership, Technology, & Workforce Development at Valdosta State University. I would like to invite you to participate in an anonymous survey for a research project titled "Teachers Perceptions and the Effects of the Bookworms Curriculum Instruction on Third through Fifth Grade Students' Academic Performance on the Georgia Milestones Assessment." The research aims to understand your perception of Bookworms curriculum implementation. There are no known risks if you decide to participate in this research; there are no costs to you for participating in the research as well. No one, including the researcher, can associate your responses with your identity. There is no question about identifiable private information in this research; all data received will remain confidential. Only the researcher and Valdosta State University Institutional Review Board will have access to the research materials. The information you provide will form the basis for future research and may be used in scholarly publications. The information collected will help educators learn more about Bookworms curriculum. Your participation in this research is voluntary, and you may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. In appreciation of your participation once you have completed the survey and I have a record of it, I will send you an Amazon gift card in the amount of $10 and there will also be a drawing for a gift card for $25.

Questions regarding the purpose or procedures of the research should be directed to Autumn Miller at amoverstreet@valdosta.edu. This research has been exempted from Institutional Review Board (IRB) review in accordance with Federal regulations. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the IRB Administrator at 229-253-2947 or irb@valdosta.edu.

You must be at least 18 years of age to participate in this research. If you agree to participate in this research, please click "Agree" to start the survey. Your selection serves as your voluntary agreement to participate in this research and your certification that you are 18 or older.

Thank you!

Survey URL:XXXXX

## Appendix E:

## Responses to Section 4 of the Teacher Survey

**Responses to Section 4 of the Teacher Survey**

| Likert Scale Responses | T1 | T2 | T3 |
|---|---|---|---|
| 4-20. The implementation of Bookworms has increased students' phonic skills. | Disagree | Disagree | Strongly disagree |
| 4-21. The implementation of Bookworms has increased students' phonemic awareness. | Disagree | Strongly disagree | Disagree |
| 4-22. The implementation of Bookworms has increased students' fluency skills. | Disagree | Disagree | Disagree |
| 4-23. The implementation of Bookworms has increased students' vocabulary skills. | Disagree | Strongly agree | Strongly agree |
| 4-24. The implementation of Bookworms has increased students' comprehension skills. | Disagree | Agree | Agree |
| 4-25. The implementation of Bookworms has increased students' overall reading achievement. | Disagree | Agree | Disagree |
| 4-26. I was provided with adequate training to implement the English Language Arts portion of Bookworms. | Strongly disagree | Agree | Disagree |
| 4-27. I was provided with specific guidelines on how to implement Bookworms Shared Reading. | Agree | Agree | Agree |
| 4-28. I was provided with specific guidelines on how to implement Bookworms Differentiated Instruction. | Strongly disagree | Agree | Strongly disagree |
| 4-29. The resources provided by Bookworms have increased student engagement. | Disagree | Disagree | Agree |
| 4-30. The resources provided by Bookworms were appropriate for the lesson. | Agree | Agree | Agree |

*Note*. T1 – Teacher 1; T2 – Teacher 2; T3 – Teacher 3

## Appendix F:

## Summary of Statistically Significant Results (RQ1-RQ4)

## Summary of Statistically Significant Results (RQ1-RQ4)

| RQs | Performance | Demographic | Significant Results | |
|---|---|---|---|---|
| **RQ1** | Lexile® Scores | - | Grade 3 -> Grade 4 | $t(128) = 14.39$, $p < .001$, $d = 1.267$ |
| | | | Grade 4 -> Grade 5 | $t(128) = 12.70$, $p < .001$, $d = 1.118$ |
| | | | Grade 3 -> Grade 5 | $t(128) = 27.05$, $p < .001$, $d = 2.381$ |
| | Lexile® Stretch Bands | - | Grade 3 -> Grade 4 | $\chi^2(4) = 69.84$, $p < .001$ |
| | | - | Grade 4 -> Grade 5 | $\chi^2(4) = 60.41$, $p < .001$ |
| | | - | Grade 3 -> Grade 5 | $\chi^2(4) = 53.36$, $p < .001$ |
| **RQ2** | Lexile® Growth Scores | - | Grade 3 -> Grade 4 | No |
| | | | Grade 4 -> Grade 5 | No |
| | | | Grade 3 -> Grade 5 | No |
| | Lexile® Stretch Bands | Male | Grade 3 -> Grade 4 | $\chi^2(4) = 26.29$, $p < .001$ |
| | | | Grade 4 -> Grade 5 | $\chi^2(4) = 35.90$, $p < .001$ |
| | | | Grade 3 -> Grade 5 | $\chi^2(4) = 29.36$, $p < .001$ |
| | | Female | Grade 3 -> Grade 4 | $\chi^2(4) = 45.37$, $p < .001$ |
| | | | Grade 4 -> Grade 5 | $\chi^2(4) = 25.66$, $p < .001$ |
| | | | Grade 3 -> Grade 5 | $\chi^2(4) = 26.36$, $p < .001$ |
| **RQ3** | Lexile® Growth Scores | - | Grade 3 -> Grade 4 | No |
| | | | Grade 4 -> Grade 5 | No |
| | | | Grade 3 -> Grade 5 | No |
| | Lexile® Stretch Bands | AA | Grade 3 -> Grade 4 | $\chi^2(4) = 42.95$, $p < .001$ |
| | | | Grade 4 -> Grade 5 | $\chi^2(4) = 32.26$, $p < .001$ |
| | | | Grade 3 -> Grade 5 | $\chi^2(4) = 34.67$, $p < .001$ |
| | | Hispanic | Grade 3 -> Grade 4 | $\chi^2(4) = 10.76$, $p = .029 < .05$ |
| | | | Grade 4 -> Grade 5 | No |
| | | | Grade 3 -> Grade 5 | No |
| | | White | Grade 3 -> Grade 4 | $\chi^2(4) = 22.65$, $p < .001$ |
| | | | Grade 4 -> Grade 5 | $\chi^2(4) = 17.51$, $p = .002 < .05$ |
| | | | Grade 3 -> Grade 5 | $\chi^2(4) = 14.97$, $p = .005 < .05$ |
| | | Multi-Racial | Grade 3 -> Grade 4 | No |
| | | | Grade 4 -> Grade 5 | $\chi^2(1) = 4.00$, $p = .046 < .05$ *a |
| | | | Grade 3 -> Grade 5 | No |
| **RQ4** | Lexile® Growth Scores | - | Grade 3 -> Grade 4 | No |
| | | | Grade 4 -> Grade 5 | No |
| | | | Grade 3 -> Grade 5 | No |
| | Lexile® Stretch Bands | Regular Education | Grade 3 -> Grade 4 | No |
| | | | Grade 4 -> Grade 5 | No |
| | | | Grade 3 -> Grade 5 | No |
| | | Gifted | Grade 3 -> Grade 4 | $\chi^2(4) = 10.27$, $p = .036 < .05$ |
| | | | Grade 4 -> Grade 5 | N/A |
| | | | Grade 3 -> Grade 5 | N/A |
| | | EIP | Grade 3 -> Grade 4 | $\chi^2(4) = 27.23$, $p < .001$ |
| | | | Grade 4 -> Grade 5 | $\chi^2(4) = 23.26$, $p < .001$ |
| | | | Grade 3 -> Grade 5 | $\chi^2(4) = 28.22$, $p < .001$ |
| | | Special Education | Grade 3 -> Grade 4 | No |
| | | | Grade 4 -> Grade 5 | $\chi^2(2) = 11.00$, $p = .004 < .05$ *b |
| | | | Grade 3 -> Grade 5 | No |

*Note.* *a - For Multi-Racial students, despite no shifts in Lexile stretch band categories within the "Below" and "Above" groups from Grade 4 to Grade 5, the chi-square test yielded a statistically significant result, possibly due to low expected cell counts. *b - For Special Education students, only a shift occurred within the "Within" group from Grade 4 to Grade 5, which likely contributed to the significant chi-square result due to altered distribution and low expected cell counts.

## Appendix G:

## Summary of Crosstabulation Results (RQ1-RQ4)

## Summary of Crosstabulation Results (RQ1-RQ4)

| RQs | Demographic | Noticeable Shifts in Crosstabulation of Lexile Stretch Bands | | | |
|---|---|---|---|---|---|
| | | Growth | S1 | S2 | S3 |
| RQ1 | - | Grade 3 -> Grade 4 | X | X | X |
| | - | Grade 4 -> Grade 5 | X | X | X |
| | - | Grade 3 -> Grade 5 | X | X | X |
| RQ2 | | Grade 3 -> Grade 4 | X | X | X |
| | Male | Grade 4 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 4 | X | X | X |
| | Female | Grade 4 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 5 | X | X | X |
| RQ3 | AA | Grade 3 -> Grade 4 | X | X | X |
| | | Grade 4 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 5 | X | X | X |
| | Hispanic | Grade 3 -> Grade 4 | X | X | - |
| | | Grade 4 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 5 | X | X | X |
| | White | Grade 3 -> Grade 4 | X | X | X |
| | | Grade 4 -> Grade 5 | X | X | - |
| | | Grade 3 -> Grade 5 | X | X | X |
| | Multi-Racial | Grade 3 -> Grade 4 | X | X | X |
| | | Grade 4 -> Grade 5 | X | - | - |
| | | Grade 3 -> Grade 5 | X | X | X |
| RQ4 | Regular | Grade 3 -> Grade 4 | X | X | X |
| | Education | Grade 4 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 5 | X | X | X |
| | Gifted | Grade 3 -> Grade 4 | X | X | X |
| | | Grade 4 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 5 | X | X | X |
| | EIP | Grade 3 -> Grade 4 | X | X | - |
| | | Grade 4 -> Grade 5 | X | X | X |
| | | Grade 3 -> Grade 5 | X | X | X |
| | Special | Grade 3 -> Grade 4 | - | X | X |
| | Education | Grade 4 -> Grade 5 | X | - | - |
| | | Grade 3 -> Grade 5 | - | X | - |

*Note*. S1 - Higher-level readers demonstrated consistent performance across grades.
S2 - A growth in higher-level readers over time.
S3 - The number of lower-level readers decreased over time.