TECHNOLOGY IN LITERACY: EXPLORING THE POSSIBILITIES

CAN TECHNOLOGY INTEGRATION ENHANCE THE

READING EXPERIENCE FOR OUR STRIVING LEARNERS?

by

JESSICA MARIE BAXTER

(Under the Direction of Linda D. Labbo)

ABSTRACT

Researchers have shown that the rapid influx of technology is greatly influencing the requirements and resources available for those considered literate within contemporary society and consequentially within literacy classrooms (Coiro, Knobel, Lankshear, and Leu, 2008). Educational statisticians have indicated that particular student groups are experiencing difficulty in learning to read within these literacy classrooms (National Research Council, 2002; Planty et al., 2009). What we do not know is the potential for the reading experience of striving readers to be improved when technology is integrated within the everyday literacy instruction of the classroom teacher.

This formative experiment was designed to explore how and why an elementary teacher chose to integrate AWARD Reading resources, specific literacy materials included within an innovative collection of curricular resources embedded with a suite of technology capabilities, to encourage unique literacy learning experiences for striving readers. The purposefully selected sample was composed of one third grade teacher and her class of 20 striving learners. Data was collected during an initial two-week baseline phase followed by two four-week intervention

phases. Data collection methods included classroom observations, interviews, document analysis, and focus group interviews. Data was analyzed using the constant comparative method.

Findings from this study revealed that when technology was integrated in purposeful ways striving learners were offered customized learning opportunities. Students benefitted from the additional designs offered within the interactive technology resources. Additionally, the teacher selected and used technology to increase access to text and provide opportunities for students to practice particular reading skills independently. Both the classroom teacher and students expanded their conceptions of reading to account for the network of processing systems used to improve comprehension (Pinnell & Fountas, 2009). Barriers to effective technology integration concerning difficulty with technology and teacher decision making were identified and addressed throughout implementation of the study. Findings from the study were discussed with reflection to theoretical frameworks of Universal Design for Learning, Multiliteracies, and Sociocognitive theory. Implications for future research and practice are also discussed.

INDEX WORDS: AWARD Reading, Striving readers, Multiliteracies, Elementary grades, Comprehension, Formative experiment, Technology integration, Assistive technology, Available designs

TECHNOLOGY IN LITERACY: EXPLORING THE POSSIBILITIES

CAN TECHNOLOGY INTEGRATION ENHANCE THE

READING EXPERIENCE FOR OUR STRIVING LEARNERS?

by

JESSICA MARIE BAXTER

B.S., Georgia College and State University, 2004

M.Ed., Albany State University, 2006

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2010

TECHNOLOGY IN LITERACY: EXPLORING THE POSSIBILITIES

CAN TECHNOLOGY INTEGRATION ENHANCE THE

READING EXPERIENCE FOR OUR STRIVING LEARNERS?

by

JESSICA MARIE BAXTER

Major Professor: Linda D. Labbo

Committee: Betty S. Bisplinghoff
Victoria D. Hasko

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
July 2010

DEDICATION

This study is dedicated to the many striving learners working with great perseverance in our schools. I hope and pray that you will never give up on your dreams. I also dedicate my work to each and every teacher who shares my passion for improving the literacy experience for all students by going the extra mile to be certain that no one slips through the cracks. As expressed best in the words of my father, I am thankful for those of us able to see teaching as not simply a job, but rather an adventure. May we never lose sight of the potential we have to make a difference in the lives of our students.

ACKNOWLEDGEMENTS

Where should I begin? There are so many individuals I would like to thank for helping me to achieve my dream of graduating from the Language and Literacy Education doctoral program at the University of Georgia. I believe that God prepared a way for me to achieve His purpose by bringing people into my life to support and encourage me when I needed it most.

First, I want to thank my major professor, Linda Labbo, for pushing me not only to achieve but to excel beyond the standard I set for myself. Without you, I know that my work would not have been possible. I felt inspired by your research and work in the field, supported by your teaching, and uplifted by your encouraging words in times of distress. I will always be grateful to you as you served not only as a mentor, but also as a friend along this journey.

I would also like to thank my committee members, Betty Bisplinghoff and Victoria Hasko. I appreciate your commitment to seeing me through this dissertation every step of the way. You pushed me to think outside my box with your perceptive questions. You challenged me to articulate my ideas and to write with much greater clarity with your insightful feedback. Thank you for supporting me and helping me to grow into the scholar I am today.

I want to express my gratitude to the entire faculty in the Language and Literacy Education Department for believing that I had the potential to achieve within this program. Additionally, I would like to thank Elizabeth St. Pierre for offering timely encouragement on days when I felt discouraged and downtrodden. I am also thankful to JoBeth Allen for going above and beyond in working with me to improve my writing. Finally, I offer a word of

appreciation to Deanna Palmer. You were a helper and an encourager on many days when I was at the end of my rope.

To my dear friend, Michael Boatright, I hope that the friendship that we share will continue on for many years to come. Thank you for always being there for me whether it was to lend a listening ear or to read my work and point out if you noticed a *snake in my paragraph*! I will always cherish the fun times we shared together.

To my special friends made within the Junior League of Athens and during the qualitative writing retreat, I thank you for supporting me along this journey. I also want to especially thank Lauren Seay Perry for your constant friendship and unfailing love. You will always hold a special place in my heart.

To my beloved Gant, I am so thankful for the special relationship that we share with one another. From the very beginning, you made my completion of this doctoral program a priority for you in the same way it was for me. Thank you for supporting me through rainy days and sunny skies. When days were tough, you managed to make me laugh and give me the will to continue. As I achieved small goals along the path toward completion, you celebrated with me in big ways. I appreciate you, and I love you.

I want to thank my precious family for supporting me along this journey. To Mom and Dad, I cannot begin to express my appreciation for the many ways you have helped to make my dreams come true. You have offered financial support, you have helped to edit reference pages, you have cried with me when days were tough, and you have cheered me onward each and every step of the way. Your love knows no end. Without your guidance and constant support, I would not be where I am today. Thank you from the bottom of my heart. To Shelley, Melissa, Matt, and Adam, I am so appreciative for the care and concern you have shown to me. Each one of

you met my specific needs in your own unique ways. Many times, I was able to *keep moving forward* simply because you encouraged me. I love you all so very much.

In closing, I wish to offer a special acknowledgement to Lee Watson for the tremendous role she played in inspiring my work within this study. To answer our lingering question: Yes, it is possible to save the world - one child at a time. And you can believe me, because I'm a doctor now!!!

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS v

LIST OF TABLES xi

LIST OF FIGURES xii

CHAPTER

1 INTRODUCTION 1

Influence of Technology 3

Rationale for Formative Experiment 7

Research Questions 10

Significance of the Study 11

Description of Key Terms 17

Summary 20

2 REVIEW OF THE LITERATURE 22

What Others Are Doing 22

What We Can Do Now 45

Summary 61

3 METHODOLOGY 62

Rationale for Research Approach 63

Overview of the Formative Experiment Design 64

Description of Research Site and Participants 68

Ethical Considerations....73
Data Collection Procedures....74
Data Collection Methods....78
Process of Data Analysis....88
Credibility and Trustworthiness of the Study....92
Summary....94
4 FINDINGS....95
Travel Conditions....97
AWARD Reading Resources as Tools for Travel....108
Travel Log....120
Roadblocks....147
Summary....160
5 SUMMARY, DISCUSSION, AND IMPLICATIONS....161
Summary and Discussion of Findings....161
Promising Learning Opportunities for Striving Readers....162
Study Limitations and Suggestions for Future Research and Practice....166
Final Thoughts....171
REFERENCES....177
APPENDICES
A STUDIES INVESTIGATING TECHNOLOGY AND MULTIMODALITY WITHIN LITERACY INSTRUCTION....199
B STUDIES INVESTIGATING COMPUTER SOFTWARE WITHIN LITERACY INSTRUCTION....203

C STUDIES INVESTIGATING CREATIVE RESPONSE USING TECHNOLOGY WITHIN LITERACY INSTRUCTION 207

D STUDIES INVESTIGATING TECHNOLOGY INTEGRATION FOR DEVELOPMENT OF EARLY READING SKILLS 210

E STUDIES INVESTIGATING ELECTONIC TALKING BOOKS WITHIN LITERACY INSTRUCTION 214

F STUDIES INVESTIGATING THE ROLE OF THE LITERACY TEACHER WITHIN TECHNOLOGY INTEGRATION 217

G STUDIES INVESTIGATING TECHNOLOGY INTEGRATION SPECIFICALLY WITHIN THE LITERACY TEACHING OF STRIVING LEARNERS 221

H INITIAL MEETING AGENDA 227

I TEACHER CONSENT FORM 229

J PARENTAL CONSENT FORM 231

K STUDENT ASSENT SCRIPT 233

L FORMATIVE GOALS DECISION GUIDE 235

M OBSERVATION GUIDE FOR BASELINE DATA COLLECTION 238

N BASELINE INTERVIEW GUIDE 240

O CONCLUSION OF PHASE ONE FORMAL INTERVIEW GUIDE 242

P CONCLUSION OF PHASE TWO FORMAL INTERVIEW GUIDE 246

Q OPEN AND INCIDENT TO INCIDENT CODING IN A QSR NVIVO 8.0 PROJECT 249

R MICROSOFT WORD TABLES USED TO ASSIGN OPEN CODES TO CATEGORIES 251

LIST OF TABLES

Page

Table 1.1: Alignment of AWARD Reading Resources with Formerly Studied Technology.....19

Table 3.1: Alignment of Research Questions to Information Needed to Methods.....79

Table 3.2: Three Iterations of Analysis.....89

Table 3.3: Research Question-Themes-Categories Alignment.....92

Table 5.1: Teacher Shift in Phase One and Phase Two Learner Objectives.....165

LIST OF FIGURES

Page

Figure 4.1: Classroom word wall....100

Figure 4.2: Mrs. Calhoun's classroom library....101

Figure 4.3: Testing genre chart....137

Figure 4.4: Post-it note reminders used by Mrs. Calhoun during teaching....139

Figure 4.5: Technology resources in classroom....150

Figure 4.6: Technology resources available for check out....151

Figure 4.7: Karaoke machine used in fluency center....152

Figure 4.8: Fluency center procedural modifications....156

Figure 4.9: Literacy center icon chart....159

Figure 5.1: Picture given as a gift from Austin Powell....176

CHAPTER 1

INTRODUCTION

"Ms. Baxter, I used to be like you… but then I realized you can't save the world." Blinking back the tears welling up in my eyes, I struggled to make sense of the words coming from the mouth of one of the more prominent and well-respected administrators in my rural school community in response to my request that additional literacy learning support be provided for a particular student in my third grade class. Having been retained the previous year, Lavonte had entered my classroom with little hope for himself. However, at this juncture in the school year, this student had changed in drastic ways. After all, it was only weeks before this conversation took place that he had pointed to the chapter books lining the shelf proudly proclaiming that he would read those books one day.

Is it possible that despite countless hours of one-on-one literacy tutoring and extensive efforts to establish a rapport with Lavonte that this administrator already perceived him as a lost cause? Could it be that the dreams I had for this student were of little use with minimum classroom support? Could it be possible to make a difference in the life of this student when those holding leadership positions saw little hope for success? Plagued with frustration in response to this attitude, I began to question the learning opportunities presented in modern day classrooms. Why was responding to the learning needs of Lavonte considered an effort to "save the world"?

As a white female growing up in a middle to upper class family, as described by the rural South Georgia town where I lived, opportunities for growth surrounded me. Vivid memories of my father and mother encouraging my every endeavor continue to flood my brain even today. Failure, as my happily married parents explained it, was not an option for me. Living in a positive home environment with nearly every available educational resource at my disposal, I was poised for success. Throughout my educational career, as a student, I cannot recall encountering any academic difficulty. These positive school experiences are what, I believe, led me to pursue a career in the field of education.

Upon graduating from college with a teaching degree, I confidently bounded into the interview process and quickly accepted a job offer. After all, based on my experiences, what

could possibly go wrong? It was only when I walked into my kindergarten classroom to see an eclectic body of students quite different from the students I had encountered in my school experiences that I began to feel less at ease. My class consisted primarily of minority students bringing different background experiences to the classroom than mine. Additionally, these same students were living in poverty as identified by their receipt of either a free or reduced lunch each school day. Soon thereafter, I found myself trying to understand the puzzled looks on the faces of these children I was trying to teach to read. Despite the variety of approaches I used to accommodate the unique group of students in my classroom, I found myself losing confidence as my students began to lag behind. Failure, it appeared, was, in fact, an option for me.

Why were my strategies ineffective for this group of students? Feeling increasing pressure to improve the literacy learning opportunities in my classroom and reflecting on why I was a successful reader became critical to my teaching. I soon realized that my background and the extensive array of experiences I had encountered early in life provided a foundation for understanding that was missing for my students. Unlike me, the majority of my classroom students appeared to have far fewer opportunities to explore experiences outside the home.

Keeping this in mind, I began to question a child's ability to truly comprehend a story set on the beach, for example, if they had never heard the crash of waves or felt the sand between their toes. While I could describe this experience to my students, my description could never be adequate. Throughout three years of teaching at the elementary level, I continued to observe an unequal playing field for students because of a lack of background experiences. Recognizing the continually decreasing availability of funding for field trips where students might gain access to meaningful experiences outside the home and classroom, I found myself asking if meeting the needs of all learners in the classroom was an impossible feat. Had the administrator been correct

in her perspective? Could meeting the learning needs of every student in the literacy classroom be as unlikely as "saving the world"? It was at this frustrating reflective juncture that I vowed to find a way to make a difference for each and every student regardless of background. Students, like Lavonte, were depending on me.

Influence of Technology

My research interest focuses on how technology integration could affect the literacy learning experience for striving learners in elementary classrooms. Some may question my emphasis on technology explaining that a number of other resources available to literacy teachers likewise warrant investigation. However, I attest that currently research on technology is most pertinent to the literacy education field because of its continuous increasing infiltration within schools (Cuban, 2003). As I began to consider the vast availability of technology to all students attending school, my desire to explore how this resource might improve literacy learning opportunities grew. We acknowledge that much diversity exists within contemporary classrooms where students possess unique strengths, weaknesses, learning styles, and background experiences (Yatvin, 2004). What difference could this widely available resource of technology make in terms of leveling the playing field for students from various backgrounds in our classrooms?

An ability to read and write is pertinent to the successful assimilation of any individual into modern society. Occasions for one to exercise literacy abilities occur on a daily basis ranging from reading a bill arriving in the mail to ensure a timely response for continued utility use to using written language to fill out a job application for potential future employment. The rapid emergence of technology has additionally shaped how society differentiates between literate and illiterate individuals. Present-day expectations for literate individuals are expanding

to include a new set of abilities, termed new literacies that are of increasing importance if one desires to make efficient use of emerging technologies (Burnett, Dickinson, Myers, & Merchant, 2006; Cope & Kalantzis, 2000; Labbo, Reinking, & McKenna, 1998). Examples of new literacies required by these emerging technologies include making decisions for the successful playing of video games (Gee, 2007), using a mouse to navigate among the hypertext of the internet to gather information (Leu, Kinzer, Coiro, and Cammack, 2004), participating in virtual reality simulations for social engagement (Merchant, 2009), and critically evaluating the mass information available on the World Wide Web for use in problem solving (Bilal, 2000).

These progressively changing societal expectations for what constitutes a literate individual are likewise influencing the nature of reading education in modern classrooms. Educators are beginning to recognize the role that technology integration within instruction may play in supporting traditional literacies of the past while simultaneously providing learning opportunities for students to develop new literacies of the present and future (Taffe & Gwinn, 2007). Enter a contemporary classroom with the benefit of a technologically rich environment and the traditionally recognized audible evidence for learning will differ greatly from sounds heard within classrooms of years past. While the rustling of papers combined with the tapping of pencil to paper previously predominated classroom environments, changes in the nature of literacy in response to ever-emerging technologies are subsequently influencing learning environments (Coiro, Knobel, Lankshear, & Leu, 2008; Gambrell, 2006). For this reason, research over the past decade has transitioned from asking whether technology is valuable to the learning of young children to exploring how educators might utilize technology to maximize student learning potential (Clements, 1999).

Research investigating the influence of computers and technology on literacy development has been ongoing within the educational arena for an extended period. Atkinson and Hansen (1966) initiated the scholarly quest with a study investigating the potential for the Stanford Computer-assisted Instructional (CAI) system to develop early literacy learners at their own learning rate without the need for a teacher present. However, this line of inquiry spurs onward today with incorporations of additional technologies and further exploration of the role of both the teacher and students for most effective literacy instruction.

Researchers have begun to explore how integration of assistive technologies could benefit students with special needs in contemporary literacy educational settings. Utilization of assistive technology can be grouped according to whether it is used to provide access to text, termed compensatory support, or to improve the reading skills of a student serving as a remedial support (Edyburn, 2006). In a review of the research exploring technology use with striving readers, Strangman and Dalton (2005) cited an increased accessibility to text, for students who previously experienced difficulty due to an inability to decode, when technology capabilities of computer-mediated text, text-to-speech, speech recognition, hypermedia and computer programs were used. Use of technology features to provide direct access to the text frees up the cognitive capacity of striving learners to focus more intently on aspects of comprehension and reading for understanding (Doty, Popplewell, & Byers, 2001; Pearman, 2008). Embedded multimedia, a term coined to describe the interweaving of visual and auditory stimulations, was suggested to make concepts and understandings discovered by students within reading more clear and memorable when utilized (Chambers et al., 2008). These findings are in alignment with dual coding theory that supports the notion that memory retention is improved when material is presented dually in visual and aural form as opposed to only one form.

Additional studies have shown positive results of electronic talking book integration for providing independent remedial learning opportunities for those still in need of intensive adult support (de Jong & Bus, 2004) and for development of phonological awareness in emergent literacy learners (Chera & Wood, 2003). Technology has the potential to provide opportunities to support students with particular needs by serving as an electronic support. Schmid, Miodgrag, & Francesco (2008) recently conducted a qualitative exploration concerning the effects on learning outcomes of striving early readers during one-on-one tutoring that utilized a particular software program designed to serve as an electronic performance support system (EPSS) in providing appropriately leveled instruction for particular learners. Conclusions drawn from this study reveal that learning opportunities for students with software are increased when particular conditions exist. These conditions include establishment of rapport between child and tutor, maintenance of continuous student motivation with continued use of software, and appropriately provided scaffolding to the student when needed.

Educational software targeting specific literacy skills is increasingly available for use on the computer and is consequently being evaluated within classrooms. Kulik (2003) completed a systematic review of controlled studies evaluating the effects of instructional technology in elementary and secondary schools. Kulik cited that though new potentials for the teaching of reading with increasingly sophisticated computers are certainly possible, current studies reveal mixed results concerning effectiveness of computer integration within literacy teaching. Countering these findings, additional studies (Comaskey, Savage, & Abrami, 2009; Tracey & Young, 2007) reveal that computer support has a positive effect on literacy learning among specific populations of early learners identified as being high risk for school failure particularly in terms of vocabulary development (Segers & Verhoeven, 2002) and phonological awareness

(Mitchell & Fox, 2001). Macaruso, Hook, & McCabe (2006) reported similar results from a quantitative study and concluded that intensive phonics-based computer assisted instruction (CAI) designed to supplement regular reading instruction is beneficial to low performing early learners.

Research within the field of literacy and technology continues to emerge in response to ever-emerging needs of contemporary classrooms. The potential certainly exists for technology use to meet the needs of students striving to meet grade level literacy expectations when integrated in meaningful ways (Schmid, Miodgrag, & Francesco, 2008). Scholars are currently acknowledging the potential for literacy growth of students using developmentally appropriate technology with interactive teacher support (McKenna, Labbo, & Reinking, 2004). Additional studies (Judge, 2005; Voogt & McKenney, 2008) have likewise investigated the effects of interaction with a more expert other during computer mediated literacy activities on student experiences.

Rationale for Formative Experiment

With such wide spread availability of research within literacy and technology, some might additionally call into question why I felt the need to conduct yet another study in this area. While the findings of current studies offer a great deal in terms of advancing our understanding of the role that technology can play in advancing student literacy development, the majority of researchers have focused their objectives on exploring the effects of a single technology intervention within literacy learning. Examples of these studies include exploration of the effects of multimedia stories (Verhallen, Bus, & de Jong, 2006), teacher use of interactive white boards (Shenton & Pagett, 2007), and integration of digital photography and creativity software within a language experience approach (Labbo, Eakle, & Montero, 2002). However, few studies have

taken into consideration the opportunities for literacy learning which may be afforded to striving readers when a range of all-inclusive technology tools are integrated by a classroom teacher in purposeful ways to achieve particular goals.

Educational researchers (Bond, Dykstra, Clymer, & Summers, 1997; Neuman & Dickinson, 2002) have suggested that specific teacher and learner characteristics play an important role in determining the effectiveness of any instructional approach. With this in mind, I argue that we need research within authentic classroom settings that explores the ways in which various technologies can be incorporated into everyday literacy instruction by a classroom teacher to meet the particular needs of striving readers. I agree with Reinking and Bradley (2008) that we must implement a method of research that "contributes directly to practitioners' need not only to find workable instructional options but also to provide specific guidance about how to implement instructional interventions given the diverse variation in classrooms" (p. 7). In reviewing studies previously conducted within the field of education, I found that the majority of studies used hypothesis testing in which an intervention was implemented with the researcher only collecting data without the opportunity to intervene should the intervention prove to be ineffective. My experience as a former classroom teacher led me to question the usefulness of this type of research in terms of generating knowledge on ways that technology integration could be useful for striving learners in the complex environment of the elementary classroom. Reflection on the part of the classroom teacher plays an important role in the process of designing appropriate learning opportunities for students. As problematic situations arise or the needs of students change, effective teachers acknowledge these occurrences and appropriately shift their instruction to accommodate for these variables (Gaskins, 2003). Shouldn't there be a

method of research that likewise allows the researcher to shift the way an intervention is implemented in response to emerging understandings within the field?

My work with Linda Labbo and Andrew Huddleston throughout the 2008-2009 academic year proved to be extremely valuable in providing experience in a research method that would allow a shaping and reshaping of my study in response to factors that either enhanced or inhibited progress toward a pedagogical goal. In exploring, field testing, and designing guidelines for effective use of the PBS series *Word World* in an effort to increase the literacy development of students, I gained invaluable experience in research conducted using the methods I felt would be most useful to my dissertation. The opportunity to explore the formative experiment research in a prior setting gave me the experience and insight I would need to conduct my independent research.

According to Reinking and Bradley (2008), I wanted to investigate "how to get from a current less satisfactory condition to a subsequent more satisfactory condition" (p. 37). For this reason, pragmatism served as the macro-level theory upon which this study was founded. This theoretical context allowed my research to focus on practical applications in particular educational contexts. According to Dillon, O'Brien, and Heilman (2000), scholars situating their research within the tradition of pragmatism believe that "conducting inquiry to useful ends takes precedence over finding ways to defend one's own epistemology" (p. 17). I believe that research within literacy education is most valuable when findings have the potential to improve students' lives through improved learning contexts. Rather than seeking to make broad, generalized claims for the educational community, the purpose of my pragmatically fueled research was to explore how and why technology was integrated by a classroom teacher in specific ways to encourage meaningful literacy learning experiences for striving elementary readers.

Evidence suggesting that children who begin schooling requiring great effort simply to achieve grade level expectations in literacy rarely catch up (Good, Simmons, & Smith, 1998; Juel, 1988; Torgeson, 1998) should substantiate the need for research exploring how literacy learning opportunities might be improved for striving learners when the unique features of technology resources are integrated within everyday instruction in meaningful ways. While new opportunities for student learning are possible with use of innovative technology resources, educational researchers (Bond, Dykstra, Clymer, & Summers, 1997; Neuman & Dickinson, 2002) have suggested that often the decisions and resultant implementation of the teacher play an important role in determining the effectiveness of any instructional resource. For this reason, I additionally chose to employ a formative experiment because it allows the "researcher to work alongside the participants as they implement and modify an intervention to achieve successfully a study's pedagogical goal" (Ryan, 2008, p. 35). In order to assist my classroom teacher in her efforts to achieve pre-established pedagogical goals using the AWARD Reading materials, I knew it would be necessary to follow the suggestions for effective literacy coaching by learning and teaching effective decision making, content knowledge, and pedagogical knowledge to my classroom teacher through building a relationship and communicating effectively (Casey, 2006).

Research Questions

In this formative experiment, I observed a third grade classroom in a public elementary school in a rural southern town to explore how and why a classroom teacher chose to integrate specific technological components found within a comprehensive set of resources, termed AWARD Reading, to encourage unique literacy learning experiences for striving learners. The following four research questions were explored:

1. *Baseline*: How are the current instructional resources and approaches used by a third grade teacher supporting or inhibiting the literacy development of striving learners?
2. What AWARD Reading resources does a third grade teacher select to use in creating opportunities for unique literacy learning to occur for striving learners? Why?
3. What literacy learning opportunities are being provided to meet the pedagogical goals set by a classroom teacher when using AWARD Reading resources?
4. Are any barriers to effective integration of AWARD Reading resources for the purposes of providing unique literacy learning opportunities for striving readers observed? How are these barriers addressed?

Significance of the Study

This study was significant for two related reasons: (a) we have a great deal of evidence that many students in elementary classrooms continue to strive toward achieving grade level performance, even as (b) literacy expectations are increasingly evolving to reflect the newer requirements of a technologically driven society.

Striving Readers

According to a position statement released by the International Reading Association (1999), there are a significant number of students who are unable to meet the increasing demands of a literate society. Additional research suggests that a number of factors, including race, class, gender, family-based socioeconomic status, mother's age, home language other than English, and level of parent's education, influence whether students lag behind in literacy classrooms (Allington, 2006; Brooks-Gunn & Duncan, 1997; Snow, Burns, & Griffin, 1998; McLaren, 2007). A recent report issued by the National Assessment of Educational Progress (NAEP) on the reading achievement levels of fourth-grade students confirmed these findings citing that both

Black students and Hispanic students scored significantly lower than White students on the national reading assessment (Planty et al., 2009).

The National Research Council (2002) reported that one in five children is estimated to have difficulty learning to read in school. Some may suggest that this finding simultaneously reveals that four in five children are not experiencing difficulty. However, I am left to question what is to happen to the one student left behind by the educational system. Could this one student be my Lavonte? There is growing concern that student "failure leads to discouragement and disengagement from school, and… manifests itself in [students] dropping out of school altogether" (Schumaker et al., 2006, p. 64). Striving learners choosing not to continue their education to completion of high school graduation are consequently additionally disadvantaged on a global scale in terms of opportunities for social advancement when compared by employers to their more qualified peers. Thus, the ability to read is fundamental to the academic and occupational success of students (Lyon, 2009). Recognition that a large proportion of students will never become skilled readers (Pindiprolu & Forbush, 2009) resultantly prompted my research agenda centered on improving the literacy learning opportunities for those students striving to meet grade level expectations.

Hart and Risley (1995) estimated that by age four, children coming to school from homes of mid to higher socioeconomic status had heard fifty million words, whereas children from a lower socioeconomic status had heard only seventeen million words. Educators will continue to be challenged as the poverty rate among families in the United States increases – along with the social and linguistic diversity of the nation's population (Federal Interagency Forum on Child and Family Statistics, 2009). These differences reveal the potential struggles for the classroom teacher attempting to teach students who may have experienced the world in dramatically

different, yet no less valid, ways and therefore approach and experience learning to read differently. Cassidy and Cassidy (2008) cited that literacy educators are revealing an increased desire to incorporate focused instructional strategies appropriate for all students. Teachers are beginning to recognize that attention should be given to the correlation between student background and resultant potential for academic success when designing learning opportunities in the classroom. With this in mind, my study was especially useful in that it capitalized on the interests of these teachers through exploring new possibilities for literacy learning of striving readers through integration of technology resources (Cuban, 2003).

New Literacy Expectations

While students striving toward grade-level expectations in literacy according to present day standards continue to infiltrate classrooms, educators are observing even greater challenges as expectations for these same striving readers continue to increase to reflect the requirements of ever emerging technologies within society. Formerly held conceptions of literacy as solely print-based are being replaced by a much broader description that accounts for up-and-coming new literacies evidenced in contemporary society. Students entering modern classrooms have access to numerous technologies in everyday life including text messaging on cellular phones, blogging on internet websites, playing video games, and e-mailing as a form of communication among others (Cook, 2005). Although early attention to literacy focused on more traditional forms, society is beginning to recognize that meaning making is occurring all around. Carrington (2005) used the term "textual landscape" to describe the "multidimensional and multimodal landscapes in and through which we conduct our lives in a text-rich society" (p. 20). By simply walking down the street one is likely to encounter literacy in viewing a visually stimulating graphic design t-shirt or hearing the music emitting from a passing car.

The increasing availability of diverse technologies has prompted a detailed characterization of emerging literacies by scholars in the field. Multimodality (Cope & Kalantzis, 2000; New London Group, 1996), a term frequently encountered on the new literacies terrain, represents the varying modes of meaning available in new technologies that include sound and visual images in conjunction with traditional print-based linguistic features. Navigation within a virtual space via the internet encourages a multilinear form of reading (Kress, 2003), differing from former left-to-right conventions of print, by utilizing hyperlinks as tools for students to select their own preferred order for reading (Bolter, 1998). The intertextuality of new literacies moves beyond the traditional bounded book to account for meaning construction that occurs as a result of juxtaposing ideas from varied sources within a complex social world (Rojas-Drummond, Albarran, & Littleton, 2008). The characteristics of new literacies are clearly reflective of the everyday uses of technology by students within contemporary society.

Literacy instruction must resultantly be adapted to accommodate for the technologically savvy generation entering classrooms today. Research has suggested that mismatches between the nature and understanding of students concerning literacy at home and literacy at school may cause difficulty in early literacy learning (Christ & Wang, 2008). According to Stanovich (1986), an emergent learner who struggles and falls behind initially in school rarely ever catches up in terms of literacy development. Despite this alarming proposition, few empirical studies have been conducted concerning incorporation and integration of digital literacy within primary schools (Burnett, 2009; Lankshear & Knobel, 2003). Yet new curriculum designs and pedagogical methods must incorporate the ever-emerging literacies relevant to the present and future lives of early year students if meaningful learning is to occur (Exley, 2008). In other

words, students already striving to reach grade-level expectations can experience even greater difficulty if learning opportunities do not incorporate the new literacies of the present and future relevant to the lives of students. The integration of technology has the potential to influence a system that has historically privileged some and disadvantaged others on the basis of environmental factors beyond students' control (MacLeod, 1995). Could the benefits of technology integration be twofold as opportunities are provided both to encourage the development of traditional literacies, such as reading and writing, while also incorporating the new literacy skills required of students for the future?

Scholars in the field of literacy education and technology are continuously adding to the repertoire of available research. However, Leu, Kinzer, Coiro, and Cammack (2004) describe the current realm of study within literacy as a "technological deixis" to account for the reality that even as understandings and conclusions drawn from research in the field become published, change resulting from ever emergent technologies and shifts in meanings in the classroom are occurring and influencing those findings (p. 1591). Perhaps the continual emergence and resultant shift in understandings could account for the claims of some that few empirical studies are available to the field (Burnett, 2009; Lankshear & Knobel, 2003). As we consider the possibilities of research exploring how technology integration could influence the literacy learning experiences of striving readers , we would do well to draw from the findings of an ever-emerging body of case studies (Labbo & Kuhn, 2000; Cuddeback & Ceprano, 2002; Edmunds, 2008; Walsh, 2008) and classroom ethnographies (Turbill, 2001) used within child-centered studies to guide our work.

With the wide variety of multimedia software and other various forms of technology continuously emerging in the market today, questions concerning how to effectively use these

resources in the literacy classroom continue to remain a central area of inquiry. It is certainly difficult to envision everyday life without likewise visualizing technology. For instance, developments in technological tools and the integration of computers into people's daily lives include such everyday practices as using automated bank tellers and driving a car (Haugland & Wright, 1997) as well as using media players, cell phones, and the internet via wireless mobile computers (Van 'T Hooft, 2008). Kominski and Newberger (1999) stated that the vast availability of the personal computer as a technological tool for individual and organizational use has transformed lives in significant ways.

This modern day technological onslaught is likewise being observed within contemporary education environments. According to Wells and Lewis (2006) in a report on internet use in schools during the 2005 academic year, 94% of public school instructional rooms had internet access, compared with 3% in 1994, and the ratio of students to instructional computers with internet access in public schools was 3.8 to 1, a decrease from the 12.1 to 1 ratio in 1998. In addition to this increase in physical access to technology for students in schools, integration of technology within the classroom is also undergoing reevaluation. Researchers investigating reading comprehension now explore the differences in meaning-making processes for students who read text onscreen in comparison to those who read traditional print-based text (Coiro, 2005). The exploration of potential for student learning with the integration of technology continues to guide research in literacy education (Burnett, 2009).

Considering these dynamic changes, scholars are beginning to ask a provocative question: is technology being used most effectively within classrooms? Cuban (2003) argued that the increase in physical availability of technological tools within schools has been largely ineffective in student development because of teacher's inability to integrate technology in

meaningful ways. Additionally, scholars (Clark, 1985; Healy, 1998) have criticized those advocating for the use of technology within instructional settings stating that the effectiveness of technology use has yet to be demonstrated in significant and consistent ways. With the continued emergence of technology and resultant increase in literacy expectations, research pertaining to how these resources can be used most effectively, particularly with currently striving learners, will be crucial for success in schools.

Of particular interest to my agenda were the claims that "as speed becomes essential for the effective use of the new literacies of the Internet and other ICT's (information communication technologies), it will be critical to solve the equity issues that result from children who process and communicate information at different rates" and that "the gap between highly literate and literacy challenged individuals will be exacerbated by the new literacies of the Internet" (Leu, Kinzer, Coiro, & Cammack, 2004, p. 1597) As an educator committed to finding innovative ways to bridge the gap between higher and lower functioning literacy learners, I drew from work on the New Literacies Perspective that technologies will not only help this process, but are necessary if we are to ensure that the discrepancy between learners is not widened.

Description of Key Terms

A number of key terms will be used in the remainder of my dissertation study and are explained in the following section:

- Formative Experiment: A formative experiment is a research methodology used within an authentic setting involving the researcher and participants in determining those factors which inhibit and enhance progress toward a pre-identified pedagogical goal when using a particular instructional intervention. Cyclic periods of qualitative data collection occur to allow for understandings to emerge concerning modifications made by the researchers

and participants to the instructional intervention throughout the study to more effectively meet the pre-established pedagogical goals (Reinking & Bradley, 2008; Ryan, 2008).

- Striving Learner: A striving learner is defined as a student who is on the threshold of meeting grade level literacy expectations (Booher-Jennings, 2005).
- AWARD Reading: AWARD Reading is a newly released collection of K-3rd grade reading materials which fully integrate "technology and print to accelerate reading achievement for all students" ("AWARD Reading", 2008, p. 4). Within the available reading resources with embedded technology and multimedia for each grade level, three different learning levels can be utilized by the classroom teacher to meet the specific learning needs of students. Each level contains texts of varying genres with interactive CD-ROM activities that help teach the same effective strategies that encourage development of self-extending systems for readers traditionally used by teachers in elementary classrooms. As described by Fountas and Pinnell (1996), a self-extending system is achieved by a reader when he or she learns each time a text is read independent of teacher assistance. The nature of AWARD Reading as being a comprehensive set of resources embedding print and technology simultaneously within the curriculum is precisely what makes it unique to other technological components that are sometimes integrated into a curriculum on a case-by-case basis. The interactive text components of the software provided within the AWARD Reading resources allow for the students to view videos connected to the concepts presented in various texts, to design personal responses to text using on screen capabilities, and to employ features designed to scaffold the student reading independently by having portions of text read aloud or particular words pronounced with simply the click of a mouse. In the past, teachers have used

resources similar to the technology available within AWARD Reading to aid learners in meeting particular literacy learning goals. However, currently these opportunities exist within an all-inclusive set of resources allowing supplementation of these resources in the classroom to occur with relative ease and manageability. Table 1.1 lists and describes the resources available within the all-inclusive AWARD Reading curriculum set while simultaneously showing how these available resources align with other resources used in research previously conducted within the field of literacy and technology.

Table 1.1

Alignment of AWARD Reading Resources with Formerly Studied Technology

AWARD Reading Resources	*Formerly Used Technology*
Leveled Printed Texts of Varying Genres including Narrative, Informational, and Poetry	Fountas and Pinnell (1996, 2001, 2006) advocate the use of leveled texts to ensure that reading is developmentally appropriate to the varying literacy learning levels of students comprising elementary classrooms.
Interactive Electronic Books	Zucker, Moody, and McKenna (2009) conducted a review of the relevant research on use of electronic books (E-books) with children aged pre-kindergarten through fifth grade finding that e-books can be used to support comprehension goals. These authors defined e-books as a form of electronic text that contains features of traditional text (i.e., print and pages that turn) while also incorporating digital enhancements (i.e., text-to-speech, images, animation, and sounds) to create a qualitatively different reading experience.
Interactive Games 1. *Whizzy Quiz*: students answer questions to demonstrate understanding of text 2. *Word Train*: students recognize and match consonant and vowel sounds within words to reinforce phonics skills 3. *Word Detective*: students match definitions to words to demonstrate vocabulary knowledge	A number of researchers have investigated similar interactive games used with particular software programs to achieve pre-identified goals such as *WiggleWorks* to increase vocabulary development (Boling, Martin, & Martin, 2002), *Accelerated Reader* to improve reader attitude and test comprehension (Cuddeback & Ceprano, 2002; Malette, Henk, & Melnick, 2004), *Daisy's Quest* and *Daisy's*

4. *Explanimations*: students observe animated explanations of grammatical features (e.g. nouns) found within text 5. *Spelling Game*: students spell high-frequency and content words from text 6. *Readermeter*: students listen to and read a portion of text to practice fluent reading	*Castle* to assist early learners in phonological awareness (Mathes, Torgeson, & Allor, 2001), and the *Waterford Early Literacy Software Program* to explore learner benefits for striving early readers (Tracey & Young, 2007).
Response to Literature 1. *You Be a Newsreader*: students make choices to create their own story based on a previously read text that will be used to practice fluent reading 2. *Newspaper Front Page*: students design an onscreen persona and use multimedia content to write and express their thinking on a previously read text within an onscreen newspaper template 3. *Silly Story Maker*: students select words/phrases to create a new silly story that correlates to a story previously read that can be read back, read by the student onscreen, or printed 4. *Sentence Sizzler*: students explore sentence structure by recreating various sentences from a previously read text and illustrating the newly designed sentences 5. *Snappy Slide Show*: students use multimedia content to design a slide show that expresses their ideas about a particular text that can be saved and viewed by other students at a later date	Opportunities for students to provide a creative response to a reading using technology have been investigated with particular technologies such as e-mail exchange (Dove, Fisher & Smith, 2001), Power Point software (Burnett, Dickinson, Myers, & Merchant, 2006), *StoryRoom* (Guha, Druin, Montemayor, Chipman, & Farber, 2007), and a multimodal writing software (Rojas-Drummond, Albarran, & Littleton, 2008).
Audio Books	Text-to-speech is an important feature made available with traditional printed books and accompanying audio reads of the book via a technological tool (i.e., a compact disc, tape, or software program) (Verhallen, Bus, & de Jong, 2006).

Summary

In this chapter, I provided a detailed account of my developing interest and experience in this area of research. Additionally, I gave a rationale for use of a formative experiment for this

study, offered the research questions that guided my study, and discussed the significance of my research. Lastly, I provided a description of the key terms that will be used throughout my dissertation. In Chapter 2, I review relevant literature of research discussing how technology was explored within literacy instruction to (a) consider multimodality, (b) integrate software, (c) elicit creative response, (d) develop early reading skills, (e) integrate electronic talking books, (f) explore the role of the teacher, and (g) investigate technology use with striving readers. I also discuss the theoretical frameworks that informed my study.

CHAPTER 2

REVIEW OF THE LITERATURE

Boettcher (2006) provided a useful direction for reviewing literature in a particular field that requires scholars "watching to see what others are doing, wondering what fits for them, and wishing they knew what to do". This section of the review of relevant literature will be organized within two key areas: (a) What Others Are Doing and (b) What We Can Do Now. First, I explore the available research pertaining to integration of multimedia and technology within literacy instruction. In examining each of these studies, I highlight what we currently understand about integration of technology within literacy instruction while simultaneously emphasizing the need for my particular study to further inform the field Secondly, I provide an overview of the theory of multiliteracies and sociocognitive theory exploring ways in which they informed my study.

What Others Are Doing

Technology has undoubtedly influenced the educational arena in powerful ways in terms of providing opportunities for student literacy development and exploration. Despite this widespread acknowledgement, only a small number of comprehensive literacy studies have been conducted to assess the effectiveness of technology integration within literacy instruction (Holum & Gahala, 2001). Additionally, some scholars have called into question the consistency of the research findings claiming that technology integration enhances student learning (Clark, 1985; Healy, 1998). Turning a critical eye to the use of technology in literacy education classrooms, Cuban (2003) argued the integration of the computer into modern classrooms as a

"benign addition" that serves to supplement the existing curriculum rather than to transform the nature of instruction in response to an evolving world (p. 67).

In the most recent review of literacy and technology in primary classrooms of aged 5-11 students, Burnett (2009) employed Green's operational/cultural/critical framework as a frame of reference for analyzing available research to suggest that the majority of studies failed to examine the potentials of digital literacy in classrooms instead focusing on print literacy skills promoted by policy in an age of accountability. Labbo and Reinking (2003) likewise concluded in a review of studies investigating computer use within early literacy classrooms that attention to the multiple realities transforming the nature of reading and writing must be considered within future investigation of useful integrations of technology for literacy development. Additional reviews (Blok, Oostdam, Otter, & Overmaat, 2002; Kamil & Lane, 1998; Lankshear & Knobel, 2003; Tondeur, van Braak, & Valcke, 2007; Yelland, 2005) address this critique in a call for better research designs that explore the ways technology can familiarize children with emerging expectations of literacy in the future that will differ greatly from those of the past.

In this chapter of the review of the relevant research literature, I examined studies that investigated current use of interactive multimedia and technology within the literacy instruction of elementary classrooms attending specifically to its use with striving learners. Following the direction of Maxwell (2006), studies were included in this review if deemed to possess "important implications for the design, conduct, or interpretation" (p. 28) of my study. Initial literature searches were conducted using ERIC (at EBSCOhost), Education Full Text, and Academic Search Complete. Search terms included those most significant to the purpose of the review such as technology, literacy, multimedia, hyperlink, software, internet, CD-ROM, computer, reading, e-mail, striving learners, low-performing learners, and elementary. In

addition to the use of particular search engines, other relevant journals were directly consulted including *Reading Research Quarterly, Theory and Research in Education, Journal of Early Childhood Literacy, Language Arts*, and *Journal of Research on Technology in Education*. Research handbooks tied specifically to the review were also perused for contributable studies. Lastly, bibliographies of included studies and other relevant literature reviews were explored for contributable studies.

Inclusion criteria were established to ensure that only those studies significant to the present research were included: (a) each study must take place in the context of a Pre-kindergarten through fifth grade regular education classroom, and (b) each study must have been published no earlier than 1999. Leu, Kinzer, Coiro, and Cammack (2004) described the current realm of study within literacy as a "technological deixis" to account for the reality that even as understandings and conclusions drawn from research in the field become published, change resulting from ever emergent technologies and shifts in meanings in the classroom are occurring and influencing those findings (p. 1591). For this reason, only those studies occurring within the past ten years were included in the review.

The studies explored could be categorized according to how technology was integrated within literacy instruction into seven categories: (a) exploring multimodality, (b) computer software, (c) creative response, (d) development of early reading skills, (e) electronic talking books, (f) role of the teacher, and (g) technology use with striving readers. In introducing each of the categories, I cite an illustrative string of studies that have examined the use of technology within the category throughout the past decade. Following the introduction, I provide a detailed description of a study deemed closely related to my dissertation research.

Exploring Multimodality

A number of researchers have conducted studies investigating the effects of multimodal digital features on literacy instruction. These studies include Bernard, Chaparro, Mills, & Halcomb (2002), Hassett (2006), Verhallen, Bus, & de Jong (2006), Ware (2006), Shenton & Pagett (2007), Chambers et al. (2008), Takahira, Ando, & Sakamoto (2008), Walsh (2008), Levy (2009), and Merchant (2009). Appendix A includes a chart outlining the purpose and findings from each of these studies investigating technology and multimodality within literacy instruction.

Verhallen, Bus, & de Jong (2006) investigated whether supplementary multimedia and animation could play a more defined role in excelling the process of reading for children scoring at the lower end of language proficiency within schools. The researchers hypothesized that traditional literacy tools using spoken text with static pictures may not be enough to excel the comprehension of young second language learners, and therefore sought to explore whether additional multimodal applications of film representations, music, and sounds within literacy instruction could increase the likelihood that these students would comprehend narrative story structures. While in earlier years literacy educators focused mostly on the ability of students to decode print, teachers now increasingly emphasize the ability of a student to comprehend, or *understand* and *make sense* of messages derived from print. The purpose of this study was (a) to test whether multimedia stories would stimulate narrative comprehension more than oral stories with static pictures, (b) to determine whether multimedia stories went beyond retelling the main details of the story and included emphasis on details only implied or inferred within the text, (c) to examine whether multimedia extended linguistic skills of vocabulary and syntax for students, and (d) to explore whether repetition within multimedia provided a more stimulating learning opportunity than repetition within traditional read aloud stories with static pictures.

Materials for the study included a multimedia version and static version of the Dutch story *Winnie the Witch*, considered appropriate and meaningful for kindergarten learners, along with a technologically interactive game identified as *Midnight Play*. Sixty kindergarten children, considered at risk for school failure, were selected for participation in the study. Governmental criteria identified students as being at risk when (a) students came from immigrant homes where a language other than the primary language of Dutch was spoken, and (b) parents of the children possessed a low educational attainment level. The researchers randomly assigned the sixty kindergarten participants to one of six condition groups for this experimental study. Four experimental groups heard the story of *Winnie the Witch* with differences in (a) format (static images vs. multimedia) and (b) frequency of story encounters (1X vs. 4X). Additionally, two control groups were included in the study to estimate any effects of students receiving special attention and extra computer experiences. One control group was pre- and post-tested only, while the other control group played *Midnight Play* all four sessions with no interactions with the static or multimedia version of *Winnie the Witch*.

Results revealed that children at risk for school failure do positively benefit in terms of story comprehension and vocabulary development when multimedia and repeated interactions are combined for literacy instruction. Children hearing the oral narration of a story in combination with the viewing of static pictures, which is comparable to traditional print-book reading sessions, could only understand *part* of the story. However, children interacting with the multimedia version of the story in repeated settings revealed an increased retelling ability emphasizing implied elements found within the story. An additional benefit of the multimedia environment was cited as multimodal symbols drew children's attention to particular story elements which encouraged at risk readers to exhibit strategic behaviors typical of good readers-

thereby encouraging effective processing of the story. Results of this study revealed that multimedia can increase the story comprehension and vocabulary development of at risk kindergarten learners. However, the researchers stated that more research is needed to determine if the findings of this study are applicable in a variety of contexts and with a variety of learners.

Computer Software

Using software within literacy instruction was investigated in studies by several researchers including Topping & Paul (1999), Boling, Martin, & Martin (2002), Jones (2003), Shiratuddin & Landoni (2003), Mallette, Henk, & Melnick (2004), Pelletier, Reeve, & Halewood (2006), Karchmer-Klein (2007), and Owston, Wideman, Ronda, & Brown (2009). Appendix B includes a chart outlining the purpose and findings from each of these studies investigating computer software within literacy instruction.

Boling, Martin, and Martin (2002) examined the effects of a multi-sensory computerized teaching approach on the development of vocabulary for first grade students. Students have traditionally been exposed to multi-sensory learning environments as teachers utilize reading, writing, and speaking within literacy instruction. Likewise, children initially develop ideas about the world on their own through exposure to a concept via the senses followed by a connection of the concept to an orally spoken word. As software companies increasingly release programs targeting the senses and interests of children learning to read, researchers of this study sought to explore how technological tools might enhance the multi-sensory literacy learning environments of contemporary classrooms.

The purpose of this study was to investigate whether a computerized multi-sensory approach to the teaching of reading, through use of the *Wiggle Works* software program, would increase first-graders' vocabulary development. The *Wiggle Works* software program offers

inclusion of multimedia via computer-based activities while concurrently supporting traditional methods of literacy teaching with accompanying trade books and audiocassettes. Teachers have the option to customize instructional opportunities for students through a management function within the software which dictates which resources students may access while exploring activities available on the computer. Within this study, seven stories were selected for use with a new and increasingly difficult story being introduced every other day. The story ability levels ranged from kindergarten to second grade.

Ten boys and eleven girls, coming from the lower socioeconomic status and identified as having limited educational experiences outside of school, were selected from a first grade classroom for participation in the study. The students were randomly assigned to a control group, comprised of ten students, and an experimental group, comprised of eleven students. While both groups continued to receive regular reading instruction, the experimental group explored stories using a computerized storyboard. First, the students receiving treatment listened to the story for enjoyment purposes via a computer-based activity. Secondly, the students were given the opportunity to revisit the story to click on words unknown to them as the computer pronounced the word while concurrently highlighting it onscreen. Thirdly, the students were required to read along with the story once while listening. Upon completion of these activities, the students within the experimental group had the option to listen and/or read any story previously read or any story at a lower level using the *Wiggle Works* software program. By contrast, the students comprising the control group initiated their experience with the same story by experiencing it being read aloud by either the teacher or researcher. Next, the students listened to the story on tape while following along in an accompanying trade book. Upon

completion of the required activities for the control group, these students were provided with an assortment of literature ranging from library books to personal books to read at their leisure.

Findings from this study revealed that use of the computer did significantly improve the vocabulary development for first-grade readers while also increasing motivation. However, student interaction with the computerized instruction seemed to be determined by their ability level. Strong readers worked rather independently, average-ability students were at an instructional level with reading and technology skills, while students with less reading ability needed support with reading and technology. Overall, student learning of new vocabulary occurred at a more rapid pace with greater accuracy within a computerized instructional environment. Future research should explore the potential for computer software programs to provide unique opportunities for independent learning among students ranging in ability levels within contemporary classrooms.

Creative Response

Several researchers have explored the potentials for technology within literacy instruction to provide student opportunities for creative response. These studies include Dove, Fisher, & Smith (2001), Burnett, Dickinson, Myers, & Merchant (2006), Britsch (2005), Ranker (2006), Guha, Druin, Montemayor, Chipman, & Farber (2007), Mavers (2007), Rojas-Drummond, Albarran, & Littleton (2008), and Kuiper, Volman, & Terwel (2009). Appendix C includes a chart outlining the purpose and findings from each of these studies investigating creative response using technology within literacy instruction.

According to Kuiper, Volman, and Terwel (2009), the increasing availability of the internet to members of modern society continues to change the abilities required of individuals for literacy achievement. With immediate access to varying information sources now available

through use of the internet, individuals must possess an ability to critically evaluate what they read in order to put available information to personal use. Educators are beginning to examine the new literacies required for students to use the web for their own inquiry purposes which include: (a) web searching skills, (b) web reading skills, and (c) web evaluating skills. The purpose of this study was to explore the possibilities and limitations of collaborative inquiry activities as an appropriate context for the development of web literacy skills for students to acquire and use content knowledge on healthy food for personal purposes.

Four fifth grade classrooms, comprised of ninety-three students total, participated in the ten week instructional project requiring students to work collaboratively in pairs to create a brochure about healthy food using the internet as a source for information. Weekly lessons increasingly required higher web literacy skill levels for students. Lessons initially focused on formulating research questions for the healthy food brochure, then transitioned into exploring the differences between traditional print readings as compared to the hyperlinked reading on the web, and ended with the necessity of critically evaluating information found on the web to determine its usefulness for personal purposes. Results of this study revealed that thematic inquiry activities can provide a valuable context for the teaching and learning of web literacy skills by students when: (a) students are given explicit guidance in formulating appropriate research questions for inquiry, (b) positive relationships among classroom members allow for productive collaboration to occur, (c) basic inquiry skills are pre-existing among readers, and (d) the teaching style exhibited by the teacher invites hands-on learning opportunities via explicit instruction. Future research within response to reading should focus on unique opportunities for student development of the new literacy skills required with the increasing availability of technology and access to information via the internet.

Development of Early Reading Skills

Studies using technology for developing early reading skills were conducted by Mathes, Torgeson, & Allor (2001), Gillen (2002), Paterson, Henry, O'Quin, Ceprano, & Blue (2003), Hyun & Davis (2005), Brabham, Murry, & Bowden (2006), Macaruso, Hook, & McCabe (2006), Roberts, Djonov, & Torr (2008), Voogt & McKenney (2008), and McKenney & Voogt (2009). Appendix D includes a chart outlining the purpose and findings from each of these studies investigating technology integration for development of early reading skills.

According to McKenney and Voogt (2009), research investigating the role that technology may play in aiding the development of emergent literacy skills among students has significantly increased within the last decade. The purpose of this design research study was to examine how a technology-supported learning environment could contribute to helping young students understand the nature and function of written language. The focus of the *Picto Pal* learning environment centers on using technology to create documents for student use in authentic settings or as literacy props in off-computer activities. Specifically, four research supported areas were given intense consideration to ensure the pedagogically appropriate design of the *Picto* Pal learning environment: (a) the learning environment should be open emphasizing the student's active role in generating documents for authentic purposes, (b) activities on the computer should promote discussion and collaboration among students and with the teacher, (c) products of the computer should be used in related meaningful off-computer activities to promote print-enriched play, and (d) usability testing should be considered so as to promote the practical literacy needs of kindergartners.

Within this research, four small scale studies were conducted. These studies implemented a cyclic process of design, formative evaluation, and revision of three *Picto Pal*

versions to: (a) enhance the ability of learners to use technology components, (b) to examine opportunities to elicit engagement of students within the learning environment, and (c) to assess student literacy knowledge and skill development. Each of the small scale studies used an experimental design to divide students in a kindergarten class among a treatment group (interacting with the *Picto Pal* technology-supported learning environment) and a control group.

Results of the studies revealed that the technology-supported learning environment of *Picto Pal* can contribute to the understanding of kindergarten students concerning the nature and function of written language when students are provided with initial guidance to facilitate the development of technology skills needed to use the software. Secondly, *Picto Pal* does encourage learner engagement during on-computer and off-computer activities – specifically when these learning contexts are supported by an adult guide. Lastly, use of the *Picto Pal* system can lead to gains in literacy knowledge and skills when off-computer activities are simultaneously integrated. McKenney and Voogt (2009) concluded their report stating that the *Picto Pal* research initiative offers only one technology-supported approach for development of emergent literacy skills. The field would benefit from additional studies investigating how to best integrate on-computer activities with off-computer activities for meaningful literacy learning opportunities.

Electronic Talking Books

Several researchers investigated the role of electronic talking books within literacy instruction. These studies include Labbo & Kuhn (2000), Doty, Popplewell, & Byers (2001), de Jong & Bus (2004), Littleton, Wood, & Chera (2006), and Oakley & Jay (2008). Appendix E includes a chart outlining the purpose and findings from each of these studies investigating electronic books within literacy instruction.

Doty, Popplewell, and Byers (2001) conducted a study to determine if there was a difference in the level of second grade students' reading comprehension when one group of students read an interactive CD-ROM book and another group of students read the same story in a traditionally printed storybook form. Twenty female and nineteen male second-grade students from a Title I elementary school within an urban school district participated in the study. The students were randomly assigned to two groups with one group reading the text from a conventional print book while the other group read the text from an interactive CD-ROM storybook.

Electronic talking books offer numerous technological features that can support the learner during the reading process. The purpose of this study was to assess the reading comprehension of second grade students. For this reason, the feature that allows for the student to have the text read aloud was disabled for the experimental group. However, students were able to use technological features that allowed them to click on a word for a pronunciation and/or definition, as well as features that allowed them access to illustration labels and pronunciation of words within an illustration with the click of a mouse. For the second group of participants within the study, the conventionally printed storybook was read individually with the researcher present should the student seek to obtain assistance. This setting most closely replicated the reading scenario of the computer supported experimental group.

The researchers used three literal questions and three inferential questions to assess the comprehension of students upon completion of the text reading. Researchers also required students to give an oral retelling immediately upon completion of the reading. Mean scores on the comprehension tests revealed that students reading the text via the medium of an interactive CD-ROM storybook scored significantly higher than those reading the text via the conventional

printed storybook. However, results from the oral retelling revealed no significant differences in ability levels between groups. Overall conclusions drawn from the study revealed that CD-ROM storybooks can positively benefit the reading comprehension of young readers by decreasing the decoding burden for students and eliminating the need for individualized teacher attention by providing immediate assistance via technological features found within the software. Future research integrating multiple electronic books over a longer period of time may provide additional insight into opportunities for comprehension development with technological tools.

Role of the Teacher

Exploring the role of the teacher in technology integration within literacy instruction was the focus of study for some researchers including Reinking & Watkins (2000), Turbill (2001), Rodrigo (2003), Chen & Chang (2006), and Edmunds (2008). Appendix F includes a chart outlining the purpose and findings from each of these studies investigating the role of the literacy teacher within technology integration.

According to Reinking & Watkins (2000), research concerning technology integration within literacy education has consistently neglected to account for the numerous interacting variables within contemporary classrooms that can directly influence the potentials for technology to improve student literacy development. Past research endeavors have used conventional experimental designs to explore the effects of instructional interventions with and without technology thus perpetuating the belief that technology is merely an add-on to the current curriculum. Unlike former researchers, Reinking and Watkins (2000) sought to explore factors that add to or detract from the success of a technological intervention in accomplishing a pre-determined and valuable pedagogical goal by using a formative experiment. They questioned how a technological intervention might be adapted in response to identified factors to

better accomplish the pedagogical goal. In other words, the researchers wanted to explore the ways in which a technological intervention could be integrated to achieve instructional goals already identified by the classroom teacher.

The purpose of this study was therefore to investigate how a computer-based instructional intervention of creating multimedia book reviews could be used to achieve the pedagogical goal of increasing the amount and diversity of students' independent reading. Designed by the researchers, the computer-based instructional intervention of creating multimedia book reviews was to be used in place of the conventional process of writing book reports. Students used *Hyper Card*, an authoring system designed for Macintosh computers, to create multimedia book reviews upon completion of reading a book chosen independently. The technology-based authoring system allowed students to create book reviews that incorporated text, graphics, and audio files. Student-created standardized book reviews, in which the format was decided upon by teacher and student participants were available for perusal by a larger audience within a searchable computer database located in the media center of the school. Additional non-standard design components, such as autobiographical information entered by students, were included in efforts to allow creativity by students outside the standardized book review format. However, these components were not accounted for within the searchable database due to their individualized nature.

The duration of the study lasted two school years with two elementary schools participating in the first year of the study and one elementary school participating in the second year. Two fourth grade classrooms, comprised of approximately thirty students each, within one school, and three fifth grade classrooms, comprised of a maximum of thirty students each, within the second school served as the intervention classrooms during the first year of implementation.

Additionally, both a fourth and fifth grade classroom within the first school served as comparison classrooms for researchers to gather data concerning how a computer program was currently being used to meet the pedagogical goal of increasing the amount and diversity of independent student reading. During the second year of implementation, the researchers explored the computer-based instructional intervention within a fourth and fifth grade classroom of a third elementary school. All teachers participating in the study had varied background and experiences with computer integration into teaching; however all showed a similar enthusiasm for realizing more innovative ways to integrate technology within literacy learning.

The procedure of this formative experiment occurred within several phases. Initially, qualitative data was gathered by the researchers to gain a thorough understanding of the school, students, teachers, and classrooms where the study would take place. Quantitative data was also collected to establish a baseline for comparing the amount and diversity of independent student reading time before and after the intervention was used within the classrooms. Results from this data collection, which occurred within the first six weeks of school, suggested that overall students spent an average or somewhat above average amount of time engaged in independent reading. After initial collection of baseline data, the researchers introduced the students to the computer-based instructional intervention of creating multimedia book reviews. Throughout implementation of the instructional intervention, researchers collected qualitative data through use of taped, semi-structured interviews with teachers, perusal of log books completed by teachers recording their observations about events taking place with integration of the instructional intervention, conducting focus group interviews with teachers and students, dictating observational field notes, reviewing videotape of various project activities, and examining completed student products. Qualitative data collected by researchers played a

tremendous role in the process of determining those factors which enhanced or hindered the effectiveness of integrating student creation of multimedia book reviews toward the pedagogical goal of increasing the amount and diversity of student independent reading time. To allow for more in-depth analysis, the researchers also identified four focus students within each classroom representing above-average reading achievement and interest, above-average achievement but below-average interest, below-average achievement but above-average interest, and below-average reading achievement and interest.

Results derived from qualitative data analysis revealed that peer interaction and resultant sharing of information about books between students increased during the multimedia book review activity. This finding was important because the researchers had initially hypothesized that student access to a searchable database comprised of book reviews designed by peers would serve as the primary catalyst for increasing student independent reading time. However, the peer interactions occurring as students worked with technology actually facilitated the pedagogical goal in a greater way. Additional data collected during integration of this computer-based intervention revealed development of technological expertise by students as well as an increased interest among students in the achievement of their peers and in the products they were developing.

As data collection revealed the benefits for learners occurring within peer interactions, teachers resultantly made a conscious effort to encourage and explore student collaboration within the classroom. This intentional effort, resulting from continuous systematic data collection and analysis by the researchers, demonstrates the benefit of using a formative experiment design. This methodology provides participants and researchers alike the

opportunity to adjust the instructional variable under investigation as new understandings emerge regarding what works and what does not work within the educational environment.

Further findings from the qualitative data analysis suggested that low achieving students seemed to exhibit increased confidence and self esteem when working with the computer thus positively effecting their engagement in literacy activities. Direct effects with teachers were also observed within this learning environment as they became ready and willing to play the role of learner as they needed assistance from students in understanding and using the technological components of the intervention. Several conclusions were drawn relating to reading achievement among learners. The researchers found that the process of creating multimedia book reviews made differences in reading abilities among students more obscure thus creating a positive literacy environment for all students. Additionally, the project stimulated creative thinking among high achieving readers and increased the attention of poor readers. Learner engagement was also effected as students completed the project activity. All students seemed to be more cooperative, more willing to ask questions, and more willing to take risks when creating multimedia book reviews.

Differences were observed among classrooms with regard to the effectiveness of the instructional intervention. Four factors seemed to account for the variations among classrooms within two of the schools. Firstly, the perspective of the administration in relation to the research project differed between schools and resultantly effected teacher enthusiasm. Secondly, teachers at one school felt they were receiving less attention by the researchers than teachers at the other school. Thirdly, teachers at one school appeared to be more aware of whether the study was being properly conducted and whether the activities being conducted in the classroom were suitable to the researchers. Finally, opportunities for collaboration and planning among teachers

were lessened at one school where project activities were implemented within their own classroom as opposed to the other school where project activities were implemented within a shared computer lab setting.

Other differences in terms of the effectiveness of the intervention within the research sites could be attributed to the attitude of the teacher toward technology. Teachers were characterized within several clearly identifiable roles including the technology expert, the emerging or marginal technology expert, the facilitator, and the passive participant. Teachers representing the technology expert were often credited by their peers for playing this role. They had great initial success with the technological equipment and often found ways to incorporate technology beyond the minimal requirements set forth by the researchers. The emerging or marginal technology experts at first played a passive role in the project. However, as these teachers became increasingly comfortable with technology their enthusiasm grew for exploring the possibilities with the computer-based instructional intervention. Educators falling within the facilitator role did not explore the technology features of the project, but instead focused on non-technological opportunities for the intervention to connect to other classroom activities. Lastly, teachers who were somewhat enthusiastic about the learning potentials with the computer-based intervention but still needed explicit instruction and guidance were classified as passive participants. These individuals put forth minimal effort to master the technology, put forth little effort towards problem solving, and made fewer attempts to connect the intervention to other curricular areas.

The researchers of this study concluded overall that creating multimedia book reviews was effective in facilitating the pedagogical goal of increasing student independent reading. More specifically, the intervention was particularly useful when inhibiting factors were

considered and implementation was resultantly adapted to accommodate for these factors. These accommodations are made possible within the context of a formative experiment. Use of a formative experiment design also allowed the researchers to consider unanticipated findings. One unanticipated outcome of integrating a computer-based intervention was that students attended more to grammatical aspects of their writing because they realized that their work would be exposed to a larger audience via a searchable database. A second outcome was that professional involvement by teachers participating in the project increased as evidenced by their presenting at professional conferences, pursuing advanced degrees, and submitting proposals for a state conference. A third outcome was that parental involvement in the classroom and in the school increased. A final unanticipated outcome was that students and teachers alike revealed an increased awareness of electronic forms of reading and writing.

In closing, Reinking and Watkins (2000) issued a call for other researchers to employ formative experiments in exploring how instructional interventions could enhance literacy development. Doing so, they felt would allow researchers to ask new questions and explore emergent insights not generally associated with other research methodologies. Formative experiment implementation provides unique opportunities for the potentials of technology integration within literacy instruction to be more fully realized in the field.

Technology Use with Striving Readers

Numerous studies exploring the potentials for literacy learning with striving learners through technology integration were conducted by Howell, Erickson, Stanger, & Wheaton (2000), Mioduser, Tur-Kaspa, & Leitner (2000), Mitchell & Fox (2001), Pinkard (2001), Cuddeback & Ceprano (2002), Segers & Verhoeven (2002), Laffey, Espinosa, Moore, & Lodree (2003), Judge (2005), Kemker, Barron, & Harmes (2007), Proctor, Dalton, & Grisham (2007),

Tracey & Young (2007), Macaruso & Walker (2008), Schmid, Miodrag, & Di Francesco (2008), Yong & Ping (2008), Comaskey, Savage, & Abrami (2009), and Hines (2009). Appendix G includes a chart outlining the purpose and findings from each of these studies investigating technology integration specifically within the literacy teaching of striving learners.

According to Proctor, Dalton, and Grisham (2007) the reading achievement gap between various demographic groups within the United States continues to be exacerbated as diversity increases and ongoing research in how to improve the condition for striving readers is limited. The majority of research available to the educational field focuses on monolingual English-speaking populations alone. For this reason, these scholars contend that more research with English language learners (ELLs) alongside their English-only (EO) counterparts is needed to gain greater understanding of the components and processes of English reading comprehension and to develop useful instructional interventions that will decrease the persistent gap in reading achievement. The purpose of this study was to investigate the effectiveness of a digital approach to supported reading, termed a Universal Literacy Environment (ULE), on the vocabulary acquisition and comprehension growth of ELLs and EO monolinguals in the fourth grade.

Sixteen Spanish-speaking ELLs and fourteen EO learners were selected for participation in the study by two teachers aware that the educational goals of the intervention were to improve comprehension of ELLs and struggling readers. The ULE used within the study was a multimedia digital reading environment consisting of eight hypertexts, four narrative and four informational, with embedded supports designed to target the vocabulary development and cognitive and metacognitive strategy development of students. Embedded supports, designed to scaffold and assess student progress, were grouped within: (a) prereading, (b) within-reading, and (c) postreading sections of the text.

An introduction to the reading was provided to the student as five "power words" (p. 79) considered important to the text were introduced in English and Spanish. Additionally, a brief definition, a contextual sentence, one or two images illustrating the word, and an auditory pronunciation were provided to the student. Prereading activities required students to record themselves pronouncing each power word and to type an association they made with the word into a text entry box. Students were also given the option to click on a bilingual coaching avatar for added support in the introduction if needed. Within-reading supports included prompts, hints, and modeling of strategies used by expert readers designed to increase the reading comprehension of students. At the end of each digital page, activities within-reading required students to employ a reading strategy of summarizing, predicting, clarifying, questioning, or visualizing by entering a written or recorded response. Students struggling with the required activity had the option to use a strategy coach providing support in either Spanish or English. In addition, all strategy activities were leveled so that students were given the opportunity to move from high to low levels of support with the ultimate goal being independent application of reading strategies. To be clearer, at a higher level of support, for example, students would select the most appropriate prewritten summary given three onscreen options. An example of an activity at the lowest level of support would require the student to compose his or her own summary of the story. Other embedded supports within reading provide hyperlinks to vocabulary words for students to click on if desired that provide the word's definition, the Spanish translation of the word, and the word within the context of a sentence. Students were additionally required to add a minimum of three hyperlinked vocabulary words to a computerized personal glossary as they read. As students selected vocabulary words for their glossary during their readings they were also prompted to type in a rationale for why they

selected the particular words. Postreading activities required the student to use eight sequenced images from the text to write a description of what was happening within the text as portrayed by the illustration. Next, the student's composition was presented within a single text box where the student was required to edit the composition for clarity and flow. Lastly, the student completed a self-check rubric to ensure that typical story elements, such as the setting and plot, were included in their retelling. Use of supports and completed activities by students were recorded in a feature of the digital environment referred to as a work log for later viewing by the student or teacher to evidence the text interactivity that was occurring.

The procedure for this research began with teacher participants attending training sessions the week prior to the start of the intervention in order to become familiar with the reciprocal teaching methods within reading comprehension teaching required of the project and to allow the researchers an opportunity to explain the ULE intervention features. Preceding the intervention, student participants were administered the Gates-MacGinitie Reading Achievement test in English to determine a baseline measure of reading achievement. Upon completion of pre-assessment measures, the students participated in 12 sessions lasting 45 minutes each and occurring 3 times per week. The students worked individually on the computer within the ULE, however the teacher was present to provide feedback on the appropriateness of the level of electronic scaffolding being used by the student. Additionally, two co-teachers were available to provide technical assistance to students if needed. While teachers were available to support students in the ULE environment, the researchers made a deliberate mentioning that the computer lab setting was not an active teaching situation. Instead, teacher participants viewed the interactions with electronic texts by students as an opportunity for reinforcement and practice. For this reason, connections between strategies employed in the regular reading

program and strategies employed in the ULE environment were not discussed in whole class settings as teachers felt pressured to spend time outside the lab solely on state mandated assessment and curricular objectives. Upon completion of the 4 week intervention cycle, student participants were again administered the Gates-MacGinitie Reading Achievement test in English in an effort to acquire postreading scores.

Results of this study revealed that comprehension-based embedded supports were useful to both ELL students and striving readers as determined by posttest gains evidenced in student comprehension. Additionally, it was found that less skilled readers were more likely to access the embedded supports associated with comprehension gain. Individual analyses of these student interactions suggested that students using the embedded digital supports were interacting with the text in a meaningful way applying cognitive strategies to improve the reading experience. In comparison to previous studies, the researchers discovered that student participants were accessing the electronic vocabulary and strategy scaffold features at a greater rate within this particular study. This finding was attributed to the researchers intentionally providing a meaningful purpose for students to use the digital features – such as the student requirement of adding three words to their personal glossary – and the presence of the strategy coach via an onscreen prompt at the time of the intervention. The researchers emphasized that during the introduction stages of a technological intervention certain digital features may need to be pushed towards students so that these supports may be accessed or pulled by students later for self scaffolding purposes requiring higher levels of learner regulation. In conclusion, the investigators of this study discussed the limitations of having a small number of participants, a limited duration for the intervention to be integrated, lack of data on language growth other than within the English language, and a need to compare narrative versus informational text

experiences among students. Findings from this study suggested significant opportunities for all students within a scaffolded digital literacy environment. Future research endeavors should explore additional possibilities for improving the literacy experience and learning outcomes for all students through integration of a scaffolded electronic medium within regular literacy instruction.

What We Can Do Now

Researchers, working within the field of new literacies, have shown that the rapid influx of technology is greatly influencing the requirements and resources available for those considered literate within contemporary society and consequentially within literacy classrooms (Coiro, Knobel, Lankshear, and Leu, 2008). Educational statisticians have shown that particular student groups are experiencing difficulty in learning to read within these literacy classrooms (National Research Council, 2002; Planty et al., 2009). What we do not know is the potential for the reading abilities of striving readers to be improved when technology is integrated within the literacy instruction of the classroom teacher.

Pindiprolu and Forbush (2009) confirmed that little is known empirically concerning the value of technology-based reading programs in advancing the reading skills of students striving to achieve grade level expectations in literacy classrooms. It would seem that if we integrated available technology supports within our existing literacy classrooms in ways that promote our existing curricular objectives it would encourage the meaningful learning of striving readers. Dalton and Strangman (2006) explained that technology has "the potential to support [striving] readers in two important ways: as a compensatory tool, providing access to text; and as a learning tool helping students learn how to read with understanding" (p. 75). Therefore, the purpose of my study was to explore how and why a classroom teacher selected and integrated

particular developmentally appropriate technology resources included within a comprehensive set of literacy materials in ways that would provide opportunities for unique learning experiences for striving readers.

Despite the recognition that emphasis on gaining meaning from text is crucial to literacy success, initial reading instruction within elementary schools traditionally centers around the phonological aspects of print followed later by a focus on reading for understanding (Snow, Burns, & Griffin, 1998). Pressley (2006) described the impact of this experience on learners as resulting in a "fourth grade slump" in which student difficulties are documented for the first time in the upper grades occurring when "reading demands change… [as] comprehension is emphasized more, while the difficulty of text increases" (p. 80). The National Reading Panel (NRP) (2000) identified five major instructional areas for the teaching of reading: (a) phonemic awareness, (b) phonics, (c) fluency, (d) vocabulary, and (e) comprehension. Each component identified by the NRP makes a contribution in the ability of a student to experience success in literacy learning. With this in mind, teachers should always explore reading with students as an interactive process with the end result emphasizing understanding to learn.

Fielding and Pearson (1994) described the general shift that has occurred in our thoughts about reading: "Once thought of as the natural result of decoding plus oral language… [reading] is now viewed as a much more complex process involving knowledge, experience, thinking, and teaching." (p. 62). Certainly, if no meaning is gleaned from interaction with the multiple variables at work in the processing of written language, reading is then simply considered by students to be a puzzle of decoding letters and print to create sounds and words. Considering the possibility for this type of experience with reading to occur for students is cause for alarm. For

this reason, my study provided the context to explore how technology integration within literacy teaching could enhance the meaning making process, or comprehension, of striving learners.

It is additionally known that a very specific challenge for students in terms of comprehending written language relates directly to the level of vocabulary the student can bring to the task. According to Kamil (2004):

> Understanding text by applying letter-sound correspondence to printed material only occurs if the word read orally is a known word in the learner's oral vocabulary. If the word read orally is not in the learner's vocabulary, then the leaner will not be able to understand the word's meaning. Thus, vocabulary seems to occupy an important middle ground in learning to read (p. 215).

From the earliest reports issued by Whipple (1925) through the influential work of Davis (1968) and continuing onward today, a strong research base supports the finding that vocabulary is tied directly to general literacy achievement. Therefore, my study additionally provided the context for exploration of any unique opportunities that may be provided by technology integration within the literacy classroom to enhance the vocabulary development of striving learners to promote the overall goal of reading for understanding.

Universal Design for Learning

Another aspect related to technology integration within the elementary literacy classrooms explored within my study dealt with considering why particular technology resources were selected for use by the classroom teacher for the purposes of enhancing the meaning making experiences of striving students. Rose and Meyer (2002) conceptualized a Universal Design for Learning (UDL) to explain that learning designs should be flexible in order to account for the widest possible range of learner needs and preferences found within

contemporary classrooms. The theory of UDL extends the objectives of the universal design movement that originally occurred in the field of architecture to apply similar understandings within the field of education. Universal design within the field of architecture set the standard that the design of products and physical structures should account for the communication and mobility needs of all individuals – including those with disabilities – to allow for greater accessibility resultantly benefitting the entire population. Examples of accommodations within structural design include television captioning for the hearing impaired and curb cuts allowing for accessibility to buildings of those impaired by wheelchairs. When applied to the field of education, universal design suggests that opportunities within classrooms be designed at their inception to increase opportunities for success in learning for all students by taking the widest possible range of learner needs, skills, and interests into consideration.

New and emerging technologies and media have the potential to serve as the catalyst for improving learning for those students who have traditionally been largely unsuccessful in contemporary classrooms. According to Meyer and Rose (2005):

> The needs of diverse learners who have until now been disenfranchised in a print-centric world can drive us to discover, develop, and apply the astonishing power of new media to expand educational opportunities. Learning is supported and facilitated by the interaction between the learner and the curriculum. When that support and facilitation is missing, "learning disabilities" arise… we are ready to take full advantage of the power and flexibility that digital tools and content offer, and to envision new ways for teachers to teach and learners to learn. (p. 19)

The UDL instructional framework supports the idea that successful learning can occur for students when adjustments are made by teachers to provide customized and flexible instruction

to accommodate the diversified needs of all students. In the similar way that curb cuts allow accessibility to individuals with impairments to a building, incorporation of digital media and technology within the field of literacy education might allow accessibility to cognitive meaning making structures by striving learners that in the past have been unreachable. Within my study, I wondered whether particular selection and resultant uses of these continuously emerging digital resources by the classroom teacher could provide more meaningful learning experiences for those students striving to perform at a grade level expectation as suggested by UDL.

Rose and Rappolt-Schlichtmann (2008) described three central principles that serve as the foundation for application of UDL in developing curricula and curriculum materials, such as digital technologies, for improving literacy instruction of all students (p. 214):

1. Provide multiple means of representation to give learners various ways of acquiring information and knowledge.
2. Provide multiple means of expression to give learners alternatives for demonstrating what they know.
3. Provide multiple means of engagement to tap into learners' interests, offer appropriate challenges, and increase motivation.

A brief description of the three principles follows. The first principle addresses the notion that diversity exists in terms of how students recognize and make sense of information presented to them within the classroom. In the most severe circumstances, students have difficulty accessing forms of representation due to physical disabilities such as vision or hearing impairments. In more common cases, as is the case for the majority of striving learners, students find information presented to them in some formats more accessible than others due to their individualized learner needs. Examples of multiple representations range from sensory and perceptual options such as

customizing the size color, or font of text to linguistic options such as providing illustrative graphics to increase vocabulary understandings. Providing multiple representations of information presented to students can increase the potential for students to make sense of knowledge required by the curriculum and presented within the printed text for reading.

The second principle addresses the concern that differences have been observed in the abilities of students to express understandings and navigate the setting for learning. Motor disabilities of students that inhibit the physical action of using various kinds of learning tools to construct and communicate knowledge represent the most debilitating instances in this area. Within the standard classroom environment, teachers are observing the mixed abilities of students ranging from those who express themselves better using oral language but exhibit difficulty when expressing themselves in written form to those who express themselves better using art but may reveal difficulties expressing themselves in words. Providing multiple means of expression via physical options such as allowing students to respond with a computer keyboard as opposed to the traditional form of writing using a pencil or pen, media options such as speaking into a microphone, or organizational options such as allow student access to strategy scaffolds within a multimedia software program can allow increased opportunities for learner success to occur.

The third principle addresses the idea that students vary in terms of the types of learning opportunities that they consider engaging and motivating. Some students are motivated when literacy activities are presented to them that they perceive as challenging. Other students in the same classroom may be alarmed when challenging learning opportunities are presented to them thus resulting in decreased engagement. Providing differentiated learning opportunities, such as using the internet to access materials that appeal to student interests or using various levels of

coaching supports within digital media to scaffold varying learning levels, may improve the likelihood that students experience success in literacy classrooms. This study explored why particular digital technologies and media resources were selected and used by the classroom teacher to make meaningful literacy learning opportunities more accessible for striving learners.

Multiliteracies

Exploration within the field of new literacies and technology requires ongoing reflection and a continuous juxtaposition of varying disciplines and theoretical frameworks (Labbo & Reinking, 1999; Nixon, 2003) to ensure that research is useful to the field. Though a wide range of theories within new literacies could have informed my study, I believed that the unique theoretical framework of multiliteracies was most important to the exploration occurring within my particular study. In the following sections, I describe how I interpret this theory and explain why I feel it is relevant to my study.

Varied and complex understandings of what constitutes literacy and more recently new literacies continually emerge in response to the influx of technology and its impact on society. Although it is beyond the purview of this section to address the multitude of perceptions pertaining to traditionalist notions of literacy, two prominent models merit addressing. One acknowledges a skills-emphasis (Pressley, 2006) that incorporates the sequential development of visual decoding skills acquired via explicit instruction from a more expert, and the other advocates for a whole language model (Gee, 2004) that emphasizes the acquisition of literacy as a natural process. However, Hoeschmann and Low (2008) accused traditional understandings of literacy as being "out of date in a rapidly evolving present whose communicative needs are driven by new media technologies and the economic, political, and cultural conditions of globalization" (p. 10). Thus, teaching with new literacies, central to the meaning making

occurring as a result of computers and technology, must take into account symbolic modalities positioned within historical, social, and cultural contexts. According to Love (2007), educators now "have opportunities to expand their notion of literacy and what it means to be considered literate by including multiple modes of meaning making during their literacy instruction" (p. 19).

The multiliteracies theoretical framework emerged in 1994 as a result of a lively discussion held in New London, New Hampshire by a diverse group of scholars who met to discuss the changing nature of literacy and the new demands required of literate individuals in a continuously changing world. From initial discussions with this group, two main arguments surfaced that serve as the foundation for further exploration within this emerging paradigm. Firstly, it was argued that individuals in our society now require a new "multimodal literacy" (Cope & Kalantzis, p. 6, 2000) that calls for a seamless integration of varying sources of meaning beyond the traditional textual form, to also include visual, audio, and spatial forms in the process of meaning making. Secondly, the scholars claimed that an ability to adjust in response to the continuously emerging cultural and linguistic differences in society was now required for successful functioning in a modern world. Combining these two fundamental ideas, the scholars suggested that educators begin using a highly responsive pedagogy of multiliteracies in order to encourage meaningful learning to occur in their contemporary classrooms for all students.

The multiliteracies theoretical framework informs my study by prompting an expanded notion of what constitutes effective literacy teaching for educators in modern classrooms in response to continuously changing definitions and requirements of literate citizens. Two significant contributions to my study relate to the potential for this theory to answer questions concerning what students need to learn (content) and how literacy pedagogy should occur (form).

What students need to learn. As I explained earlier, within the pedagogy of multiliteracies numerous representations of meaning are available to learners that extend beyond the traditional single form of language. A multimodal approach (Cope & Kalantzis, 2000) to representation and communication takes into consideration the varying modes of meaning available with emerging media that include sound and space-based images integrated with the traditional linguistic form. The New London Group (1996) employed a concept of Design in relation to learning, which uses specific vocabulary to clearly describe how language and meaning-making modes are resources that are continually being remade by their users. Meaning is constructed by users in ways that are progressively more multimodal to account for the way language is continually being reshaped with the emergence of new forms of communication media and technology.

Multimodal social semiotic theory, concerned with the influence of multimodal signs on the meaning making process of humans, provides additional cognitive implications for teaching and learning (Bezemer & Kress, 2008; Kress, 2005). From this perspective, construction of knowledge, or designing, is constantly occurring as individuals engage in reading and creating signs in a semiotic environment. The notion of signs as multimodal indicates that meaning is represented by language, image, gesture, sound, and action. Effective teaching uses selection and configuration of these multimodal semiotic resources or available design within the learning environment (Stein, 2008). Work toward production of meaning in response to engagement in this environment, according to Kress (2005), occurs via an articulation or outwardly produced sign (i.e. writing) or interpretation representing an inward made sign (i.e. reading). Meaning production is thus dialogically constructed "by the impact between a material phenomenon and

the shared processes of consciousness of those who participated in it" (Halliday, 1994/2004, p. 139).

According to the New London Group (1996), the notion of Design as an instructional practice should theoretically involve three elements: (a) *Available designs* represent the varying resources that interact in complex ways to aid in development of new understandings, (b) *Designing* refers to the transformative process occurring as an individual reconstructs existing representations of reality in response to given resources of available design, and (c) *The Redesigned* signifies the transformed meaning resulting from the cognitive situation of available designs within the process of designing. Using the responsive pedagogy of multiliteracies requires educators to consider the available designs for meaning representation in the context of emerging new literacies. The redesigning process only successfully occurs when teachers and learners act as designers to use and conceptualize the multimodal resources at their disposal in meaningful ways.

The process of Designing has specific implications for exploring unique literacy learning opportunities through integration of technology resources. It is important for educators to recognize that as the process of Designing is occurring, every moment of meaning making for students results in a transformation of the available resources. Repetition is not part of this process. Instead, Designing involves representation and re-contextualization to shape new meaning by working with, and at the same time upon, the new emerging meaning termed the Redesigned. According to the New London Group (1996), Designing, or transformation, "is always a new use of old materials, a re-articulation and recombination of the given resources of Available Designs… Designing always involves the transformation of Available Designs; it always involves making new use of old materials" (p. 22). Within the field of education, it is

generally understood that meaningful learning occurs only when connections to the internal cognitive structures of individual students (Available Designs) to newly encountered information (Other Available Designs) are established.

One example where meaningful learning has the potential to occur for striving readers via technology integration within literacy education occurs during the very act of listening to a story being read aloud with electronic storybook software. As students hear the audibly spoken words of the story read aloud (Available Designs), they connect to their internal cognitive structures comprised of personal interests, experiences, and background knowledge (Additional Available Designs) to comprehend and develop new understandings (The Redesigned) as new connections and resultant new meanings are constructed. Another application of the concept of Design occurs within the act of reading requiring students to be able to access particular Available Designs, such as written words via decoding. What happens to the striving reader who lacks the Available Designs, or cognitive resources, to decode text? I wondered if new and emerging technologies had the potential to transform the outcome of Designing for students by making formerly unavailable cognitive structures accessible to them via integration of combined multimodal features such as illustrative graphics, animation, and sound effects.

If students lack in background knowledge (Available Designs) – could multimodal elements within technology provide the scaffolding for meaningful learning to occur? Multimedia can provide extended learning opportunities with the incorporation of varying modalities. In discussion of the multimedia principle, Mayer (2008) explained that "people understand more deeply when scientific explanations are presented with words and pictures than with words alone" (p. 360). Consider briefly the difference in the reading experience for students reading a static text describing a walk along a busy beach shorefront as opposed to an

interactive onscreen environment that stimulates the reader with moving images and sound in addition to traditional print. Students that have relevant background knowledge developed through a visit to the beach likely possess the ability to achieve referential processing of this text. However, those students that have never heard the crashing of the ocean waves, observed the building of a sandcastle, or witnessed the strength of the ocean breeze might experience difficulty. According to Stein (2008), teaching and learning within a multimodal approach characterizes "communication in classrooms beyond the linguistic… Other modes can include image, space, gesture, colour, sound and movement, all of which function to communicate meaning in an integrated, multilayered way" (p. 1). Within my study, I wanted to explore ways in which multimedia environments that incorporated various multimodal features could provide unique opportunities to increase the comprehension of striving students.

How literacy pedagogy should occur. In addition to providing explanations concerning the invisible structures in which meaningful learning occurs for students, The New London Group (1996) also developed guidelines for integrating a pedagogy of multiliteracies. This highly responsive instructional framework incorporates four stages of (a) situated practice, (b) overt instruction, (c) critical framing, and (d) transformed practice. Within situated practice, providing meaningful instruction requires careful reflection by the teacher concerning the background, experiences, ability levels, and interests of students. Expert novices, or those who are skilled in the Designing process, mentor those students experiencing difficulty within the context of authentic and meaningful learning opportunities provided for practice. Using overt instruction, teachers scaffold students in the process of developing strategies to make sense of unfamiliar Design elements encountered independently within the learning environment so that these Designs can contribute to the meaning making of the student in useful ways for future

Designing. Critical framing, within the pedagogy of multiliteracies, challenges educators to encourage activation of higher-order thinking skills in evaluating what has been learned. According to The New London Group (1996), during critical framing "learners… constructively critique [the Redesigned]; account for its cultural location; creatively extend and apply it; and eventually innovate on their own, within old communities and in new ones" (p. 34). Finally, transformed practice prompts teachers to extend students thinking to "meaning-making practice, which puts the transformed meaning (the Redesigned) to work in other contexts or cultural sites" (p. 35). Within this instructional context, learners are challenged to apply new understandings in ways that positively benefit their public lives (citizenship) and personal lives (lifeworlds) as designers.

An additional focus within my formative research centered on the development of practical guidelines for effective instructional integrations of technology curricular materials to benefit striving literacy learners. Implications from the varying stages described in the pedagogy of multiliteracies suggest that learning opportunities build upon one another, build upon the background of students, and accommodate for the ability levels of students in terms of the scaffolding provided. Labbo (2006) claimed that learning opportunities in classrooms today require a balancing between traditional literacies of reading and comprehending combined with the new skills, strategies, and dispositions required of a technologically driven society. Pedagogical implications on the landscape of new literacies have much to be gained from reflecting on how theory might inform practice.

Sociocognitive Theories for Learning

The emergence of new forms in digital media and communication channels will undoubtedly continue to affect the decisions of modern day teachers. Additionally, a dramatic

increase in cultural and linguistic diversity within schools is also influencing the range in learning opportunities being provided within contemporary classrooms. Sociocognitive theory explores how cognition, language, social interactions, society, and culture are linked together in the production of meaning. In describing the function of literacy from a traditionalist perspective, comprehension is based on the ability of an individual to translate a piece of language into an equivalent representational system such as another language or mental structure. Evaluating this belief through a sociocognitive lens, Gee (2001) claimed that the formulation of meaning is tied to people's experiences of situated action in the material or social world and therefore language is never neutral or objective but is instead tied to perspectives. This broader understanding of literacy takes into account the assumptions tied to language within a particular context. For example, consider the difference in approach to knowledge construction, or comprehension of one reading a philosophy textbook for informational purposes as opposed to a graphic novel for enjoyment purposes. From a new literacies perspective, one must additionally take into account how meaning production occurs within the multimodal environments comprised of sound, moving image, and other visual representations on the internet and within other technologies. Hence, a solidified construction of knowledge by the reader requires reflection on the particular context of the reading act to determine which cognitive structures must be utilized (Hammerberg, 2004).

Sociocognitive approaches to literacy acknowledge learning to read and write as being entrenched within the social, cultural, and cognitive context of individuals (Vygotsky, 1986; Wertsch, 1985). Advocates of this particular theoretical orientation claim that understanding of a text only occurs when it is acquired in an authentic context in which the learner acts as a member of a social practice wherein members read about, talk about, hold certain attitudes and values,

and socially interact over similar texts in specific ways (Gee, 2004, 2008; Heath, 1983; New London Group, 1996; Teale & Sulzby, 1986). This particular theoretical influence emphasizes the need for readers to use specific constructions of knowledge, or schemas, for meaning development within particular acts of reading. Additionally, sociocognitive theorists categorize knowledge structures in terms of discourses that children employ to make sense of their worlds (Hammerberg, 2004). Comprehension requires one to be competent in differing language uses within a variety of situations. According to Gee (2008), a literate individual must utilize distinct ways of listening, speaking, reading, and writing depending upon the particular social context in which the meaning making occurs. By way of example, consider the difference in discourse typically utilized in a rural area hair salon as local townspeople discuss the latest gossip concerning mutual acquaintances as opposed to the more formal language utilized in a graduate level college course. Literacies, much like identities (Gee, 2004), can be multiple and change in response to the social and cultural context in which the production of meaning transpires. Hence, effective pedagogy from a sociocognitive standpoint requires a situated practice whereby concept development occurs as a result of real world applications positioned within authentic contexts to students.

Vygotsky, an often cited theoretician in the field of education, devoted a tremendous portion of his studies to understanding the process behind concept attainment for children. According to van der Veer (1998), Vygotsky noted a clear distinction between two types of knowledge construction: (a) Scientific concepts are hierarchically linked understandings established within school that are embedded in the institutional structure, whereas (b) Everyday, or spontaneous concepts comprise those understandings acquired outside of school yet rich in experience and removed from any formulaic representation. Sociocognitive theorists

respectively imply that in order for meaningful learning to occur these scientific concepts must be situated within the context of preexisting mental structures whether in terms of schema or discourses. In order for this designing process (Cope & Kalantzis, 2000) to occur, educators must be reflective on the situated experiences and practices that students bring to the classroom.

In recognition of the differing experiences of diverse students in the classroom, Hunsberger (2007) issued a call for more connectedness or a stronger link between what children live and what they learn. How are students expected to engage aesthetically with texts when their everyday concepts are not developed sufficiently for transactional meaning making to occur? Limited funding continues to be a preventive factor in efforts by teachers to plan exploratory trips outside of school. Since field trips have the potential to provide the rich experiences comprising everyday concepts that particular student groups lack, scholars are beginning to question how ever emerging technologies might make up for the diminishing opportunities for field exploration.

Although the rapid influx of technology complicates the notion of new literacies, it has simultaneously revolutionized potentials for learning within contemporary classrooms. Emergence of the virtual field trip which "generally denotes a multimedia presentation that brings the sights and sounds of a distant place to the learner through a computer" has offered tremendous opportunity for students with few life experiences to develop the everyday concepts needed in order for meaningful learning to occur (Klemm and Tuthill, 2003, p. 178). Thus, the student encountering particular descriptive terms, such as the crack of a bat within a baseball narrative, now has the opportunity to live through this experience in a virtual environment. What difference would this multimedia experience have on students' transactions with the text in the production of meaning? This type of multimedia experience could be possible through selection

and use of particular of technology resources available within the suite of materials comprising AWARD Reading.

Summary

In this section, I explored the available research pertaining to integration of multimedia and technology within literacy instruction. In examining each of these studies, I highlighted what we currently understand about integration of technology within literacy instruction while simultaneously emphasizing the need for my particular study to further inform the field. The chapter concluded with a discussion concerning ways in which the theory of Universal Design for Learning, theory of Multiliteracies, and sociocognitive theory informed my study. In the following chapter, I discuss the methodology used within my study focusing specifically on methods of data collection and analysis used to design, conduct, and report on this study. I provide a description of my research participants and explain the process of data collection throughout the various phases of my formative experiment study.

CHAPTER 3

METHODOLOGY

The purpose of this qualitative study was to explore how and why a classroom teacher selects and integrates particular developmentally appropriate technology resources included within a comprehensive set in ways that may provide opportunities for unique literacy learning experiences for striving readers. To shed light on this topic of inquiry, the following research questions were addressed:

1. *Baseline*: How are the current instructional resources and approaches used by a third grade teacher supporting or inhibiting the literacy development of striving learners?
2. What AWARD Reading resources does a third grade teacher select to use in creating opportunities for unique literacy learning to occur for striving learners? Why?
3. What literacy learning opportunities are being provided to meet the pedagogical goals set by a classroom teacher when using AWARD Reading resources?
4. Are any barriers to effective integration of AWARD Reading resources for the purposes of providing unique literacy learning opportunities for striving readers observed? How are these barriers addressed?

This chapter describes the research methodology of this study organized by the following key areas: (a) rationale for research approach, (b) overview of the formative experiment design, (c) description of research site and participants, (d) ethical considerations, (e) data collection procedures, (f) data collection methods, (g) process of data analysis, and (h) credibility and trustworthiness of the study. The chapter ends with a brief culminating summary.

Rationale for Research Approach

Use of qualitative inquiry is beneficial to those seeking to fully explore, describe, and understand a phenomenon within a particular context. Researchers employing studies based on quantitative traditions typically use reductionist methods to explain a phenomenon within tightly prefigured categories of knowledge. In contrast, goals set forth by qualitative researchers focus on discovery, interpretation, and allowance of emergent understandings to unfold concerning an area of inquiry for the purposes of generating holistic knowledge that accounts for the numerous complexities within our social world (Denzin & Lincoln, 2008; Marshall & Rossman, 2006; Merriam, 2009; Patton, 2002). While research conducted using quantitative methods requires a clear separation between the researcher and the participants to avoid a perceived contamination of the findings, interactions between the researcher and participants within qualitative inquiry are essential as often this serves as a primary vehicle for data collection and emergent analysis to occur. Bentz and Shapiro (1998) explained that "good research should contribute to your development as a mindful person, and your development as an aware and reflective individual should be embodied in your research" (p. 5). Approaching research using a qualitative design facilitates mindful inquiry by promoting an interactive research environment in which a researcher is responsible for making decisions that will generate rich explanations.

Collecting and analyzing data through use of qualitative methods clearly aligned with my goals of exploration and discovery within this dissertation. In other words, qualitative inquiry facilitated my research by allowing the "study of issues in depth and detail… without being constrained by predetermined categories of analysis" (Patton, 2002, p. 14). Quantitative studies are useful to individuals seeking standardized data that can be used to support or reject the hypothesis of the researcher (Bloomberg & Volpe, 2008). Instead, it was more important to my

purposes in research that I gather rich descriptions in order to fully realize the potentials of technology in literacy classrooms when integrated by a teacher to meet specific pedagogical goals for striving readers.

Overview of the Formative Experiment Design

The goal of my dissertation study was to shed light on the ways that an elementary teacher could use an array of technology resources within the context of her everyday instruction to develop meaningful learning opportunities for a specific group of striving readers. I sought to conduct research that would be easily transferable to a world of practice where a number of complexities are often at play. These complexities within contemporary schools can include, but certainly are not limited to, the layout of the physical environment, makeup of the students within the class, organization of the instructional day, availability of educational resources, and pedagogical beliefs of the teacher. To accomplish my study, I employed a formative experiment research design. According to Ivey and Broaddus (2007), using this design for research leaves "open the possibility for creating interventions that are actually responsive to a particular group of students in a particular context" by "monitoring student engagement and adjusting instruction accordingly" (p. 515) in order to reach a particular pedagogical goal.

Research conducted in the past has incorporated controlled experiment designs to compare one instructional intervention to another in an effort to determine which better meets the needs of specific groups of learners. For example, Malette, Henk, and Melnick (2004) conducted experimental research to analyze the influence of Accelerated Reader, a computer-based comprehension testing program, on reading attitudes and self-perceptions of 358 fourth and fifth graders. Findings revealed that Accelerated Reader positively influences reader attitude towards academic reading but has little effect on recreational reading. While the findings of this study

are useful to researchers seeking to explore how available instructional interventions could influence student learning and to determine further areas for research, they offer little in terms of guidance for the classroom teacher desiring to implement this instructional intervention within her particular classroom learning environment.

In contrast to controlled experiments, qualitative inquiry in the past has offered vivid accounts of what occurs when an instructional intervention is introduced to learners within the classroom. Shiratuddin and Landoni (2003) used a case study research design to describe how children used e-book technology devices when integrated within the literacy classroom finding that students use the software with minimal support. Considering these findings, educational researchers might propose that the ease in use of e-book technology demonstrated by students in this study should prompt additional studies exploring the ways in which the e-book technologies could specifically benefit student learning. However, practitioners in the field may wonder how this e-book technology should be integrated within the classroom to allow for meaningful learning experiences to occur for students. According to Reinking and Bradley (2004), we need to "fill a neglected gap in research aimed at guiding instruction… [to] address more directly the questions and issues that practitioners face and that are not addressed by other research methodologies" (p. 152).

My decision to utilize a formative experiment design was made for two important reasons. First, I wanted to examine how the reading experience of the striving learner was influenced when a classroom teacher integrated particular AWARD technology resources to meet specific literacy goals. Methods used within the formative experiment design can include both quantitative and qualitative data analysis (Reinking & Bradley, 2008). Therefore, my use of qualitative data analysis to generate rich descriptions of the learning experiences afforded to the

striving reader with technology integration fit the research design. Second, I wanted to go beyond the basic description traditionally provided by an interpretive study. I sought to additionally generate understandings that could be used to guide the instruction of the classroom teacher. According to Lenski (2001), a formative experiment design "mirrors natural instructional situations where teachers make changes in response to their perceptions of the success of instruction" (p. 318). Therefore, use of this research design aligned with my goal to explore how and why a teacher selected and integrated particular AWARD technology resources to provide these unique learning opportunities for her striving readers.

I wanted my research conducted within a third grade classroom to account for the modifications and adjustments made to the instructional intervention in order for new learning experiences to occur. I am in agreement with Reinking and Bradley (2004) that "ignoring the panoply of variables that are continually fluctuating in classrooms and failing to adapt instruction to those variables are contrary to the essence of teaching" (p. 153). In using a formative experiment design, my goal of producing authentic classroom applications for use of the AWARD technology resources as an instructional intervention for striving readers could be met. In other words, using this study design enables the researcher to produce "rich explanatory descriptions that link interdependent variables in an authentic educational context to pedagogical outcomes in ways that inform… the real world of practice" (Reinking & Bradley, 2008, p. 46). The research process is thoughtful and reflective taking emerging data into consideration. Using a formative experiment design thus offers the benefit of interaction between the researcher and participants as the instructional intervention being integrated in the actual classroom setting is modified to improve learning opportunities. Therefore, this approach allowed me, as the researcher, alongside the participants to adapt the ways in which the AWARD Reading resources

were being used as information pertaining to what worked and what was not working was gleaned from data analysis.

Specific procedural guidelines were followed to ensure that the design, implementation, and understandings generated from my study were in alignment with the characteristics of a formative experiment (Reinking & Bradley, 2008). The procedures used in implementing my dissertation study are as follows:

1. A rich description of the instructional context along with baseline data on striving student performance and teacher pedagogy was gathered prior to introducing the AWARD technology resources as an instructional intervention.
2. Pedagogical goals were established by the participating teacher.
3. Factors and conditions that demonstrated the intervention's effectiveness in reaching the pre-specified pedagogical goal(s) were identified.
4. The effects, whether enhancing or inhibiting, of instructional moves intended to enhance the effects of the intervention were documented.
5. Explanation was sought for any unanticipated effects and outcomes, determining the extent to which the intervention transformed the learning environment and learning experience for striving students.
6. Conditions were identified under which the intervention did or did not work well toward improving practice as described in the pre-specified pedagogical goal(s).

Within my study, I followed a similar approach to the one used in the formative experiment design of Labbo, Baxter, and Huddleston (2009) exploring how integration of *Word World*, a PBS television series with complementary educational resources, could influence the emergent literacy skills of young learners when integrated by teachers in specific ways. Within our

research using *Word World* we conducted a study that extended over a six month period and included three classroom teachers for the purposes of exploring and developing guidelines for future use of *Word World* by other classroom teachers. However, within my smaller scale study I focused on one classroom teacher to explore how and why particular resources included in the AWARD curriculum materials were used to achieve specific pedagogical goals. Secondly, I used methods similar to our *Word World* study in conducting formal teacher interviews to establish pedagogical goals, taking detailed observational fieldnotes of the AWARD instructional integrations by the classroom teacher, and conducting informal teacher and student interviews to investigate those factors enhancing and inhibiting progress using the resources in achieving the pre-established pedagogical goal.

Description of Research Site and Participants

This study was conducted within one third grade classroom in an elementary school located within a rural area in the southeastern part of the United States. According to a descriptive report provided by the principal of the school, of the five hundred and six students in the school serving grades kindergarten through fifth grade, 59% of the students were classified as being eligible for free or reduced lunch, 7% Asian, 6% African American, 14% Hispanic, 67% White, and 6% Multiracial. Additionally, 14% of the students within this school were considered to have limited English proficiency and 11% were considered to be students with disabilities. This school was classified as a Title I school meaning that they received additional federal funding to be used in assisting their high percentage of children of poverty in meeting the state standards for academic achievement. Lastly, the school was comprised of five kindergarten, first, and second grade classrooms and four third, fourth, and fifth grade classrooms.

The process of gaining entry into my research site involved initially contacting the assistant superintendent of curriculum and instruction services at the board of education office to receive permission to recruit interested principals and teachers. After that, I contacted a former colleague, an Early Intervention Program (EIP) specialist at a local school within the county, to serve as a liaison in the process of recruiting interested participants. The EIP specialist contacted teachers via e-mail to determine those interested in participating. Secondly, she introduced me to those teachers and arranged for an initial meeting to discuss the study. I also met with the principal to discuss the possibility of exploring technology integration for striving learners within the context of the everyday literacy instruction of a teacher within her school. The principal was enthusiastic about the project and very interested in learning whether technology resources would improve literacy learning opportunities for her striving readers. Lastly, I met with the two second grade teachers and two third grade teachers recruited with the help of the EIP specialist. Within these meetings, I explored the possibility of their participation in my formative experiment study. Using an agenda as a guide, I provided an introduction to the technology resources included within the AWARD Reading materials, explained the requirements for participation in the study, and discussed the timeline of the project should they choose to participate. Each teacher expressed a sincere interest in the project. Appendix H contains the agenda used as a guide for the introductory informational teacher meetings.

Participant Selection

In selecting a teacher to participate in my dissertation study, I used purposeful sampling to make a final decision. As defined by Patton (2002), this sampling strategy allows the researcher to gain access to "information-rich cases that manifest the phenomenon intensely, but not extremely" (p. 243). Reinking and Bradley (2008) stressed that participant selection within a

formative experiment should prompt the researcher to consider a case where "initial conditions suggest that the intervention's success will face some barriers and challenges but where conditions are not so overwhelmingly challenging so as to doom the intervention to failure" (p. 59). The criterion for participation in this study was:

1. Classroom consisting primarily of students currently exerting increased amounts of effort to achieve basic grade level expectations thus characterizing them as striving readers,
2. Teacher enthusiasm for exploring the influence of technology integration on the reading experience for striving readers,
3. Willingness to have data collected via detailed observational fieldnotes and informal student interviews within three phases of my study to occur over a ten week period,
4. Agreed to participate in one formal teacher interview prior to integration of our instructional intervention, another formal interview to establish pedagogical goals and select AWARD technology resources to be used for phase one of our study, a third formal interview to evaluate the effectiveness of the materials in achieving pedagogical goals and to modify the intervention if needed for phase two of the study, and a final formal interview to discuss the overall effectiveness of those AWARD resources selected and used to achieve pre-determined pedagogical goals for striving readers and to analyze any factors that enhanced or inhibited use of these materials within the everyday literacy instructional context,
5. Agreed to ongoing informal interviews as needed to conduct member checks to review emerging understandings from data analysis, to further explore integration of the selected AWARD resources as an instructional intervention, to determine factors that were enhancing and/or inhibiting use of the resources in meeting pedagogical goals, and to

resultantly modify the way the resources were being used to make integration of the instructional intervention more effective in meeting the pedagogical goals set for striving literacy learners.

In conducting my initial meetings with interested teacher participants, I found that one of the second grade teachers lacked a classroom makeup of primarily striving literacy learners while the other second grade teacher expressed some anxiety with the use of technology. In meeting with the third grade teachers, one explained that her students were currently exceeding grade level standards and would therefore not meet the criteria for participation in the study. The final third grade teacher had a classroom of students primarily composed of striving readers and was willing to contribute to the study through participation in the data collection procedures. However, this teacher expressed some concern in participation due to the lack of available computers within her classroom. For this reason, I contributed a personal desktop computer as well as a laptop computer to ensure that my selected teacher felt fully prepared for integration of the instructional intervention being explored. With these additional resources, the teacher expressed a genuine interest and willingness to participate in examining the ways in which her selection and use of the AWARD technology resources might influence the learning opportunities and reading experience for her striving students. For this reason, the teacher selected for participation in this study agreed to and met the above stated criteria.

Participants

Patton (2002) suggested that the sample size within qualitative inquiry be determined with consideration to "what you want to know, the purpose of the inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources" (p. 244). The goal of my study was to take a detailed look at the ways one classroom

teacher could provide unique literacy learning opportunities for striving students in her classroom when a suite of technology resources were made available. For this reason, the participants in this study were one classroom teacher and her group of striving third grade students. All participants were given the opportunity to select a pseudonym to be used within the writing of my dissertation.

The teacher participant for my study, Mrs. Calhoun, had been an employee of the same rural southeastern school district in which the study was conducted for thirteen years. She began her educational career serving for one year as a monitor on a school bus responsible for transferring students with special needs. She served within the middle school setting as a paraprofessional in a special education classroom for students with severe and profound disabilities and emotional and behavior disorders for four years. Mrs. Calhoun served Georgia Elementary School for one year as a paraprofessional in a kindergarten classroom. She also worked for seven years in the computer lab within this same school working with students in grades kindergarten through fifth grade. During her time serving Georgia Elementary School within the computer lab, she completed her Bachelor of Science degree in Early Childhood Education. Mrs. Calhoun had a range of former experiences working within the educational setting. However, she was completing her first year of teaching during my study.

A total of twenty third grade students in Mrs. Calhoun's class were given permission by their parent or guardian to participate in my study. These student participants included twelve girls and eight boys. Fifteen students were classified as Caucasian, three as Hispanic, one as Asian, and one as African American. One student received special education services for math and writing, one student was being monitored for his English Language Learning, one student was served through EIP for reading, and one student was served through the gifted program.

According to the school administered reading assessment provided by the classroom teacher, results from the winter testing period revealed that all students within her classroom required extensive teacher support to meet grade level literacy objectives.

Ethical Considerations

When conducting research within any area, the protection of the participants should remain a priority for the researcher for the duration of the study (Merriam, 2009). It is crucial for participants to be informed concerning the purposes of the study within which they are choosing to participate. Secondly, the anonymity of the participants must be protected throughout each phase of the study beginning with initial data collection and continuing through the completion of the written study. Upon agreeing to participate in the study after our initial meeting, the classroom teacher for this study was given two copies of a teacher consent form (see Appendix I). One signed copy of the teacher consent form was filed securely among my study materials. The teacher participant kept the second copy of the teacher consent form for her reference throughout the study. Additionally, I provided verbal confirmation to the classroom teacher participant that any questions or concerns in relation to the unfolding research study could be expressed to me at any point throughout the study.

Parental consent forms were sent home with each potential student participant in the third grade classroom where the study was conducted the week prior to the start of the study. A copy of the parental consent form is included in Appendix J. The classroom teacher sent two copies of the parental consent forms home within the folder she typically used for communication purposes. Parents were asked to sign both copies of the form. One form was returned to the classroom teacher. Upon completion of collecting the consent forms, the classroom teacher gave all parental consent forms to me. These forms were stored in a secure location with all other

study materials. The second copy of the parental consent form was kept at home by the parents for their reference. The classroom teacher provided verbal confirmation to the parents that any questions or concerns that may arise during the study could be directed to either her or me.

Lastly, the purposes of the research were presented to third grade student participants using an assent script which I read aloud to each child. A copy of the student assent script is included in Appendix K. Upon completion of the reading of the script, I asked students if they had any additional questions or concerns. I also explained that any questions or concerns that may arise throughout the research study could be addressed to either me or the classroom teacher. Students were given the opportunity to choose a pseudonym that I explained would be used within my written dissertation study. Each student participant signed and dated the assent form to evidence their willingness to participate in the study. All signed student assent forms were stored securely with all other study materials.

Data Collection Procedures

This formative experiment was conducted over a 10-week period organized within three phases: (a) Baseline Phase, (b) Phase One, and (c) Phase Two. Within this section, I will describe the procedures used within each phase of data collection. The baseline phase lasted for two weeks and was conducted prior to any integration of the AWARD Reading resources by the classroom teacher. Both phase one and phase two of the study lasted for four weeks. During phase one, I collected data in relation to the initial integration of the AWARD Reading resources by the classroom teacher. Throughout phase two of the study, my goal was to continue data collection on integration of the AWARD Reading resources with a specific focus on the shifts and adaptations made by the classroom teacher to use the instructional intervention more effectively to meet the literacy learning goals she established for her striving students.

Baseline Phase

The overall goal for my research study was to explore how a classroom teacher may use a suite of technology resources available within the AWARD Reading curriculum materials to encourage unique literacy learning experiences for her striving students. In order to be certain that the learning experiences occurring within Mrs. Calhoun's classroom were exclusive to the integration of this instructional intervention, it was important for me to understand the dynamics within her classroom prior to any integration. During the two week period of baseline data collection, I completed four classroom observations in an effort to answer my research question pertaining to understanding the everyday instructional resources and approaches used by Mrs. Calhoun for the striving literacy learners in her classroom. These observations were conducted during the literacy instructional block within my third grade classroom.

Participant interviews were also conducted during the baseline phase of data collection. Data gathered from my classroom observations influenced the types of questions I asked participants. My goal in these interviews was to gain a deeper understanding of the ways in which striving literacy learners were being supported or inhibited within the present instructional setting from the perspective of the participants. Throughout the classroom observations, I often engaged in informal conversation with the striving learners and sometimes the classroom teacher. I made note of these informal conversation within my fieldnotes. Additionally, I conducted formal interviews with the classroom teacher, the paraprofessional who was serving this classroom at the time of the study, and one striving student recommended by the classroom teacher. Formal interviews were recorded and transcribed.

I met with the classroom teacher on the final week of data collection for the baseline phase to review the available materials for use within the AWARD Reading resources. During

this meeting, the classroom teacher completed the formative goals decision guide (see Appendix L) explaining the resources she would select to use for phase one of the study and to describe the ways she planned to use these resources to meet specifically identified pedagogical goals of her striving students.

Phase One

Phase one of my data collection immediately followed the baseline data collection phase. During this four week period, I completed ten one-hour classroom observations to describe the initial integration of the AWARD Reading technology resources as an instructional intervention for the striving learners within Mrs. Calhoun's classroom. In conducting my classroom observations, I took detailed fieldnotes using my laptop computer to identify the particular resources being used and to describe the ways they were being used by the classroom teacher to meet pre-established literacy learning goals set for striving readers. I made decisions on when to conduct observations with consideration to the days which Mrs. Calhoun would be using the instructional intervention with her striving learners.

Additionally, I conducted three student interviews and two teacher interviews to collect data on the perceptions of the participants concerning integration of the AWARD Reading resources as an instructional intervention. As I met with the teacher to conduct informal interviews and reported to her the ideas of the students, we often discussed what was working and what was not working in integrating the instructional intervention. Modifications to integration of the technology resources were made as these understandings emerged. As a final method of data collection during this phase, I took digital photographs to document the resources used within this classroom setting and the ways they were being adapted throughout the study to encourage literacy learning of striving students.

Phase Two

Phase two of my data collection began immediately upon completion of phase one and also lasted for a total of four weeks. Prior to integration of the instructional intervention during this phase, I conducted a formal interview with the classroom to discuss how the AWARD Reading resources were being used and in what ways she may adapt use of these resources in order to more adequately meet her instructional goals. During this interview, we also considered the literacy instructional goals she set during phase one and she made decisions to adjust the goals based on the needs of her striving learners. Lastly, Mrs. Calhoun described the particular AWARD Reading resources she would select for use in meeting her revised pedagogical goals for students.

During phase two of continuing data collection on integration of the AWARD Reading resources, I adjusted my researcher lens to specifically focus on the modifications made by Mrs. Calhoun in her use of the instructional intervention for the purposes of more effectively meeting the literacy learning goals she established for her striving students. Similar to phase one, I conducted ten one-hour classroom observations during teacher integration of the instructional intervention with striving learners. I continued to take detailed fieldnotes of what was happening during the literacy instructional block using my laptop computer. I maintained a focus on the resources being used and the ways they were used by the classroom teacher to provide new learning opportunities for striving readers. However, I additionally gave consideration to any adaptations or shifts made by the classroom teacher for the purposes of enhancing the learning opportunities being provided to the striving learners with integration of the AWARD Reading resources as an instructional intervention.

Data Collection Methods

According to Bloomberg and Volpe (2008), the past experiences of the researcher, information gleaned from the review of the literature, and keen attention to the purposes of the study should establish a working conceptual framework that focuses and shapes the decisions made regarding the data collection methods of the study. Three primary data sources of interviews, observations, and documents are available to those conducting qualitative research (Patton, 2002). Multiple methods of data collection were used within my study because I sought to produce rich descriptions of what was happening within my research setting. Additionally, use of multiple methods facilitates triangulation by the researcher which adds rigor, breadth, and depth to a study as evidence obtained during data collection can be confirmed among varying sources (Creswell, 2007).

In implementing a formative experiment design, my goal was to choose data sources that could provide "systemic understandings that inform theory development in the real world of practice" (Reinking & Bradley, 2008, p. 46). For this reason, I gave consideration to data sources that were most relevant to answering the questions asked within my particular research study and specifically to those that would aid in my effort to generate knowledge that could be easily transferable for practitioners. Additionally, in keeping with the traditions of qualitative inquiry I used multiple methods of inquiry (Marshall & Rossman, 2006) to provide rich explanations that would clearly answer my research questions. Table 3.1 shows the alignment of my research questions to the information needed and to my methods of data collection. For this study, I used the following data collection methods: (a) observations, (b) interviews, (c) document analysis, and (d) focus groups.

Table 3.1

Alignment of Research Questions to Information Needed to Methods

Research Questions	*Information Needed*	*Methods*
Baseline: How are the current instructional resources and approaches used by a third grade teacher supporting or inhibiting the literacy development of striving learners?	Description of the instructional setting, resources, and learning opportunities; perceptions of the teacher and striving learners prior to introduction of AWARD resources; learning levels of the striving students	Observation Interview Document Analysis
What AWARD Reading resources does a third grade teacher select to use in creating opportunities for unique literacy learning to occur for striving learners? Why?	Description of who and what the teacher uses to make decisions on use of AWARD resources; explanation of the learning opportunities provided by the teacher with AWARD resources; examination of teacher rationale for particular use of AWARD resources; description of adaptations to use of AWARD resources to improve learning opportunities	Observation Interview
What literacy learning opportunities are being provided to meet the pedagogical goals set by a classroom teacher when using AWARD Reading resources?	Examination of the literacy learning occurring among striving learners with AWARD resources; perceptions of striving learners learning experience with AWARD resources; analysis of striving learner progress with AWARD resources	Observation Interview Focus Groups Document Analysis

Observations

Classroom observations served as a primary means of data collection for the duration of my study. A total of twenty-four observations were completed. Four observations occurred during the baseline data collection phase and ten observations occurred during both phase one and phase two. The observations were scheduled based on the literacy instructional schedule of the classroom teacher. Within Mrs. Calhoun's classroom, literacy instruction was one hour and thirty minutes long and consisted of two segments. For this reason, observations often lasted from forty-five minutes to ninety minutes depending on the activities planned for the

instructional day. Prior to integration of the AWARD resources for the purposes of this study, the instructional schedule was clearly articulated for the classroom community. During the first segment of instruction from 9:30am-10:15 am, Mrs. Calhoun worked with small groups of students arranged according to similarities among their reading levels for guided reading instruction. Those students not participating in guided reading with Mrs. Calhoun were working independently at literacy learning centers. The second portion of the literacy instructional block, occurring from 10:15 am-10:45 am consisted of teacher directed reading. During this portion of the instruction, the students read from a basal reader from the Houghton Mifflin Reading Series adopted by the school.

During the baseline data collection period, it was important to observe the literacy learning opportunities being provided to the striving students prior to any integration of AWARD resources. For this reason, decisions on which days to attend for observation were made based on convenience of the researcher. Upon integration of the instructional intervention during phases one and two, I discussed the learning activities planned for the following week with the classroom teacher to determine which days would be linked to my research to decide which days to conduct a classroom observation.

Qualitative researchers frequently use observation to gain firsthand knowledge and experience of what is being studied as it is naturally occurring. While observation can subconsciously occur for everyday individuals, it is used as a research tool when it is systematic, used to address specific research questions, and is subject to checks and balances to ensure trustworthy results (Merriam, 2009). Using observation requires an ability on the part of the researcher to be able to describe what is happening within the research setting. According to Patton (2002), skilled observation involves paying attention to what is happening, being able to

write descriptively through recording of organized field notes, and knowing how to decide what needs to be recorded in order to obtain data that can answer the research questions.

Within my study, I took on the role of participant-observer (Creswell, 2002) in gathering observational data. According to Reinking & Bradley (2008), participant-observation allows the researcher to effortlessly move between participating in the integration of the instructional intervention within the classroom and simply observing integration of the instructional intervention without any participation. In acting as an observer within the classroom setting, I entered the room quietly choosing to sit in close proximity to the striving learners as they engaged in literacy activities but also choosing a discrete location that would not distract students from their learning. Throughout my observations, I sometimes shifted into the role of participant by engaging in informal conversations with striving students to gain a deeper understanding of the literacy learning experiences that were occurring. Other times I acted as a participant by assisting with instructional resources and answering specific questions asked by the students.

Throughout my observations, I recorded what I was seeing and hearing with great detail in the form of observational fieldnotes using my laptop computer. These observational fieldnotes contained the raw data that I would eventually use to generate knowledge during data analysis. According to Merriam (2009), the level of detail acquired within observational fieldnotes often correlates to the ease in which data analysis occurs. For this reason, I used an observation guide (see Appendix M) to ensure uniformity and to focus my attention to those details that would likely answer my research questions. The observation guide included the following prompts: (a) describe the approaches used by the classroom teacher to support the literacy development of striving learners, (b) detail the conversations taking place among striving learners and teachers, (c) note the levels of engagement among striving learners during literacy

instruction, (d) explain any instructional strategies used by the teacher to influence the literacy instructional experience for striving learners, and (e) comment on any factors that inhibit or enhance progress toward the pedagogical goals of the classroom teacher.

Interviews

Interviews served as another primary means of data collection throughout my study. According to Patton (2002), "we cannot observe everything. We cannot observe feelings, thoughts, and intentions… we have to ask people questions about those things" (p. 341). Within my study, I used combinations of structured and unstructured interviewing. Structured interviews were planned to capture precise data on a particular topic in ways that would answer my research questions. Uses of interviews guides facilitated this process and were designed with careful attention to the information needed in order to answer my research questions. However, I also maintained the flexibility to be able to deviate from my observation guide in order to "pursue information… depending on what emerges from observing a particular setting or from talking with one or more individuals in that setting" (p. 342) so that I was "free to go where the data and respondents lead" (p. 343). In other words, I frequently combined interview approaches to allow for "flexibility in probing and in determining when it [was] appropriate to explore certain subjects in greater depth, or even to pose questions about new areas of inquiry that were not originally anticipated in the interview instrument's development" (p. 347).

Within the baseline data collection period, I conducted one student interview, one teacher interview, and one paraprofessional interview. These interviews were informal so as to be able to pursue the ideas of the interviewees yet were conducted using a baseline interview guide to ensure that particular aspects were covered to achieve the purposes of my research (see Appendix N). Baseline interviews were planned with the teacher according to her convenience.

Prior to integration of the AWARD Reading resources for both phase one and phase two of the study, I conducted a formal interview with the teacher using our Formative Goals Decision Guide (see Appendix L) to structure our discussion to answer how and why particular AWARD Reading resources were selected for use with striving learners. Upon conclusion of phase one and phase two of the study, another formal interview was conducted with the teacher using an interview guide to facilitate conversation (see Appendix O and P). The purpose of these interviews was to understand the learning experiences that the teacher perceived were being provided with integration of AWARD Reading resources. Additionally, factors that either enhanced or inhibited use of the AWARD Reading resources to meet specific pedagogical goals were explored along with any modifications made to use of the instructional intervention to improve learning conditions. Finally, throughout the study informal conversational interviews were conducted with the teacher and students for "spontaneous generation of questions in the natural flow of an interaction often as part of ongoing participant observation fieldwork" (p. 342). These conversations allowed me to understand the perceptions of the teacher and students as they were engaged in use of the AWARD resources as instructional interventions during the school day.

Interviews conducted with the classroom teacher usually lasted approximately one hour. Time spent on each student interview ranged from ten minutes to forty minutes. Interviews were digitally recorded using my laptop computer. Upon completion of the interview, these sound files were saved and uploaded onto Google Documents. This provided a secure location for storage of the interview until it could be transcribed by an outside source. Each interview was transcribed within one week of completion of the interview.

Documents

Throughout my study, I collected documents and other artifacts in an effort to obtain new sources of data that are not easily accessible by means of observation or interview (Patton, 2002). According to Merriam (2009), documents include a wide scope of written, visual, digital, and physical material relevant to the purposes of research. Artifacts can additionally be collected to account for any object in the research environment that represents a form of communication. Documents used within a study can be categorized on a number of levels including, but certainly not limited to, the type, authorship, and method of solicitation by the researcher (Flick, 2006). In order for documents to benefit the data analysis of a study, attention must be paid to the type and content of documents. Consideration must be given to whether or not using the document will provide greater insight and context in answering the questions outlined within the research agenda.

Documents and artifacts were purposefully selected (Flick, 2006) during my study to provide contextual information that would help generate knowledge to more clearly describe the happenings within my research setting (Bloomberg & Volpe, 2008). During phase one and phase two of my study, I requested that the classroom teacher complete a formative goals decision guide (Appendix L) to describe her overall goals for use of the AWARD resources, her selection of materials and designated learner objectives, her methods of evaluating student literacy development with use of AWARD resources, her guiding questions of the teacher for exploration during the study, and the instructional context in which she would use the AWARD resources. I saved a digital copy of this formative goals decision guide on my laptop computer labeled “phase one guide” for easy access as my emergent analysis occurred. These documents assisted me during phase one and phase two of my study in understanding how the teacher

intended to use the AWARD resources and why she selected these particular resources to meet designated learner objectives. Throughout the study, I frequently reread these documents to evaluate whether the teacher use of the AWARD resources was effective in meeting the pedagogical goals outlined for the students. Use of these documents made it possible to consider those factors that may be inhibiting or enhancing progress toward the pedagogical goals outlined by the teacher. Understandings emerging from this ongoing analysis provided the foundation for decisions made to modify teacher use and integration of the AWARD resources to encourage meaningful learning experiences for the striving learners.

Throughout the study, photographs of student work samples, instructional resources integrated by the teacher, and technology integration within the literacy instructional block were taken using a digital camera feature on my Blackberry cell phone. These digital photographs were uploaded onto my laptop computer on a weekly basis. I organized the photographs into folders designating the phase of the study in which the photograph was taken. Descriptive terms were used to label the photograph for future data analysis. Use of these photographs as documents supplemented the description of how integration of the AWARD resources unfolded within the classroom to influence the literacy learning opportunities provided for striving learners providing a clearer picture for the reader.

Lastly, e-mail correspondence occasionally served as a means of communication for me and the classroom teacher. These exchanges were used to ask questions, schedule observations, and clarify understandings pertaining to the research study. I organized all e-mail exchanges that included information relating to the study within a folder labeled “Dissertation” on Microsoft Outlook (2007). These e-mails provided additional insight into the perceptions of the classroom

teacher in terms of whether or not her use of the AWARD resources was meeting her pedagogical goals for her striving learners.

Focus Groups

The methods I selected for data collection were chosen with careful attention to my research questions, the purposes of my study, and the strategies I thought would be most effective in obtaining information to inform my study (Denzin & Lincoln, 2008). For this reason, I initially made the decision to use interviews, observations, and document analysis. During phase one of my study, I began to notice during informal conversations that were taking place within my observations that students were more likely to share their feelings and perceptions when discussing with their peers. As this information was revealed to me, I began to question if use of focus groups would more clearly align with my goals for inquiry.

One of the benefits of qualitative research is that it allows the researcher to employ a flexible set of guidelines for the purposes of inquiry and to make ongoing decisions within data collection as understandings emerge (Denzin & Lincoln, 2008; Reinking & Bradley, 2008). Based on understandings emerging in the field, I chose to utilize focus group interviewing throughout phase two of my study. Use of this method of inquiry encouraged student dialogue by allowing participants to share additional insights beyond their original responses upon hearing and reflecting on the thoughts of others. According to Patton (2002), a focus group interview is simply an interview with a small group of people from similar backgrounds in which the researcher serves as a moderator in guiding the discussion that takes places toward topics that provide explanation that informs the research questions.

The week prior to the start of phase two, I spoke with Mrs. Calhoun explaining my desire to shift interviewing strategies to additionally incorporate focus group interviews. Following the

lead of Patton (2002), I recognized that the usefulness of this method of inquiry is often contingent upon the interview being narrowly focused often "seeking reactions to something (a product, program, or shared experience) rather than exploring complex life issues with depth and detail" (p. 388). Throughout the data collection of phase two, I conducted four focus group interviews choosing to focus on a shared experience of the striving learners in the classroom. My topic selections solicited discussion from students on their experience working independently at the fluency center, using the interactive CD-Roms for reading, playing interactive literacy games on the computer, and creating a newspaper as a response to literature using a technology program available within the AWARD resources.

Following the suggestion of Marshall and Rossman (2006), focus groups were formed with consideration to those students who shared common characteristics relevant to the questions posed by my study. For the purposes of my research, I grouped students with consideration to how they were grouped for guided reading instruction because I was most interested in understanding perceptions of a particular group of striving learners. Additionally, I believed that arranging groups in this way would increase the level of comfort among students within the focus group setting because they were used to working with one another. It was important to my purposes in conducting focus groups that students felt comfortable so that meaningful discussion was more likely to occur.

Each of the four focus group interviews was recorded using a digital sound recording feature on my laptop computer. Upon completion of the focus group interview, audio files were uploaded to Google Documents so as to be kept in a secure location until they could be accessed by my hired transcriptionist. All focus group interviews were transcribed within one week of completing the interview.

Process of Data Analysis

Attention to how collected data will be managed, organized, and analyzed is of crucial importance to the successful implementation of qualitative research (Bloomberg & Volpe, 2008). In keeping with the tradition of qualitative research, I used a variety of data collection methods because I sought to develop rich descriptions so that understanding of what was happening within my research setting among participants could be more fully realized by readers of my study. A primary challenge for qualitative researchers lies in making sense of the mass of collected data. This occurs throughout the process of data analysis. The goal of the researcher is to order, structure, and interpret the large accumulation of raw data searching for broad statements describing relationships and underlying themes (Marshall & Rossman, 2006). According to Patton (2002), this process involves a systematic transformation of massive amounts of data into findings by "reducing the volume of raw information, sifting trivia from significance, identifying significant patterns, and constructing a framework for communicating the essence of what the data reveal" (p. 432).

For my study, I used the constant comparative method developed by Glaser & Strauss (1967) to compare available sources of data searching for categories, properties, and eventually themes that provided theoretical links among my categories and properties. The qualitative data analysis process was ongoing and occurred throughout all phases of my study. Additionally, I followed a three level analysis guide (see Table 3.2) outlined by Anfara, Brown, and Mangione (2002) to propel my data analysis. I used QSR NVivo 8.0 (QSR International Pty Ltd, 2008), a qualitative data management and analysis software, and Microsoft Word (2007) to facilitate my ongoing analysis process across all three phases of my study. Using QSR NVivo 8.0, I imported raw data, referred to as internal sources, to assign initial codes and group codes into categories

during the first and second levels of iteration of my data analysis. I used Microsoft Word to organize, merge, and integrate categories to form conceptual constructs in the third and final stage of iteration within my qualitative data analysis. Additionally, I used the Microsoft Word computer software throughout all three levels of analysis to expand on fieldnotes.

Table 3.2

Three Iterations of Analysis

Three Iterations of Analysis
First Iteration: Open coding occurs as data are organized into manageable chunks
Second Iteration: Open codes are organized into categories based on patterns among codes
Third Iteration: Categories are merged to develop overarching theoretical constructs

First Iteration

For the first iteration of analysis, I entered my data into QSR NVivo 8.0 using my laptop computer. I imported data sources from document files within my laptop on a weekly basis. I organized the data sources within electronic folders according to the phase of the study in which I collected the particular data source. Upon entering the data into QSR NVivo 8.0, I began my data analysis process.

During first iteration level data analysis, I completed open coding by carefully reading through each data source searching for any segments that seemed relevant to answering my research questions (Merriam, 2009). I open coded these segments of data using a labeling feature of QSR NVivo 8.0 with concepts derived from the literature, actual words of the participants, and my own personal thoughts. For example, I initially assigned the phrases “audio sources” and “image sources” to provide evidence of multimodal resources being used by

striving learners and "asking questions" to document the particular teaching strategies being used by the classroom teacher. Following the procedures of open coding, I transitioned into incident to incident coding (Charmaz, 2006) to make comparisons among continuously accumulating data sources and to compare new insights from the data to former observations and resultant coding of data sources. I utilized this refining process to adjust and shorten phrases used during open coding to more clearly articulate the patterns I was observing as I compared data sets and points of analysis. For instance, I shortened the open code "differentiated vocabulary instruction" to "differentiation". Throughout first level iteration, I read and reread data sources searching for new codes while simultaneously adjusting the labels used previously during open coding to more clearly articulate patterns being identified within and across the data. Appendix Q is included to demonstrate the QSR NVivo 8.0 feature used to complete open and incident to incident coding. The colored strips to the right of the data transcript illustrate how varying codes were used to identify significant portions of data during first level iteration.

Second Iteration

In initially assigning open codes to my data sources, I facilitated the next step of category construction involved in my data analysis (Merriam, 2009). As I read through each additional piece of data used within my study, I reflected on the open codes already assigned to other segments of useful data. I compared and contrasted my existing open codes with my newly emerging open codes. Then, I began to group those codes that I perceived as being similar or related to one another into an overarching category. For example, I clustered codes such as "access to text", "gaining meaning from text", and "supporting traditional print literacy" to one overarching category that I named "assistive technology". Using Microsoft Word, I designed tables that I used flexibly throughout my analysis to adjust the grouping of open codes in

response to my perceptions regarding category development. I engaged in recursive data analysis throughout category construction in that I continuously revisited the categories to check for consistency and to make resultant adjustments to the categories based on my perceptions of the story unfolding within my data. Appendix R demonstrates the alignment of the refined categories that I used within my study with the assigned codes grouped based on the research question each category was used to answer.

In addition to the flexible tables, I created headings within the same Microsoft Word document that correlated to the categories I identified through ongoing recursive analysis. I placed exemplar data excerpts that I had identified using open coding within QSR NVivo 8.0 beneath each of the headings to facilitate my eventual presentation of the data findings in chapter four. As I copied and pasted significant data excerpts within my identified categories, I used this document as a reference tool to determine whether my ideas were represented on multiple instances within varied sources of data.

Third Iteration

In the final stage of analysis, I integrated my established conceptual categories to identify overarching theoretical properties. In order to establish my themes, I reread the significant data excerpts within each conceptual category searching for interrelatedness so as to be able to link them in meaningful ways. I developed each theme in the third iteration with the goal of being able to offer readers a viable interpretation of my findings for the purposes of answering each research question (Anfara, Brown, & Mangione, 2002). Table 3.3 demonstrates the particular way I linked my categories in ways that I considered meaningful to establish thematic interpretations of my findings. In chapter four, I use the themes established within the third

iteration to organize my findings and offer detailed responses to each of my research questions outlined for this study.

Table 3.3

Research Question-Themes-Categories Alignment

Research Question	**Themes**	**Categories**
1	Mrs. Calhoun as Teacher and Learner	Teaching strategies, Literary elements
	Beyond the Classroom Walls	Teacher pressures, Outside influences, Striving student experiences
2	Additional Available Designs	Assistive technology, Embedded multimedia
3	Customized Learning Opportunities	Extending representation, Differentiated levels of engagement, and Unique occasions for expression
	Reading as a Network of Processing Systems	Thinking within the text, Thinking about the text, Thinking beyond the text
4	Difficulty with Technology	Access to technology, Time constraints, Difficulty with technology, Student misuse of technology, Behavior management
	Teacher Decision Making	Instructional approaches, Directing student attention, Literacy coaching, Establishing a purpose for student use of technology, Procedural teaching, Teacher thoughts for future teaching

Credibility and Trustworthiness of the Study

To ensure that findings from my formative design experiment were trustworthy, I followed specific guidelines outlined by Reinking and Bradley (2008). Firstly, I sought to achieve conceptual rigor within my study by providing systemic validity and consequential validity.

Systemic validity refers to the alignment of theory, research, and practice. Consequential validity relates to an articulation of how an intervention might make a difference in accomplishing a well-defined and valued pedagogical goal. My goal was to assure readers that my research was plausible and could be trusted by aligning my research with both theory and practice.

Secondly, attention and openness to multiple factors and multiple sources of data were incorporated within my study. Methods of data collection, along with my focus throughout the research, were flexible shifting in response to understandings emerging within the field. I took into consideration that numerous factors could influence the effectiveness of integrating AWARD Reading resources within Mrs. Calhoun's classroom. For this reason, in generating ideas from the field, I used both observations and follow-up interviews to be certain that I was accounting for all of the factors at play within the research setting. Additionally, my emerging understandings and resultant written descriptions can be traced back to multiple instances within varied sources of data. Use of triangulation substantiates the claims of the researcher revealing that ideas can be traced back to multiples sources of data using a variety of methods.

A third factor that ensures the trustworthiness of my research relates to the amount of time spent in the field conducting the study. Three phases, occurring over a ten week period, permitted in-depth analysis and provided opportunities to modify use of the instructional intervention in response to initial understandings emerging from analysis. Fourthly, I gave careful consideration in selecting an appropriate site to conduct my research. My decision to conduct my research within Georgia Elementary School was made based on my observation of initial conditions suggesting that success of the intervention would likely face some challenges. However, conditions were not so overly challenging so as to doom the intervention to failure. In

selecting an appropriate research site, I felt it was unlikely that claims could be made that my study was manipulated to show benefits of the intervention or vice versa. Finally, I made a deliberate effort to remain skeptical throughout the research process. I chose not to define my role within the study as an advocate for the use of AWARD Reading resources as an instructional intervention for striving learners convinced that it would produce desired results. Instead, I remained focused on the factors that enhanced use of the intervention while also considering limitations of its use.

Summary

Within this chapter, I provided a rationale and an overview of the formative experiment research design. Second, I offered a description of the research site and participants emphasizing ethical considerations of the study. Third, I explained the procedures and methods involved in data collection. Fourth, I described the process used for data analysis. Finally, I discussed the factors considered to ensure the credibility and trustworthiness of my dissertation work. In the next chapter, I use a traveling metaphor to present the data findings of this study.

CHAPTER 4

FINDINGS

When asked by the teacher to define the word mandatory, one learner responds with a question: "Is mandatory like a man reading a story?" Mr. Landon, the paraprofessional assigned to work with this small group of striving learners by Mrs. Calhoun on vocabulary development, pauses to think momentarily before responding. With a shrug of his shoulders and a half-hearted smile, he credits the student for her line of thinking saying, "Well, [the word mandatory] does have man in it, so I like the way you're thinking, but that's not quite what it means." He pauses again before continuing with his response. Raising his eyebrows, he prompts, "Let's think about it this way. Is it mandatory that you do your fluency homework every night? Is it mandatory that you come to class on time? Is it mandatory that you keep your voices quiet in the cafeteria? Is it mandatory that you respect your teachers?" As he asks each of the questions, the students nod their heads indicating that they believe each of the events to be mandatory. Upon providing this string of examples, Mr. Landon releases an exasperated sigh and again asks, "So, what does mandatory mean?" Princess eagerly responds, "Being good?" Based on the illustrations he provided, Mr. Landon acknowledges that a student could draw this conclusion. He states, "You're on the right track." Various other learners attempt to provide the meaning of the word 'mandatory' to no avail. At this point, Mr. Landon directs the thinking of the students with another question: "Ok, if something is mandatory – do you have to do it or do you not have to do it?" In a collective response, the students excitedly scream, "Have to do it!" Leaning forward in his chair and smiling, Mr. Landon waits in eager anticipation for students to respond to his next question. When asked to provide a sentence correctly using this previously unknown word, one student excitedly calls out, "I have to mandatory my homework every night!" (Expanded fieldnotes, February 18, 2010)

In observing the exchanges taking place during this vocabulary lesson, I couldn't help but feel a sense of empathy for both the teacher and the striving students working so diligently in this small group setting. As a former classroom teacher, I imagined the frustration of Mr. Landon upon realization that his group of learners remained largely unsuccessful in their meaning making processes despite his energetic teaching. Additionally, I recalled his dissatisfaction with textbooks being the only resources available for use during literacy instruction (Interview, February 17, 2010). As a former striving doctoral student exerting great effort to attain high standards, I imagined the disappointment felt by the students upon recognition that despite their

persistent effort they had fallen short of the grade level expectation. With this in mind, I more easily understood the claim of Mrs. Calhoun that many striving learners had stopped raising their hands to participate altogether (Observational fieldnotes, February 18, 2010). At this reflective juncture, Mrs. Calhoun and I returned to the question guiding the study. Could technology resources serve as tools for learning to make literacy a richer and more meaningful experience for these striving students?

The purpose of this study was to use a formative experiment methodology to explore how and why a classroom teacher selected and integrated particular developmentally appropriate technology resources, included within a comprehensive set, in ways designed to provide opportunities for unique learning experiences for striving readers. To employ a metaphor that will be elaborated on throughout chapter four, Mrs. Calhoun and I embarked on an exploratory journey traveling toward success in literacy learning with her striving students. In potentially troublesome travel conditions, Mrs. Calhoun selected and used innovative technology tools for improved navigation by travelers along the way.

This chapter will be organized within four sections to answer each research question of the study. In the initial section, I answer the first research question: How are the current instructional resources and approaches used by a third grade teacher supporting or inhibiting the literacy development of striving learners? To answer this question, I describe the travel conditions of participants prior to integration of the instructional intervention. In the following section, I describe the tools selected by Mrs. Calhoun for navigation purposes and also explain her rationale for tool selection as a means of illuminating the literacy path thereby answering the second research question: What AWARD Reading resources does a third grade teacher select to use in creating opportunities for unique literacy learning to occur for striving learners? Why?

Third, I share data findings that illustrate the experiences of striving learners during travel toward literacy achievement when technology tools are integrated by the classroom teacher with specific goals for increased visibility. This section will answer the third research question: What literacy learning opportunities are being provided to meet the pedagogical goals set by a classroom teacher when using AWARD Reading resources? Finally, I explore any unforeseen circumstances that served as roadblocks during our exploratory journey and describe the ways that we detoured in order to allow continued travel addressing my final research question: Are any barriers to effective integration of AWARD Reading resources for the purposes of providing unique literacy learning opportunities for striving readers observed? How are these barriers addressed?

Observational fieldnotes used as data evidence are organized in specific ways. Within this chapter, I signify a change in speaker by using a T for teacher and S along with a number to signify different students speaking. For instance, S1 signifies that one student is speaking and S2 signifies that another student is speaking. Additionally, italic text is used to describe nonverbal behaviors and occurrences happening within the observational setting. When data from interviews is used, the letter I signifies when I am speaking as the interviewer. Any names used throughout the study are pseudonyms to protect the identity of all participants.

Travel Conditions

In the same way that water droplets can reduce visibility in foggy weather or clear skies can increase visibility in sunny weather during travel, combined characteristics either improved or complicated travel conditions in the journey toward literacy achievement for participants within this study. Based on former experience, I know that it is important to reflect on conditions prior to departure in order to increase traveling success. I'm reminded of my voyage

abroad to the beautiful land of Australia in which I neglected to check the weather conditions for travel. Rushing to the Atlanta Airport, I left my apartment that warm summer day wearing a tropical print sleeveless dress that I paired with elaborately designed open toed sandals. In my excitement to depart, I gave consideration only to personal preference when choosing my attire. However, upon arrival to Sydney, I began to reconsider my criteria for clothing selection. Disembarking the plane, I felt a chill run down my spine as I was met with cool winter temperatures and drizzling rain. Imagine the difficulty I experienced as we were required to walk long distances in the elements in order to reach our final resting place at the hotel. Reflecting on this occurrence, I now make a deliberate effort to tune in to the local weather station prior to travel in order to be certain that I am adequately prepared for the conditions to improve my traveling experience.

Through data analysis described in chapter three, I identified two themes to describe the travel conditions for striving learners in this study prior to departure on our exploratory journey with technology integration. I use these themes to illustrate how available instructional resources and approaches used by Mrs. Calhoun either supported or inhibited the literacy development of striving learners. First, I describe how Mrs. Calhoun acted as both a teacher and learner in the classroom environment. Second, I explore influences existing outside of the classroom walls that had an impact on the literacy learning experiences for striving students.

Mrs. Calhoun as Teacher and Learner

At the time of the study, Mrs. Calhoun completed her first year of teaching as a certified classroom teacher. Within the classroom setting, I observed that she played two distinct roles. First, she acted as teacher designing and implementing learning activities that she believed to be developmentally appropriate for her striving students based on understandings established in her

teacher education program. Second, she acted as learner searching for information from varying sources to improve her range of instructional methods to meet the specific needs of students in her classroom. When asked about her perceptions concerning her ability to provide effective literacy instruction, Mrs. Calhoun commented (Observational fieldnotes, February 19, 2010):

> I understand guided reading as being a good practice for students of varying ability levels after my literacy instruction class from [my undergraduate university]. However, actually implementing the procedures in a classroom setting for actual literacy learning to take place for my students is an area where I continue to strive for understanding and focus.

As teacher, Mrs. Calhoun possessed foundational understandings concerning the importance in planning instruction to meet the varying literacy needs of striving learners so that their literacy development was supported. However, as learner, Mrs. Calhoun searched for the teaching strategies that would enable her to provide the differentiated instructional opportunities that she believed would benefit her students. With limited knowledge of differentiated instructional methods available to her, Mrs. Calhoun experienced difficulty in providing meaningful learning activities for students thereby inhibiting their literacy development process.

Mrs. Calhoun improved the conditions for literacy learning for striving students within this classroom setting when she acted as a teacher using varying levels of support to meet the needs of learners within her classroom. Mrs. Calhoun explained (Interview, February 17, 2010):

> My students that struggle with the comprehension… it's sequencing… if you have them write it, which they do about every six weeks actually have to write a sequencing story, they'll start at the end of the story or the middle of the story so breaking it down verbally

> [makes it] less stressful for them than breaking it down in writing. So [first] we verbalize it, then we'll go to the writing segment next.

Mrs. Calhoun provided additional support for students when she attempted to differentiate instruction based on the particular needs of students. One striving learner working to meet grade level expectations commented on the ways Mrs. Calhoun used classroom resources to meet her needs. Princess explained (Interview, February 12, 2010), "in writing, we have a word wall [and] our writing folder and [Mrs. Calhoun] lets us write down words [that can be referenced later as needed]." According to Mrs. Calhoun (Interview, February 17, 2010), she also has a "huge library" where students can select those books "which they consider fun, but [are] still taking them toward their learning." Figure 4.1 illustrates the classroom word wall, and Figure 4.2 illustrates Mrs. Calhoun's classroom library.

Figure 4.1. Classroom word wall.

Figure 4.2. Mrs. Calhoun's classroom library.

Mrs. Calhoun also used positive reinforcement as a means of rewarding students for good behavior with the goal of motivating them to work diligently toward literacy achievement. She explained (Interview, February 17, 2010):

> I do reward with tangible rewards…. My students that are low need that reward almost instantly so [good behavior coupons] work for some of that. [Students are] allowed to bring [the good behavior coupon] to me and I have bigger toys [they can redeem their coupon for]…. The stuff comes from the Dollar Store but they're very excited about it and the ones that have achieved… continue on

As evidenced above, in working within her role as teacher, Mrs. Calhoun encouraged the literacy development of striving learners by attending to specific needs and recognizing that varying levels of support must be available. However, in working within her role as learner, Mrs. Calhoun sometimes inhibited the literacy development of striving students due to her limited knowledge concerning how to identify specific student needs and provide the most appropriate differentiated instructional methods. She stated (Interview, February 17, 2010):

> I'm seeing in some of my readers – ok you've gotten up to where you're supposed to be with your [word identification], but if I take those words and mix them up in a sentence – you can't read them so um I still think it's good that they have the basis of their [sight words because]… it's words that they see all the time but then if you're not recognizing in sentence form then [what do I do]?

The students noticed a lack of differentiated instruction to meet their individual needs as well. One of the striving learners in Mrs. Calhoun's class explained that when he comes to a word he doesn't know "she'll say sound it out and if you don't get it on the like the second try then she'll say it for you and then you'll just have to go back and read it again" (Interview, February 12, 2010). The example below demonstrates the telling strategy used by Mrs. Calhoun when students approached an unknown word in reading:

> *S2 struggles with the word 'pattern' when it is her turn to read.*
> T: Look at the word. Paaa… patttt… patterrrnnn…
> S2: Patterns!
> *S3 [the next student to read aloud] miscues on the word tilings instead saying telling.*
> T: Nope! Try that again! T… Tiiii….
> S3: Tilings!
> T: Good!
> *Mrs. Calhoun provides the beginning sounds of the word until the students guess the word based on the sounds she has told them. This "telling" of the word happens frequently within her guided reading instruction. She has yet to evidence any knowledge of additional strategies to assist students in solving unknown words. In other instances, she simply tells the student the unknown or miscued word.*
> (Observational fieldnotes, February 10, 2010)

As evidenced above, with a lack of teaching strategies available to her, Mrs. Calhoun hindered the literacy growth of striving learners by telling them unknown words as opposed to teaching students how to access printed text.

Mrs. Calhoun provided guided reading instruction to students by grouping them according to their ability levels as determined by information provided by the required school

reading assessment. Within this instructional setting, she always obtained questions to guide discussion and facilitate student talk about the text from the teacher's guide included with the reading series (Observational fieldnotes, February 18, 2010). Within her role as learner, Mrs. Calhoun hypothesized that her lack of available instructional methods inhibited the literacy development of striving learners. During one informal conversation, she mentioned her interest in one of her striving learner's participation in the study due to limitations of the everyday reading instruction.

> Nakia has progressed throughout the year at a rapid rate, but has recently declined in his reading scores. [I am] concerned because [I have] been unable to diagnose the reason why this backslide is occurring. [I] wonder if it could it be the focus of the reading instruction being provided on a daily basis…. [I am] particularly interested to see how the AWARD resources will influence the reading experience of [Nakia]. (Observational fieldnotes, February 11, 2010)

Beyond the Classroom Walls

When responding to questions during an interview, one striving learner, Princess, generally required a moment to gather her thoughts before answering. However, when asked about her least favorite part of the school day, she at once exclaimed, "Oh gosh! It'd have to be language arts… I just don't like it! It's too hard… I think [the teacher] should have to do it for you!" (Interview, February 12, 2010). Striving learners revealed feelings of disdain toward literacy as they exerted maximum effort only to meet or even fall slightly short of grade level objectives. Mrs. Calhoun explained (Interview, February 12, 2010):

> [I] have students that get it at the blink of an eye and if you happen to be one that has to really put forth that effort, and you see your neighbor finished and you haven't even

> gotten halfway through it *(trails off)*. You know, I tend to feel for those kids [because they eventually just stop trying].

As evidenced from the data excerpt above, striving learners had the potential to inhibit their own growth as literacy learners when they refused to participate in the learning opportunities they were being provided in the classroom. Mrs. Calhoun believed that the unwillingness of students to participate was linked to their continuous experiences of failure felt within school.

Additionally, Mrs. Calhoun noticed particular ways that the out of school lives of students had the potential to inhibit their growth as literacy learners. She explained (Interview, February 17, 2010):

> For the ones that don't go home and watch TV or play Nintendo games until it's bedtime - their vocabulary is much more extensive. For [our school], we have high minority groups [and] Mom and Dad are working and you know – maybe it's older brother or babysitter [who is at home with the child] and that's not a lot of interaction or talking. It's going home and watching TV or playing Nintendo… I can think of three right off the bat. They do their homework by themselves every time… Mom and Dad tell them to throw their work away at school… You know, so, you don't realize as a parent just how important that role is. Both Mom and Dad work. They're trying to make ends meet… It's a poor community at [our school]… [My students] come in in the morning and they haven't had breakfast because they don't have the money for breakfast. They're starved by 10:00… and about three days a week – I provide snack because the majority of the kids don't have it and they're hungry. So how do you teach a child whose hungry?... I think it's a life of poverty. This is how it goes.

Mrs. Calhoun believed that the background and experiences of students outside of school interfered with their engagement in school. She wondered if this external influence contributed to the difficulty she experienced in her efforts to provide meaningful instruction (Interview, February 17, 2010). The data excerpt presented below illustrates the challenging circumstances faced by Mrs. Calhoun in her attempts to engage her striving literacy learners during the literacy instructional portion of the day.

> T: S1, will you please read for us?
> *S1 begins reading but starts mumbling moments after beginning.*
> T: No, I need you to read in your good voice – and I need you to go back to the beginning and read again.
> *Mrs. Calhoun puts her finger in the text to redirect S1 on where he needs to be reading again. S1 begins to rub his eyes and refuses to look down at the book in front of him.*
> T: S1, you've got to stop messing with your eyes and look here and [read].
> *S1 looks up at the teacher through puffy eyes.*
> S1: Can we color now?
> (Observational fieldnotes, February 10, 2010)

Additional outside sources, such as school administration and state policy makers, affected the way instruction occurred within Mrs. Calhoun's classroom and consequently influenced the literate lives of striving students. Mrs. Calhoun shifted her attention toward particular learning goals in response to demands from outsiders (Interview, February 17, 2010). These learning goals were in direct alignment with expectations for students on the state administered Criterion-Referenced Competency Test (CRCT). When asked to describe how she learns to read within her third grade classroom, Princess fidgeted nervously in her seat before responding, "[Mrs. Calhoun] has these papers where um where you read a passage [or] where you read a whole page of a book and then you answer questions about it" (Interview, February 12, 2010). As evidenced from the thoughts of this striving learner, students believed that literacy could be defined as reading questions and providing answers. The data excerpt below

demonstrates how the literacy instruction of Mrs. Calhoun was being dictated by expectations set by school administration that students would pass the end of the year test.

> *Mrs. Calhoun passes out a worksheet with a reading passage followed by five questions to the five students at the kidney table for guided reading.*
> T: When we have to read a passage, we have questions to answer. What are we going to do first?
> S2: Highlight.
> T: Ok! Why do we do that?
> S2: So we can find the answers to the questions.
> T: Good!
> (Observational fieldnotes, February 8, 2010)

Mrs. Calhoun focused her literacy teaching largely on developing the ability of students to read and answer questions for a test. Furthermore, specific instructional materials were utilized to meet this goal simply because they were being provided by the local board of education for teacher use and were easily accessible. Mrs. Calhoun stated (Interview, February 17, 2010):

> [that she] uses word lists, Science Research Associates, Inc. (SRA) passages with response questions, a computerized test practice program entitled *Success Maker*, a computerized comprehension assessment entitled *Accelerated Reader*, and the Houghton Mifflin reading series provided by the county for her literacy instruction.

Reflecting on additional influences on student literacy development, Mrs. Calhoun explained how other outside individuals have the potential to influence the quality of literacy instruction provided to striving learners within her classroom. She explained (Interview, February 17, 2010):

> You have to have a commitment of the teachers, of the parents, and even of the community you know willing to support… [saying] you went from reading at a point three and you're now up to a one point zero – That's awesome! Let's give you awards –

> and we do have that at Georgia [Elementary School] where um people in the community come in and it's called Bugs Awards and say good job! You brought that grade up or you brought [another content area] up – and the kids like it. You know somebody comes in – along with the principal or assistant principal – and it's a big deal to these kids.

As evidenced in the data excerpt presented above, Mrs. Calhoun believed that recognition of student achievement by individuals outside of the everyday classroom environment supported her striving students and encouraged their literacy development.

In sum, particular characteristics of the classroom teacher combined with external influences have the potential to either support or inhibit the literacy development of striving learners as explained above. Factors at play within the learning environment account for the travel conditions for learners on their journey toward achievement. Striving learners experience increased visibility as Mrs. Calhoun implements her foundational understandings of what constitutes meaningful instruction. Additionally, community support improves the conditions for travel of striving learners toward their development as literate individuals. Striving learners experience reduced visibility due to limitations in Mrs. Calhoun's repertoire of teaching strategies to be used in meeting individual learner needs. Additionally, outside sources dictating the way literacy instruction is to occur, the materials that are to be used, and the objectives that are considered most important along with the external influences on student beliefs and levels of preparation for learning make the path toward literacy achievement obscure. In the following section, I use data evidence to explain how and why Mrs. Calhoun selected particular AWARD Reading resources to illuminate the path and increase student success along the journey toward literacy achievement.

AWARD Reading Resources as Tools for Travel

Continuing use of the traveling metaphor as an organizational structure in this section, I answer my second research question: What AWARD Reading resources does a third grade teacher select to use in creating opportunities for unique literacy learning to occur for striving learners? Why? I explain that the teacher in this study possessed similar qualities to those that characterize a good traveler. These defining characteristics facilitated her decision making process thereby improving travel along her literacy journey with striving students using AWARD Reading resources.

What characteristics define a good traveler? In reflecting on my former experiences as a traveler, I'm reminded of situations where I've faced poor conditions in which heavy rain, dense fog, or even poorly lit roadways made the journey toward my destination much more difficult. On the same trip described earlier, I remember encountering hail and sleeting rain only minutes into my drive to the Atlanta Airport to journey across the world to Australia. Under such troublesome circumstances, I could have chosen to turn around and return home, but did I? Of course not! I realized that the joy I would feel upon arrival to my destination would make any arduous travel demands worth the trouble. Determined to continue moving forward, I recognized that I had to utilize resources that would increase the visibility of my path and make continued travel possible. I considered the range of resources available to me that my more experienced parents had taught me how to use and when to use as I first learned to drive. Next, I reached down in my car and turned on my windshield wipers to remove the heavy drops of rain from my direct vision. I also switched on my headlights to illuminate my path along with my fog lights designed specifically to penetrate hazy conditions.

At this point, I return to my question of how to describe a good traveler. Based on the experience described above, I would venture to say that I am a very adept traveler. What characteristics am I using to make this judgment? First, I possessed a strong intrinsic desire to reach my destination because I recognized and understood the benefits of arrival. Second, I was aware of my travel conditions and the specific ways they inhibited my journey. Using this knowledge, I was able to evaluate the range of resources available to me and make a selection on which resources would be most beneficial to my travels based on my understanding of the specific functions each resource performed.

Though she wasn't traveling to a physical location like me, I would still suggest that Mrs. Calhoun was an excellent traveler based on the time we spent together conducting this exploratory study. She capitalized on her possession of characteristics similar to those of one who is effective at traveling to a physical location. Along our journey to explore how the learning experience might be improved for striving readers by incorporating technology resources within everyday instruction, she allowed her rationale for selection and use of particular resources to be influenced by her good traveler makeup. In making decisions on which AWARD Reading resources to use with her striving learners, Mrs. Calhoun, first, identified the final destination for her students and communicated the importance of arrival in clear ways. Second, Mrs. Calhoun understood environmental and learner conditions that may have been inhibiting literacy development and the specific way the conditions were doing so. Using this knowledge, she evaluated the resources available for use by her striving students during travel along the literacy continuum and selected to use those resources that functioned to improve specific conditions that may have been inhibiting travel.

Are We There Yet?

In selecting AWARD Reading resources to be used to provide unique learning opportunities, Mrs. Calhoun began by reflecting upon the overarching goals she expected her striving students to reach in their literacy journey. She explained, "my thought process was… these are the things I want to teach, and [then] how can I use the [technology resources] to get that [from students]?" (Interview, March 19, 2010). Mrs. Calhoun aimed to help students reach a final destination where they used a variety of strategies to make sense of printed text. During phase one of the study, she wrote (Phase one guide, February 19, 2010) that her overall goals for integration of the AWARD Reading resources within her everyday literacy instruction were to increase the comprehension, vocabulary, and fluency of striving learners. While each of these literacy goals was important to Mrs. Calhoun, she placed additional emphasis on increasing the fluency of students due to pressure from school administration for higher reading rates of students. When asked to explain her rationale for stressing fluency development of learners, Mrs. Calhoun stated (Interview, March 2, 2010), "we're looking at [whether students] can… read up to 110 words a minute so that [they] can keep up with what we're doing in class and that's really it. You have to be able to do that to keep up with the class."

After identifying the final destination to be reached by striving learners, Mrs. Calhoun outlined a road map of specific learner objectives that needed to be mastered to ensure adequate progress toward literacy achievement. She explained (Interview, February 17, 2010), "You have to take those little steps. Sometimes you can't make the big step. You gotta take all the tiny baby steps that lead to that big step and then you move on from there." Mrs. Calhoun recognized that reaching the final destination would require much time to be spent along the literacy pathway. For this reason, she articulated stopping points, or more specific learner goals, for the

journey that included the following (Phase one guide, February 19, 2010): 1) For comprehension, she would focus specifically on reader skills of comparing and contrasting, sequencing, and inferencing, 2) For vocabulary, she would focus on development of student base knowledge, and 3) For fluency, she would focus on developing student expression while reading. Additionally, Mrs. Calhoun aimed to increase [the intrinsic] motivation of striving learners to work toward achieving particular goals for literacy achievement. She also submitted (Phase one guide, February 19, 2010) the following question as one that would guide her personal exploration throughout the study: Will using the AWARD resources within my everyday literacy instruction get my kids excited about reading?

Upon completion of phase one of the study, Mrs. Calhoun evaluated the progress of her striving learners toward the overall goals to determine if modifications should be made to the learner road map for phase two. Mrs. Calhoun explained (Interview, March 19, 2010):

> I really felt like my AWARD resources would help with the fluency [during phase one]. I didn't realize just how much (word emphasized) it would help. I feel like the better your fluency, if you know what you're reading and you understand what you're reading, then the better your comprehension. They have both grown tremendously… in the past four weeks.

Based on this evaluation of student learning, Mrs. Calhoun chose to keep the same goal to increase student fluency focusing specifically on student expression while reading along with her goal to increase student motivation (Phase two guide, March 19, 2010) during phase two of the study. However, she also modified her goals for phase two of the study to focus her instruction using AWARD resources on the shifting needs of striving learners. Mrs. Calhoun explained that her "goals for phase two [would] be more focused… using the report card skills to establish more

specific goals" (Interview, March 12, 2010). She wrote that her phase two learner objectives would include the following (Phase two guide, March 19, 2010): 1) To increase student comprehension focusing specifically on fact versus opinion, analyzing story elements, cause and effect, inferencing, main idea/details, author's purpose, comparing/contrasting, and summarizing, 2) To increase student's repertoire of word solving methods with a specific emphasis on decoding strategies, and 3) To prompt students to self-monitor whether their reading makes sense. Additionally, school administration required a significant focus for Georgia Elementary School during the spring semester on student preparation for the CRCT. For this reason, Mrs. Calhoun set a goal (Interview March, 12, 2010) "to teach the testing genre to students by exploring steps used by effective test takers."

Selecting Tools for Travel

After identifying specific literacy instructional objectives, Mrs. Calhoun began the next step in resource selection by evaluating the AWARD Reading resources available to her searching for those that would serve as tools in improving the journey for her striving learners on their quest toward success in literacy. Mrs. Calhoun recognized that the striving readers in her classroom were using large amounts of energy yet making little progress in terms of their literacy development. She described the experience of one striving reader explaining (Interview, February 17, 2010):

> I see Iran reading the words and decoding them and I know she has to go through that process, then she has to read it again to get the comprehension… I can't allow her to say - No, I'm not going to read the second time. I have to say we're reading it the second time. If you're… strongly self-motivated to get through this then I see [student reading

> abilities] continually growing [but] Iran's just kind of done. [She'll say] I don't want to reread this again, [but] she's not remembering what she read [on the first read].

In selecting AWARD Reading resources to be used to provide unique literacy learning opportunities for striving learners, Mrs. Calhoun reflected on the individual needs of students in her classroom. When asked to describe the needs of striving learners, she explained (Interview, March 19, 2010):

> What I [feel] like in my classroom is, I've worked on [literacy because] it's a third grade standard for Georgia Elementary, but I don't always feel like the kids really want to [read]… They're not into it at all. It's not interesting at all, and when [AWARD Reading resources became available], it got me thinking about, yeah, if they could hear [and see movement]… how would that change it? Would it help their comprehension?

Through data analysis described in chapter three, I identified two categories to explain the rationale of Mrs. Calhoun in selecting particular AWARD Reading resources to be used in creating opportunities for unique literacy learning for striving learners. First, the teacher selected resources to serve as assistive technology supporting learners during the reading process. Secondly, ongoing discussion between me and Mrs. Calhoun resulted in her choosing to combine use of resources based on their varying incorporations of multimodal signs to explore whether increasing the available designs beyond those typically found in traditional print could improve the designing experience for her striving learners. In the following sections, I describe the AWARD Reading resources selected for use by Mrs. Calhoun using the two categories of assistive technology and available design to anchor and explain her rationale for use.

Assistive technology. Mrs. Calhoun used AWARD Reading resources as assistive technology in two distinct yet equally important ways. Some resources served as compensatory

tools increasing access to text for students. Other resources served as remedial tools to improve the specific literacy skills used during proficient reading by providing opportunities for independent application and practice.

Mrs. Calhoun decided to use the leveled printed texts included within the AWARD Reading resources as compensatory tools to increase the likelihood that students would be able to access the text by decoding print on their instructional level. She explained (Interview, March 2, 2010), "I think the stories are very engaging and they're using words that are on third grade level." Additionally, Mrs. Calhoun selected to use the interactive CD-ROM stories as an accompaniment to the leveled printed texts to improve the reading experience for striving learners even further by enhancing the ability of students to make sense of what was happening within the text. When asked why she chose to utilize the digitized interactive stories in conjunction with the traditional printed text, Mrs. Calhoun provided the following example to illustrate her perspective (Interview, March 19, 2010):

> The sequencing, that was pretty easy for the students [to determine] just from [reading] the story, but the inferencing was much more difficult for them. The CD-ROM had the illustrations and it's so interactive with the kids because it has visual [support] with movement on the screen and sound [support] when it is reading it to the kids and making noises that show what is happening in the story when it shows movement.

Mrs. Calhoun believed that use of the interactive stories which incorporated embedded multimedia, such as animation and audio, during the reading process would improve comprehension for striving learners by directing their cognitive attention toward details that would help them to recognize ideas that were not stated explicitly within the text.

Mrs. Calhoun also chose to combine the audio compact disc (CD) and accompanying traditional printed test to be used as a compensatory tool for striving students. She decided to use these resources in conjunction with one another to provide increased support to improve opportunities for students to gain access to the printed text of the traditional book. Mrs. Calhoun explained her rationale for using these resources together stating (Interview, March 2, 2010) that students "hear it not only in vocal expression but they also get to see it in picture form" within the book.

Mrs. Calhoun also selected some resources for use as remedial tools to provide students occasions to practice applying specific reading skills. She decided to give students the option of playing computerized interactive games. According to the overview of AWARD resources, the company designed these games to supplement the traditional and electronic literature used during literacy instruction and to provide independent activities to give students the opportunity to practice a range of skills including applying word solving strategies, recognizing vocabulary in context, improving spelling abilities, increasing comprehension, developing fluency, or responding creatively to literature. Mrs. Calhoun explained her rationale for using interactive games citing specific examples (Observational fieldnotes, February 19, 2010), "I'm thinking that when [students] do the spelling [game] or they do the Reader Meter it will reinforce what they're learning. I really liked the extra practice that the kid will get with the CD-ROM [after the reading]."

Additionally, Mrs. Calhoun saw opportunities for literacy development simply by incorporating the learner friendly structure of the game, which prompted students to return to skills initially missed rather than moving forward without a follow up, within her everyday instruction. She explained (Interview, March 19, 2010):

> [The students really] have to work it… It doesn't just go, oh, you've missed these questions three times and we're not going to come back to it. It doesn't let them get so frustrated, well, it lets them fail and then it comes back to it afterwards and I like that part the best because [with our current computer software], you can't move on [at all] until you [answer correctly]. Well, if you've done the same thing over and over for three days and you still haven't gotten it… That's got to be retaught… So with [the AWARD interactive CD-ROM Games] it doesn't keep them doing the exact same thing over and over which, to me, is a cycle. It says, okay, let's move to a different question and a different question, now let's come back to that question you missed and see if you've gotten it.

Mrs. Calhoun selected to use a computerized assessment feature as her final AWARD Reading resource to improve the ability of students to read purposefully and make good decisions within this reading genre. She stated (Observational fieldnotes, March 15, 2010):

> I'm thinking we need to do some test taking strategies. When we read, we look at different genres. In my guided reading group, we looked at informational. Testing is another genre. We have to learn how to understand this genre so that we can make the best choices to show what we know.

This technology tool presents striving learners with a comprehensive set of twenty questions related to a particular printed leveled text and accompanying interactive story. While numerous computer software programs offer this sort of practice, the AWARD computerized assessment feature is unique in that it includes graphic images and printed text from the story on the same screen as questions are presented. Students are prompted to use these resources to aid in their designing process. Mrs. Calhoun explained that (Interview, March 12, 2010) "using [technology

would] keep [her striving learners] engaged instead of just giving paper and pencil all the time." She also believed that using technology would improve learning conditions for students by offering a seamless connection between their home lives and school lives. Mrs. Calhoun stated (Interview, March 19, 2010), "It's interactive and it's immediate and we're in a technology age now. These kids are used to… TV [providing] immediate satisfaction and [using AWARD] will [providing that same] immediate satisfaction."

Available designs. Mrs. Calhoun selected and combined use of particular AWARD Reading resources to increase the available designs for students to access during the designing process. Prior to integration of the AWARD Reading resources, I observed the lack of available designs for students to access in their process of designing during literacy instruction. For example, the data excerpt below demonstrates how vocabulary was often taught as an isolated skill separated from the contextual information that could have served as an available design for students to use to construct the redesigned.

> T: All right, let's talk about our vocabulary words. Unh uh!
> *Mrs. Calhoun shakes her head at a student in the classroom.*
> T: Close the book.
> *As this student is closing his book, another student is opening his book. Mrs. Calhoun shakes her head again at this student to prompt him to close his book during their discussion. When all students have their books closed, Mrs. Calhoun begins.*
> T: What about criticize?
> S3: I think it means when you tell somebody about something.
> T: No.
> *Mrs. Calhoun calls on another student to answer the question.*
> *S4 answers appropriately and Mrs. Calhoun elaborates on her response further explaining the meaning of the word to students.*
> (Observational fieldnotes, February 18, 2010)

Using the teacher manual as a guide, Mrs. Calhoun formatted her teaching and selected learning materials giving careful consideration to the suggestions provided within the reading series used by her school. However, it is important to note that Mrs. Calhoun possessed an

intrinsic motivation to improve her literacy instruction by incorporating resources that would improve the learning conditions for her striving learners. She explained (Interview, February 19, 2010):

> [For my literacy teaching I choose materials] designated from our reading series… The [guided reading] books go along with the weekly story [in the basal reader] and they're level low, medium, and high... You read a book and then you answer three questions in the back of the book… It is very stale… It's not interactive and it is something that, okay, if you don't finish then you miss recess… I'd rather use… the computer.

Through informal conversations, Mrs. Calhoun began to consider that striving learners within her classroom could be unmotivated and struggling during the transformative process of designing due to a lack of resources available to aid in development of understanding. Mrs. Calhoun reflected aloud (Interview, March 2, 2010) explaining that her striving learners

> … still don't understand the concept of [how] these words [in a text can] express this feeling. They get it when they see it but [only] when we're talking about it and they read it [and I prompt their thinking with questions such as], well, how does that person feel? [Without this support] there's no comprehension there. If I read it to them, there's a little bit more, but they're still not [fully] grasping that these words are expressing this feeling.

As this recognition surfaced for Mrs. Calhoun, she selected resources giving consideration to those that could be used for the specific purpose of collectively incorporating a range of multimodal signs including image, sound, action, and language. She wanted to make these additional designs accessible for her striving learners within the literacy instruction she was providing in hopes of improving the designing process of students. Mrs. Calhoun explained her

rationale for combined integration of AWARD Reading resources stating (Interview, March 2, 2010):

> I really like all [the AWARD Reading resources, because reading] is done in more than one way… We've been struggling [with traditional printed text]. What I like about [this] is it's visual. They get to see it [happen on screen] and they [also] get to hear how it's read and they know that they have to meet that same thing [as readers].

Mrs. Calhoun decided to use traditional printed text, audio CDs, assessment software, and interactive stories and games within her literacy instruction to provide simultaneous visual and auditory stimulation aiming to enhance the meaning making processes occurring for striving learners. As phase two of the study began, the following question guided her discovery (Phase two guide, March 19, 2010): Will use of the AWARD resources within my everyday literacy instruction increase student comprehension and resultant self-monitoring? In other words, Mrs. Calhoun wanted to explore whether integration of the multimodal available designs, within the AWARD Reading resources she selected, would improve the ability of striving readers to effectively engage during the designing process so that their final redesigned cognitive understandings would incorporate richer understandings.

To review, Mrs. Calhoun made decisions for her use of AWARD Reading resources in the same way that a good traveler makes decisions to experience success on a long journey to a physical location. First, she identified the final destination for her striving students and outlined a roadmap, setting specific goals for her striving learners to achieve along the extended journey, in order to move closer and closer to the point of arrival. Second, she identified the conditions under which her striving learners were traveling by identifying their specific needs. Using this knowledge, she evaluated the AWARD Reading resources selecting those that would serve as

assistive technology and those that would increase student access to available designs during the designing process. To summarize, Mrs. Calhoun combined use of traditionally printed narrative, informational, and poetry texts, audio CDs, interactive stories with the accompanying interactive games, interactive response to literature technology features, and assessment software. In the subsequent section, I use excerpts from my data to illustrate how integration by Mrs. Calhoun of the AWARD Reading resources as tools for travel enhanced the literacy learning voyage for striving readers.

Travel Log

Within this section, I elaborate further on my traveling metaphor in answering my third research question: What literacy learning opportunities are being provided to meet the pedagogical goals set by a classroom teacher when using AWARD Reading resources? I have decided to organize this section in the same way one might organize a travel log in an effort to fully describe the learning opportunities afforded to the striving learners within the classroom of Mrs. Calhoun as they traveled on their literacy journey using AWARD Reading resources as tools for travel.

When I embarked on my expedition to Australia in May of 2008, I had no idea that I would return to my home a new person transformed by the places I visited, culture I observed, and adventures I shared with fellow travelers. While I was certain that no one could fully understand without personally making the trip, I still believed that it was important to document my journey using a travel log to give others the opportunity to take a glimpse into my experience of traveling to the land down under. As I made a record of this journey, I realized that there were two important ways that I wanted others to understand my experience. First, I wanted to describe each place that I traveled on my trip in such great detail that others could imagine being

there. Second, I wanted to fully explain to others how I had been changed as a result of each experience I described.

In a similar fashion, the striving learners of Mrs. Calhoun's class embarked on a literacy expedition in February of 2010. As these learners traveled along their journey, they were likewise transformed by the places they visited in their literacy growth, the culture they observed of those leading literate lives, and the adventures they shared with fellow readers. Through data analysis described in chapter three of this study, I identified two themes that illustrate the unique literacy learning opportunities being provided to striving learners when AWARD Reading resources are used by the classroom teacher to meet specific pedagogical goals. This section serves as a travel log where I will, first, describe the distinctive experiences of striving learners along their journey as customized learning opportunities were provided by the classroom teacher. Secondly, I will discuss the transformation that occurred for these learners as a result of their unique experience.

Customized Learning Opportunities

In order for literacy learning opportunities to be meaningful for her striving learners, Mrs. Calhoun recognized the importance in tapping into the unique interests and varied learning modalities of each individual student within her class. However, she also admitted that providing this sort of differentiated instruction was extremely difficult for her as a new teacher. She stated (Interview, February 17, 2010):

> That's probably the hardest thing as a new teacher - keeping up with this kind of stuff… and where are they [in their literacy development] because it's twenty-one students and they're on twenty-one different plans… [and they] need to be [supported] and challenged

> [by me] and you can see when they're getting bored so I can't *(trails off)* - that's why I use centers a lot.

Despite her frustration, Mrs. Calhoun still aimed to use resources and instructional methods that would support striving students as they worked to overcome areas of weakness but also capitalized on their strengths, personality traits, and interests to challenge and motivate them to move further. She described (Interview, February 17, 2010) her goal of providing differentiated instruction and use of literacy materials: "Let me get [my striving students] into reading these books. Let's look at literacy and incorporating [new materials] to take you further in your content and your vocabulary and your base knowledge." Operating on this thought process, Mrs. Calhoun integrated the AWARD Reading resources into her everyday literacy instruction aiming to improve the learning opportunities for her striving readers. Through data analysis described in chapter three, I identified three categories that I use to describe the customization of learning made possible when AWARD Reading resources are integrated in specific ways by a classroom teacher. First, I share excerpts from my data to illustrate how integration extended representation for striving learners. Second, I offer data to demonstrate the differentiated levels of engagement afforded to striving learners with integration. Finally, I use data excerpts to explain unique occasions for expression offered to striving learners when AWARD Reading resources are integrated in purposeful ways.

At this point, it is important to mention that in order for integration of the AWARD Reading resources to be most effective for learners, a great deal of collaborative planning and reflection took place for me and Mrs. Calhoun. I will discuss this issue in further detail in the final section of this chapter where I answer the research question pertaining to overcoming barriers.

Extending representations. As Mrs. Calhoun integrated the AWARD Reading resources, she enhanced the designing process of striving students occurring during reading in distinctive ways as multiple representations of information were being provided. Using the AWARD Reading resources, learners accessed additional available designs and were able to choose which representations met their individual needs. The data excerpt presented below illustrates how striving students customized their literacy learning experience by attending to technology resources that supported their needs.

> Students are independently reading an informational interactive story on the computer. S1 clicks on the first page and clicks on the speaker to hear the words read aloud. She observes the pictures moving. Several of the students working independently have paused to look at the computer screen as S2 watches the movement on screen. S1 explores the screen clicking on various pictures to see the movement in what appears to be a random order. As the screen reads aloud – S1 opens her traditional print book and follows along momentarily. S3 is on a different screen. She is moving at a much quicker pace through the text. S2 is taking the time to explore the screen – and click on the various pictures.
>
> (Observational fieldnotes, March 15, 2010)

As Mrs. Calhoun integrated AWARD Reading resources, she offered seamless access to multiple representations of information for striving learners within each resource. For this reason, students that were previously confined by their delimited abilities to make sense of traditional printed text were now utilizing additional available designs to improve their designing process. During an interview, Princess explained how access to multiple representations of

information within the interactive stories improved her reading experience (Interview, March 2, 2010) :

> I: How does it help you?
> Princess: Because it, if you don't understand it you just go back and read it, but you can't do that in your reading book.
> I: Why not?
> Princess: Because it doesn't read it for you. But when it reads it for you, you get a better idea of it.
> I: And how does that help you?
> Princess: Because it's putting the exciting stuff into it so [I can understand].
> (Interview, March 2, 2010)

As technology resources were integrated within the classroom, Mrs. Calhoun supported the individual needs of striving learners as multimodal signs were made easily accessible within a range of resources. During a guided reading lesson, one striving learner evidenced how access to animation provided needed vocabulary support.

> S1: Oooh! I just noticed that the rain was moving while it was reading the passage! Oh! *Student hits head signifying recognition of something.*
> S1: So that's *(word emphasized)* what it means when they say it started raining cats and dogs!
> (Observational fieldnotes, February 24, 2010)

The technology tools integrated into the everyday literacy instruction of Mrs. Calhoun offered student access to multiple representations of information beyond those typically found in traditionally printed text. By incorporating animation, graphic images, language, and sound simultaneously within her literacy instruction, she provided multiple cognitive pathways for students to travel during the designing process to encourage students to reach an appropriate redesigned cognitive understanding. The data excerpt presented below demonstrates how Mrs. Calhoun incorporates numerous multimodal signs, including language, graphic images, animation, and printed text, within her literacy teaching to improve the opportunity for striving learners to comprehend after an interaction with a text.

T: Remember, they said something about having green thumbs. What is it talking about when it said they had green thumbs? Let's go back.
Mrs. Calhoun clicks back to the screen where the author used the term, "green thumbs" on her group laptop computer. She prompts students to look at the screen and also to look on the same page in their guided reading books.
T: Ok, look here it says "last week…"
Mrs. Calhoun tracks the text on the screen as student members of the guided reading group follow along. S1 reads the page aloud along with Mrs. Calhoun. The remaining students silently follow the text with their eyes.
T: Ok, so the girl is talking about the fact that the seeds from her plant had already grown.
Mrs. Calhoun clicks on the graphic image to show the animation of the plant growing.
T: I'm trying to get this to grow.
Mrs. Calhoun points to the graphic image of the seed in the ground.
T: So now her plant is as tall as herself. So if someone tells you that you have a green thumb – it means you're good at growing plants. If you have a brown thumb – you're bad at growing plants.
(Observational fieldnotes, February 24, 2010)

In previous settings, the classroom teacher engaged in discussion about vocabulary isolating it from the contextual clues presented in the text. However, within the guided reading instructional setting presented in the data excerpt above, Mrs. Calhoun chose to use the features of the technology to direct student attention to the multimodal signs that would aid in the designing process.

After introducing and modeling the way readers can use multiple representations to improve comprehension, Mrs. Calhoun implemented lessons that required students to apply their abilities to utilize available designs to reach an appropriate redesigned cognitive configuration.

Mrs. Calhoun clicks on the screen to have the text read aloud to the students. Upon completion of the read aloud, the animation follows to support what was read.
T: All right, so what do we see [happening] here? We've got a lot going on here. What can we pick out?
S4: You see the helicopter in the front and the helicopter in the back. They probably have water. [I think] the man started the fire, and the fire got bigger and bigger, and I think they are watering the house because the fire is there.
T: Do you see anything else?
S1: It's wet!
T: What else?
S3: The little kids aren't there! They're still in the forest.

T: Ahh! They aren't in the house?
S4: They're taking water from the pool and putting it on the house.
T: Ok, do you think it's a firefighter or someone else?
S4: Firefighter, because of their hats…
S2: I think, I think, I think that they are watering the house so the fire doesn't come.
T: Ok, what else do you see?
S2: The firefighters are wearing boots and hats.
T: Good. Ok, who do you think these people are?
Mrs. Calhoun points to the graphic image in the book showing a mother and father standing beside the house.
S2: I think it's Mom and Dad!
(Observational fieldnotes, March 1, 2010)

Within her everyday literacy teaching, Mrs. Calhoun observed that the integration of technology lent itself to discussion and application opportunities for striving students to use combinations of available designs to overcome difficulties experienced when attempting to gain meaning from a text (Phase one guide, February 19, 2010). Therefore, she incorporated support structures for the particular needs of students to increase the likelihood that all would experience success. Princess explained how she used multiple representations to improve her reading experience (Interview, March 2, 2010):

> Well, see there's a picture on the screen… and then they move after the passage has been read and it makes you, if you're having a bad day, you can laugh at it… It makes you understand how the story goes along.

In addition to incorporation of technology in the guided reading setting, Mrs. Calhoun also gave striving students the liberty to work independently with the technology. In this way, she tailored the learning opportunities of striving students by offering them the chance to select those representations of information which appealed to their learner style and needs. As Mrs. Calhoun customized literacy activities by providing multiple representations of information to meet individual needs, students experienced greater success and enjoyment when reading. One striving reader explained (Interview, March 18, 2010) the way that access to additional available

designs improved her reading experience stating that "when the picture starts moving it makes it more like it could happen in real life and this picture, it just makes it seem fun to read."

Mrs. Calhoun provided a flexible learning environment that allowed striving students to utilize those forms of representation that appealed to their learner preferences. In this way, she supported striving learners in specific ways in their development toward literacy goals. Mrs. Calhoun explained (Interview, March 2, 2010), "the inferencing is just flowing. It's like, oh, I understand now. Just seeing it [with] the… [electronic] books [makes a huge difference]… It is astounding." In the similar way that Braille can provide access to text for a person who is blind, increasing the available designs within the classroom environment facilitates improved literacy learning for those students needing specific supports. Mrs. Calhoun stated (Interview, March 19, 2010):

> [Before] I felt like I was having to teach so much background knowledge just to get them to this point where I could teach them, but using the AWARD resources… it made a level playing field for all my kids… [by giving] them [access to] things that they have never been exposed to.

Differentiated levels of engagement. Within this study, Mrs. Calhoun additionally customized learning opportunities with consideration to those factors that would increase learner engagement. As she designed pedagogical activities with technology incorporation, she offered a learning context tailored to the interests, personalities, and preferred levels of support of striving students thereby increasing the likelihood that students would engage during learning. Mrs. Calhoun explained (Interview, March 2, 2010):

> It's very interactive… Yesterday the whole class just about lost it, and part of me is like, okay, you've got to stop [the loud behavior] and [then] I'm looking and I'm thinking,

> when was the last time they all kind of exploded and let me hear what's going on and let me see what's going on during reading? That's a good thing.

The learner engagement described by the classroom teacher resulted, first, from the way technology integration inherently catered to the interests of students and connected to their lives. Mrs. Calhoun believed that her students connected to use of technology during literacy instruction simply because it was relevant to their lives. She stated (Interview, April 15, 2010):

> [I work with] a generation that goes home and watches TV and plays games. They get instant satisfaction and paper and pencil is not instant and it's something they have to work at. They're working just as hard… using the AWARD [resources], but they don't perceive it that way… I honestly believe it's just a generation of you go home and watch TV or you go home and play videos or Nintendo games and they all… can talk to you about the different Nintendo games and, you know, the Wii and that kind of stuff… I really think the AWARD [resources] lends itself to that. It gets their attention.

In utilizing technology resources for the purposes of literacy teaching, Mrs. Calhoun provided a learning context that appealed to the technologically savvy generation of students in her classroom. When asked to describe the differences observed within her classroom with integration of AWARD Reading resources, Princess exclaimed (Interview, March 2, 2010), "The video games! They're fun!" On another occasion, one striving student referred (Observational fieldnotes, March 24, 2010) to the interactive story now used in guided reading as a "movie".

With technology integration, often students did not even realize that learning was taking place. Instead, striving learners perceived use of the AWARD Reading resources simply as an opportunity for fun.

> I: Now I've watched Mrs. Calhoun at the back table with y'all. She asks you vocabulary questions! That question you just answered on the game was also asking you about vocabulary.
> Princess: It was?
> I: Yes, it was! It was asking which one of these words means *(word emphasized)* something special. Then, which one of these words means *(word emphasized)* moving quickly from place to place.
> Princess: Oh! It was!
> *Princess smiles and raises her hands in surprise.*
> I: I know that Mrs. Calhoun asks you those same questions at the back table, but I don't see you laugh and act like it's fun back there. What's the difference?
> Princess: I don't know. What is the difference?
> *Princess scratches her head and looks to me for an answer.*
> I: Of course, I have my ideas, but I'm wondering what you think. What's different about when you do vocabulary on the computer instead of with Mrs. Calhoun?
> Princess: Well, when you do it with Mrs. Calhoun you're just writing on paper and when you do it on the computer they make the pictures and stuff so it's fun!
> (Interview, March 18, 2010)

As striving learners used technology they were also able to exert control over their inquiries during literacy enabling them to attend to those features that supported their particular needs. For example, some students chose to use the animation, graphic images, and text features for visual support. Bobexi described (Interview, April 1, 2010) the available designs that enhanced her reading in an interactive story, "I can see the whole thing that's happening around the people… and I can see the words bigger… [so] I know what's happening in the story." Another striving learner, Banana, illustrated how the highlighted text feature supported her reading experience.

> When you're on a book… when you turn the page and you go to read, it reads and on the first line where it says *(Student reads text)*… it's going to turn red, and them other words at the end of the period is going to turn red… to let you know that's where they are reading. (Interview, April 1, 2010)

For other learners, the sound effects provided an electronic scaffold that kept them engaged during the meaning making process. Nakia explained (Interview, March 31, 2010) that when he

can “hear noises… It feels like you're there, but you're not… It sounds like we’re there but we’re not.” Interestingly, one striving student revealed a preference for the traditional printed text. Autumn stated (Interview, April 1, 2010), “I would rather read it in the book… because you get more ideas.” When asked to explain what she meant by this statement, she said, “with [the computer] like it reads to you, [but] like when it stops reading to you and stuff… you forget it and when you read this book *(points to traditional printed text)* you will remember it in your head.”

By incorporating a wide variety of resources, Mrs. Calhoun customized learning opportunities to appeal to learner preferences thereby increasing engagement. Striving students experienced opportunities to choose whether they wanted to use combinations of multimedia for overall support or attend to specific technology features on a case by case basis as they supported individual needs arising as they interacted with text. Mrs. Calhoun explained (Interview, April 15, 2010), “you have some that are auditory and some that are visual, but what I've seen … is that when I did the visual [and also provided the] audio the kids [were] actively engaged.”

Mrs. Calhoun allowed striving students to use AWARD Reading resources in ways that would support their individual designing process thereby additionally increasing engagement. The interactive stories offered opportunities for multilinear reading. Striving learners used the mouse to click and link to available designs that would answer their individual questions as they occurred during independent reading. This multilinear reading experience created a context in which students could bridge gaps in their existing cognitive structures so that meaningful learning could occur. Mrs. Calhoun described the engagement and resultant growth of one striving learner.

> Sam [had] not passed a comprehension test, and that's even with us reading [together] every week and us talking… writing… or drawing a summary… using cartoons. He didn't get it… [and now] he's getting it. What I liked about [Sam] reading independently today was [he] got to go as fast as [he] wanted to, and granted he clicked a couple of times to see the bird do the movement again, but he also retained everything… and you know, I was probably one of the one's that would say, no I don't like the idea of stories being read to them out loud for comprehension… [but] I'm seeing such a big difference and steady steps in comprehension…It's allowing each of them to go at their own pace… They're not bored and it's still learning… [After the independent read] we started talking about when they see the [interactive] stories and how does that add to it… The low readers finally understood… when I read, I [should] see it in my mind. They see a movie and now they're seeing the movie as they read [traditional text] (Interview, March 2, 2010).

In addition to customizing instruction to the individual needs of striving learners, Mrs. Calhoun also tailored instruction accounting for the varying levels of support desired by students. Multiple interactive games, accompanying texts previously read by students either in a traditional or electronic format, provided a learning context that catered to learner preference for support level. The interactive nature of the technology features offered varied levels of support allowing striving learners to select and utilize only those components that would meet their needs and fuel their literacy exploration. The following data excerpt illustrates how one striving learner is actively engaged adjusting particular features of an interactive game to her desired level for support.

> S2 clicks on the text to have it read aloud to her. She is following the text with her eyes as it is read on screen. S2 then clicks "your turn" to read the text on her own. As the text

> begins moving across the screen, she clicks the meter to have the text slowed down. She reads the text aloud. S1 taps her on the shoulder to ask a question, but S2 does not stop her reading. When S2 reaches the text "grandma used to make breakfast every morning", she stops the text completely to read this section. She then resumes the movement of the text. As she begins reading, she adjusts the speed of the text to move slightly slower. After a few moments, she moves it to "normal" (normal speed). S2 continues reading to the end of the text. S2 looks back to me and says, "One minute and twenty seconds!" (Observational fieldnotes, February 25, 2010)

As illustrated above, features within the interactive game could be adjusted by the students so as to provide an appropriate level of challenge. Additionally, students also selected games based on their own learning goals and personalities. Princess decided to play *Whizzy Quiz* most frequently because she wanted to improve her comprehension, and she appreciated the extrinsic motivation offered by the on screen prompts.

> I love [Whizzy Quiz]… because it helps you understand the book more and this little guy eats up all the letters when you get done… If you get them all right, he'll move and move and move until he's all the way up there *(points to the top of the ladder on the screen)* and he'll gobble them up. Like, mmm, mmm *(rubs tummy and laughs)* (Interview, March 18, 2010).

As evidenced in the data excerpt presented above, striving students began to experience success and recognized a purpose for developing their literacy skills as Mrs. Calhoun provided differentiated levels of engagement.

Additionally, students began to take ownership of their learning when given the opportunity to make choices that appealed to their interests, personalities, and preferred levels of support. According to Mrs. Calhoun:

> I think it is fun for students because… It's taking them outside of their box… they're sitting in at Georgia Elementary School… With technology, they're doing more, it's exposing them to things that they've never seen before [and] never thought about… So

> I'm seeing more things asked about. They're a lot more willing to ask me what something means. Today… they were asking me how long does a bird sit on an egg and I had four students sign up to get on the computer tomorrow to look those kinds of questions up. That didn't happen before [integrating AWARD Reading resources]. I would say let's find out about this, but since [integrating AWARD Reading resources]… it's got them interested and they're wanting to take it further. (Interview, March 2, 2010)

Unique Occasions for Expression. Mrs. Calhoun further increased the customization of learning opportunities for students as they explored a range of options to express their thinking about literacy. A variety of physical tools for students to use in expressing their knowledge were available for access including using the computer keyboard for typing, recording voice using a microphone, and using a computer mouse to make selections. As multiple means for expression were made available by Mrs. Calhoun, students began to utilize those resources that made communication of what they knew possible based on their needs. The data presented below demonstrates how striving learners expressed their knowledge by selecting interactive games that appealed to their preferred mode of representation.

> S1 chooses to play *The News* game first. He chooses to name his news station an independent name that he makes up himself. On another computer, S2 is playing the *Word Detective* game focusing on vocabulary… S1 taps S2 and points to the name that he has chosen for his news station. S2 completes the *Word Detective* game and chooses to move on to *The News* game (Observational fieldnotes, March 2, 2010).

Some striving learners made connections to real world experiences when using technology to express their understandings about literacy. As students perceived their literacy learning activities as being applicable in a world outside the classroom, they began to see a

purpose for their learning and exerted additional effort to clearly express their ideas. Princess explained (Interview, March 2, 2010) how her use of an interactive game connects to life experiences and thereby motivated her to express her reading more fluently. "*The News* is where you're actually, like, you're on the news. You're reading like you went on the news. Like, 'Good evening everyone. My name is Princess Edwards and I want to tell you… well, here's the weather for today.'"

Mrs. Calhoun recognized the benefit for students expressing their knowledge in ways that could be applicable to real life experiences. Upon observing the learner engagement taking place as students played the role of the news reporter on an interactive game, she extended her teaching to provide additional opportunities for student expression.

> [The students were] doing the news reports on the [AWARD interactive game] and they liked that idea. So… I have this huge box now and I've covered it and painted it in black paper so it looks like it's a TV. So we're going to work on fluency and act it out… They get to be the reporter that way. (Interview, April 15, 2010)

Mrs. Calhoun played a tremendous role in customizing literacy instruction using technology resources in ways that would aid in the development of striving learners toward specific pedagogical goals relating to expression. She designed a fluency center to provide striving students a model of fluent and expressive reading as they listened to the AWARD text being read aloud. Students followed this activity by recording their own voices reading the same text into a microphone to be played back and critiqued by the student group. Mrs. Calhoun gave students ownership of their learning objectives as they determined areas of strength and areas for improvement in fluency for themselves and for their peers. The collaborative nature of this activity appealed to the personality types of the striving learners within Mrs. Calhoun's

classroom thus further increasing student motivation in literacy learning. Within this learning context, Mrs. Calhoun explained (Interview, April 15, 2010):

> They love listening to themselves and that's an active part of it… I've seen growth where [students are saying] I should have read it this way or I should have read it that way. The kids are coming and explaining that to me and they've written it down. They've taken ownership of it [and are asking] can I do it again [to try and improve my expression]?

Students expressed understandings about literacy developed within the fluency center in multiple ways thus engaging a range of learners. Additionally, students benefitted from the media tools provided within the fluency center increasing their enjoyment during literacy learning. Sam stated (Interview, March 31, 2010), "when I'm reading in the microphone I'm feeling like a star on American Idol, but reading a book."

Mrs. Calhoun additionally provided opportunities for creative expression as students responded to literature through art within the interactive games accompanying specific stories. The data excerpt presented below demonstrates how students were able to use the computer to express their ideas about a text in creative ways.

> Mrs. Calhoun shows the students the *Sentence Sizzler* game. She walks students through how they can make choices to mix-up a sentence from the story. She then shows students how they can use the technology tools to illustrate their picture to match the silly sentence they've created and then click "sizzle" to have their sentence read aloud to them with their name and illustration on the screen (Observational fieldnotes, February 22, 2010).

As Mrs. Calhoun integrated interactive games designed to provide a medium for creative expression of students, she additionally offered students an electronic scaffold providing custom

levels of support to propel students toward achievement. Striving learners began to transfer understandings developed using modes of expression available on the computer into their literacy activities with paper and pencil. As stated by Mrs. Calhoun (Interview, March 19, 2010):

> One student came to me and said, "Can I set [my paper and pencil response to literature] up the same way [as my newspaper response on the computer], and I said sure. So he sat down and I ended up having four over there looking at [the newspaper report] together on the computer, and they were working. They all did [their paper and pencil response to literature] that way and they've continued to turn in their summaries using that same format.

Finally, Mrs. Calhoun used the AWARD computerized assessment feature to demonstrate to students that responding to a test is another mode for expression. Through numerous informal conversations, Mrs. Calhoun made the decision to introduce testing to her striving learners as a genre that must be read in specific ways in order for students to be able to express their knowledge within this medium effectively. Through interactive teaching of how to make sense of this genre, Mrs. Calhoun gave students opportunities using the AWARD computerized assessment within a whole group setting to apply their knowledge. For example, during the lesson Mrs. Calhoun asked one striving learner to explain the differences observed in layout and make up of this text compared to another. Following this exploratory discussion, she asked another striving learner to underline where he found the knowledge he was expressing in the form of an answer to a question on the AWARD assessment projected onto the dry erase board (Observational fieldnotes, March 15, 2010). Figure 4.3 illustrates the chart used by Mrs.

Calhoun, in conjunction with the technology resources, to teach students how to express their understandings in the form of a test.

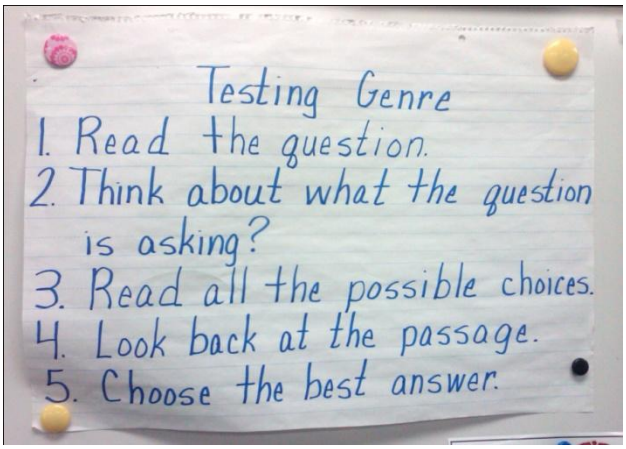


Figure 4.3. Testing genre chart.

Through integration of AWARD Reading resources, Mrs. Calhoun provided opportunities for students to show what they knew about literacy using multiple means of expression. Striving students experienced greater success in the classroom because instructional activities were flexible enough to incorporate alternative pathways for students to demonstrate their knowledge. Mrs. Calhoun described the changes that took place for her striving learners as adjustments were made within their learning environment to accommodate their particular needs.

> I'm not prompting them at all anymore and I used to prompt all the time…. [Now] I listen to them talk about [literacy] and take it further… My low kids are performing… research when they have a question just as well as my high kids and my low kids know. They know that what they're producing is just as good as some of their classmates, and so I've seen a lot of self-esteem grow too (Interview, April 15, 2010).

To summarize, as the classroom teacher integrated the AWARD Reading resources in particular ways, she offered customized learning opportunities to striving learners. Using a suite of technology tools for specific learner objectives, Mrs. Calhoun provided flexible instruction

addressing the specific needs and challenges of students striving toward achievement by extending representations, providing differentiated levels of engagement, and offering unique occasions for expression. In the next section, I will discuss how the reading experience was transformed for students as a result of these experiences.

Reading as a Network of Processing Systems

Individuals considered to be proficient readers possess an ability to make decisions regarding which sources of information available to them should be used to draw meaning from a text (Pinnell & Fountas, 2008). From this perspective, in order for students to develop into skillful readers they must possess metacognitive knowledge so that they understand how they learn. As evidenced in previous sections, Mrs. Calhoun formerly spent a great portion of time providing hints to learners in hopes that with enough prompts they would eventually guess the word. However, as Mrs. Calhoun provided customized learning opportunities using the AWARD Reading resources and as we engaged in ongoing discussion she began to transform her ideas about reading along with her students.

> It [became] important [for me] to take [the AWARD Reading resources] home and make sure that I knew what story I could project up and how I was going to use that story [to benefit my striving learners]… so I could start on the first day using the [interactive stories] introducing what we're going to do and how we're going to work with [the text]… [Before] I would always read what I was going to teach to the story [in the teacher's guide]. I never even would have thought to write down my teaching points for the book until you made the suggestion. I've never really written questions down and there's so much that's available that you can bring to their attention… so I've been writing the questions down real quick to make sure, usually on Sunday night, because I'll read

over the stories that we're going to read. It's like, oh, this will bring this out, or oh, this will be good to talk about again. (Interview, March 12, 2010)

Figure 4.4 illustrates the way Mrs. Calhoun began to use post it notes as reminders throughout the text of opportunities for teaching.

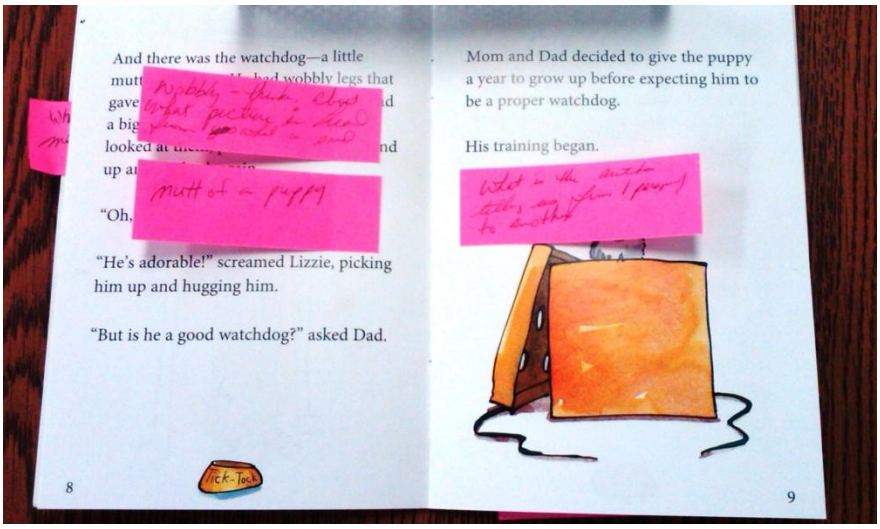


Figure 4.4. Post-it note reminders used by Mrs. Calhoun during teaching.

Designing her literacy instruction with this new perspective, Mrs. Calhoun began to teach students how to build up a repertoire of strategies that they could use to make sense of what they read. In other words, as she provided customized learning opportunities, Mrs. Calhoun, along with her students, transformed the reading process into a network of processing systems. Through data analysis described in chapter three, I identified three categories that I use to describe the transformation of teacher and student perspectives of reading that took place when customized learning was provided using AWARD Reading resources. In this section, I share data excerpts to demonstrate how reading became a network of processing systems for participants within which they were thinking within, beyond, and about the text.

Thinking within the text. As Mrs. Calhoun integrated AWARD Reading resources, she provided a learning environment that supported the teaching of specific strategies to prompt

striving learners to think about what is happening within the text. First, students began to apply word solving strategies by making connections between words using phonological cues. Banana provided a specific example of her use of phonological cues to solve unknown words developed as she played an interactive game. She explained (March 2, 2010), "[In] *Word Train*… it has to make the same sound. [Like the word] good, it has to make an 'oo' sound… other words have the same sound as good." On another occasion, within the context of guided reading instruction Mrs. Calhoun used the graphic images within an interactive game to guide her instruction. She facilitated discussion on recalling important details to summarize a story.

> *Mrs. Calhoun clicks on Whizzy Quiz. The first question requires students to place pictures in the correct order based on the events happening within the story.*
> T: Ok, we move the pictures into the correct order.
> *The majority of students raise their hands to answer. Mrs. Calhoun prompts a discussion on the sequencing of the story – and uses the images in the game to prompt students to talk about what happened in the story as they put the events in order.*
> (Observational fieldnotes, February 22, 2010)

Through ongoing collaboration and reflection, Mrs. Calhoun began to recognize the importance of students visualizing what is happening within the text. The data excerpt presented below illustrates how I offered reminders to Mrs. Calhoun to remain focused on her specific goals during her teaching using the technology resources.

> You want to use the onscreen prompts to talk about thinking that should be happening for your readers. Help them to understand that what is happening on screen should be happening in their heads as they read. Visualization plays a huge role in proficient reading. (Interview, March 12, 2010)

As described in previous sections, Mrs. Calhoun placed a strong emphasis on development of fluency. In working with striving learners at the fluency center, Mrs. Calhoun realized how visualization influences the way words are expressed by a reader. The following data excerpt

illustrates how she adjusted her teaching to emphasize the thinking required of proficient readers in order to improve student expression.

> *S3 continues reading on the next page with expression.*
> S3: He's telling the people that he's scared to go into the house.
> T: Yes, and because people thought he had a big, bad, voice – they thought he was a scary animal.
> S1: Yes.
> T: So how could you have portrayed the caterpillar so that the tiger would be scared and the elephant would be scared? What kind of voice would you use?
> S1: A big grumbly voice
> *S1 lowers his voice demonstrating what he means by a grumbly voice.*
> T: Yes. If the caterpillar had a teeny tiny voice – then would that be scary?
> S3: No.
> T: No – so when you read that part – you have to use a big booming voice in your head as you think about it.
> (Observational fieldnotes, March 10, 2010)

As striving students began to increase their repertoire of cognitive strategies, Mrs. Calhoun increased her expectations for students. During phase two of the study, she set a specific goal for students to self monitor as they were reading (Phase two guide, March 19, 2010). With this goal in mind, Mrs. Calhoun made an effort to provide opportunities for students to apply their reading strategies within the context of her guided reading instruction. She directed students to attend to phonological, syntactic, and semantic cues within the text. Additionally, she facilitated discussion on how to cross check these sources of information against one another to determine if the reading made sense.

> T: Now when you said this word *(points to word hummed on computer screen),* you said, Alpacas humbled. If that word was humbled, what sound would you have to hear in the middle? Humbbbled. *(enunciating "b" sound)* What letter makes that "buh" sound?
> S: B.
> T: Humbbbled, *(enunciating "b" sound)* Right? Do you see a B there?
> *Mrs. Calhoun points to the word hummed on the screen.*
> S: No.
> T: So what else could that word be?
> S: Hummed?
> *The student looks to Mrs. Calhoun for confirmation that she is correct.*
> T: Alright. So would that make a little bit more sense?

S: Yeah.
T: What do you think about when you think alpacas hummed?
S: They were going mmmm-mmm-mmm.
The student moves hands in rhythm as she makes a humming noise.
T: Okay. So that's another thing you want to do is think, does that make sense?
(Observational fieldnotes, March 18, 2010)

This exchange illustrates how Mrs. Calhoun began to teach striving learners how to compare important pieces of information from the text to develop the self monitoring abilities of a proficient reader. As she became increasingly aware of the importance in teaching strategies, she began to incorporate discussion within her teaching on how to search for and use the cueing systems presented within the text to be sure that reading makes sense. Mrs. Calhoun discussed how this teaching was transferring into the independent reading and literacy learning opportunities for her striving learners. She explained (Interview, March 19, 2010), "I've seen just from the [student] questions… that they recognize they didn't [understand] it… I've gotten [my kids] excited about understanding… The AWARD [reading resources are helping me give] students a different avenue [for reading]."

Thinking about the text. Mrs. Calhoun also provided opportunities for students to develop an ability to think critically about a text. Within phase one of the study, she realized that her teaching needed to move beyond giving hints in order for her students to become skillful readers. As she worked with a striving learner using an electronic story, Mrs. Calhoun recognized (Interview, March 2, 2010) that if he wasn't thinking about "the words [he could] miss the whole content … [This striving] student went through and [read]… but he miscued several of the words so the pictures didn't match… so I played [the animation] and he figured out his miscues."

Mrs. Calhoun began facilitating discussion among striving students concerning how good readers think about a text to analyze the information being presented. On several occasions, she

used electronic informational texts as a resource to provide explicit instruction on how striving learners could use particular structural features to extract meaning. The data excerpt presented below illustrates how Mrs. Calhoun utilized an electronic text during a guided reading lesson to instruct students on how a reader should use a diagram to gain meaning.

> T: So we have this big picture of a cell phone. What is it showing us?
> *Mrs. Calhoun points to a diagram on the screen of the laptop.*
> S4: It's showing us where the parts of the phone are.
> T: Very good! That's called a diagram! So if I said, on this phone – could you show me where the camera is?
> S4: It's right here!
> *S4 points to the camera on the diagram in her book.*
> (Observational fieldnotes, March 15, 2010)

Within this same lesson, Mrs. Calhoun also directed students to compare and contrast the table of contents and the glossary. In providing opportunities for students to think about how to use the reference tools within a text, she further developed their processing abilities.

Mrs. Calhoun additionally offered specific occasions for striving learners to think about how the structural cues of a text could be used as a source of information. Mrs. Calhoun prompted students to think about how parts of speech informed the reader. In previous discussions of parts of speech, Mrs. Calhoun required students to identify parts of speech within a sentence with little consideration being given to how this information informed the reader within the context of the story. Using interactive games as a teaching resource, she now required students to evaluate whether words matched the specific structural cue she provided.

> T: What is the verb that goes with this picture?
> *Mrs. Calhoun uses the mouse to direct students' attention to the picture. She goes through each picture and calls on students to provide an appropriate response. Responses must be action words, and they must match the picture.*
> (Observational fieldnotes, February 22, 2010)

Additionally, Mrs. Calhoun incorporated prompts within her teaching to encourage students to think about whether their reading sounded right upon reflection of the structural cues offered within the text of a story (Observational fieldnotes, April 14, 2010).

Lastly, striving learners developed an appreciation for the particular way authors use words as they were thinking about reading. Students asked questions to critically evaluate the language used in a story. Mrs. Calhoun prompted students to envision what was happening in the story to analyze the way words were used by the author to convey meaning. The data excerpt below demonstrates an occasion where Mrs. Calhoun facilitated discussion on thinking about the text of a story.

> *Interactive story reads text,* "it was a nightmare"
> S4: Woah! *(said with excitement)* What's a nightmare?
> T: That's what I was going to ask you!
> S3: It means they're scared!
> T: Ok. Let's think about what the author is trying to do here. Then we can come back to the word nightmare… What are [the story characters] afraid is going to happen?
> S3: The fire is coming to their house.
> T: Good! So what is their biggest fear?
> S1: The fire coming to their house!
> T: Ok, so in your mind, you can see the fire coming to their house. Right? They are doing everything they can to keep the fire from coming. That is why the author said it is a nightmare.
> S2: Oooh, Mrs. Calhoun! Don't scare me!
> *Ms. Teacher listens to two students tell stories about fires in their personal experiences. One student comments that the experience was a nightmare for him too.*
> (Observational fieldnotes, March 1, 2010)

Thinking beyond the text. In order for meaningful literacy learning to occur, students must be able to situate new understandings within existing cognitive structures. This requires an ability to think beyond the text presented in a book. Mrs. Calhoun integrated AWARD Reading resources as a scaffold to develop the ability of her students to extend their thinking during reading. As a result, her striving learners began to think beyond what was explicitly stated in the

printed text and began making connections to other sources of information. She explained (Interview, March 2, 2010)

> I'm seeing growth… [My striving learners] are getting things that I've been trying to teach but they haven't gotten in the past. And that is exciting to see. It's neat when your kids get it. So when they were doing their… character analysis…. [where] you put the character name in and you put describing bubbles around it… I still saw a lot of the surface [thinking], [such as] blonde hair… But I also saw, listening to mom and dad, you know, things that you really had to kind of look at a little bit deeper to see. Was considerate because she took pictures of something and sent it to her friend… And [others] had, did we see anything like that in any other books we've read?
>
> (Digital transcribed teacher interview, March 2, 2010)

With access to the AWARD Reading resources during instruction, students reflected on their background knowledge and previous experiences. When asked to explain his thinking during reading, Sam explained (Interview, March 2, 2010), "I think about myself and reading and the book. Three stuff at the same time. I'm learning a lot."

As Mrs. Calhoun transformed her perspective on reading along with her students, she began to give consideration to the content of text. She based her selection of texts on whether or not she believed the material was relevant to the lives of learners. In doing so, she provided opportunities for students to make text to self connections. In the following data excerpt, Mrs. Calhoun described her rationale for text selection that supported thinking beyond the text.

> One is information and… about a cell phone and [therefore students] talked about prior knowledge of going with their parents to pick out cell phones… Almost all of them have cell phones of their own because they go home alone, so their parents have those in their

book bags. So they can compare and talk about that and then they compare it to the story (Interview, March 19, 2010).

Mrs. Calhoun additionally used the AWARD Reading resources to support her pedagogical goal for students to develop inferencing skills. Students experienced opportunities to think about what the author was trying to convey as a story unfolded. The data excerpt below demonstrates how Mrs. Calhoun used specific instances within the text to prompt students to think about how the events of the story could provide an implied meaning.

> T: Ok! Let me ask you. Tell me what you think the boys are feeling – just from what we watched.
> S1: Happy!
> T: Ok good – why do you think they're feeling happy?
> S1: Because they have a big smile on their face – and they've never seen snow before.
> T: Ok – so why do you think that dad asked if they should go on the snow slide?
> S: Because everybody keeps falling.
> (Observational fieldnotes, February 22, 2010)

Lastly, students explored how they could use resources to think beyond the test to make decisions during the meaning making process. During baseline data collection, students explained how they used Mrs. Calhoun as their primary resource during reading. With technology integration providing unique literacy learning opportunities, students developed an ability to consider how other resources could provide information pertinent to their learning goals. Banana explained (Interview, March 2, 2010) how the AWARD Reading resources encouraged her to use resources to solve questions arising during interactive game play.

> It lets you get the copy of a book, so it can let you just predict where you know where the word is and you can see how the word's spelled… Like I didn't know how to spell *remember*. So I got a copy of the book and see how to spell it… [The AWARD Reading Game] said to get a copy of the book. So I did.

In sum, by integrating AWARD Reading resources, Mrs. Calhoun offered new considerations for striving learners where they were thinking about reading as a network of processing systems. She encouraged students to develop an ability to use varying sources of information in a smooth orchestrated process to gain meaning from literacy experiences (Pinnell & Fountas, 2008). According to Snow and Sweet (2003), students must be able to simultaneously extract meaning from text by discovering how print represents sounds that comprise words while also constructing meaning by integrating new information presented in a reading with current cognitive understandings. Mrs. Calhoun provided opportunities for her learners to use a network of processing systems involving thinking within, about, and beyond the text in order to encourage them to cross check sources of information to evaluate whether or not what they were reading made sense (Pinnell & Fountas, 2008). In the next section, I will describe the roadblocks experienced along our technology integration journey and explain how we detoured from our path to improve learning opportunities provided to striving learners.

Roadblocks

In this final section, I return to my traveling metaphor in answering my fourth research question: Are any barriers to effective integration of AWARD Reading resources for the purposes of providing unique literacy learning opportunities for striving readers observed? How are these barriers addressed? I discuss each roadblock, or barrier, we encountered along our journey. Following this discussion, I describe how we worked collaboratively to establish alternative routes to reach our desired destination.

Upon completion of my excursion through Australia, I was disappointed knowing that I had to depart from such a glorious place. However, I was also eager to return home so that I could share my adventurous tale with family and friends. I bounced into the airport with my

suitcase full of souvenirs to carry home with me so that I would be able to remember my trip forever. Upon weighing my suitcase at check-in, much to my dismay, the airport security informed me that I was overweight and would therefore be unable to board the plane with all of the treasures I had collected along my way. Did they not understand what an important role these items would play in preserving the memory of all of my amazing experiences in their land? Apparently not.

At this point, I had a decision to make. I could choose to board the plane and leave my precious mementos behind, or I could come up with a way around the airport security. After a quick reflection, I decided that my souvenirs were valuable enough to me to find a way to bring them along. Looking around, I realized that my trinkets may be too heavy for one suitcase, but could they board the plane if their weight was distributed among many suitcases? With a smile spreading across my face, I quickly gathered my fellow travelers together explaining my plan. My precious souvenirs were then scattered among seven suitcases in a packing frenzy.

Was it worth the trouble? The moment I stepped foot into my home, I immediately unpacked the souvenirs one by one. With these mementos, I could feel the gritty sand off the shores of the Australian beaches, I could taste the salty flavor of kangaroo jerky, and I could observe my experience via DVD where I jumped from a plane 10,000 feet above the most easterly tip of the continent. To answer my question, I say yes, it was indeed worth the trouble.

Throughout this study, Mrs. Calhoun and I experienced similar roadblocks to the one I encountered in the Australian airport. In these situations, we also had to decide if continuing onward with technology resources was worth the trouble or if we should leave them behind. When asked to reflect on this question, Mrs. Calhoun explained (Interview, March 2, 2010):

> When I have the low group [using the AWARD Reading resources]… they have taken ownership of their own reading. That [is] a huge thing… that when I went over to help them… they [were working to meet their literacy goals] on their own… They took ownership of [their learning] and talked about reading and they were helping each other read… which [is] great… So the independence thing to me [is] just great... because that low group tends to be so needy with everything… [You'll] show them how to do it and then they'll start to attempt it but you still have to walk through it. Where yesterday when I showed them the pages of jokes and they each started taking a joke to read and then read it together [in the fluency center with AWARD Reading resources], they were [working on] their own, and it was done in a positive manner… It was all done very natural, let's read this together. I just about cried I was so excited.

As demonstrated above, Mrs. Calhoun believed that use of the AWARD Reading resources in a collaborative setting provided a scaffold for striving learners to be able to work more efficiently toward meeting their literacy goals. Without these resources, the literacy experience within her classroom would not be the same. Therefore, to answer our question, yes, overcoming obstacles in our path was indeed worth our trouble as well. During data analysis described in chapter three, I uncovered two major barriers that had the potential to inhibit use of technology resources. Within this section, I will begin by explaining how each barrier stood in the way of Mrs. Calhoun boarding the technology plane headed toward more effective literacy teaching. Following this explanation, I will describe how we worked as a team to shift the weight of these barriers using other suitcases, or resources, so that striving learners were provided opportunities for meaningful learning.

Difficulty with Technology

In order to use the AWARD Reading resources in effective ways, Mrs. Calhoun and I had to troubleshoot two key issues with technology. First, we had to provide a solution for the lack of technology available for consistent classroom use. Second, we had to improve the quality of technology provided as students continued to experience difficulty with available resources.

From our initial meeting, I first recognized that the lack of available technology could serve as a major hindrance to integration. Mrs. Calhoun explained during our initial meeting that she only had three computers available for use by students within her classroom (Observational fieldnotes, January 29, 2010). Within this count, she also included the computer that was designated by the school system to be used by the classroom teacher. In addition to computers, the school system provided each teacher with a traditional classroom cassette player. Teachers were also able to check out a technology cart, from the school library, that included a laptop computer, projector, speakers, and a document camera. However, teachers were required to return the technology cart immediately upon completion of use. Figure 4.5 illustrates the technology resources available for student use in the classroom. Figure 4.6 shows the technology resources available for check out.

Figure 4.5. Technology resources in classroom.

Figure 4.6. Technology resources available for check out.

Both Mrs. Calhoun and I realized immediately that increasing access to technology would be extremely important in order for us to be able to conduct the study. In order to address this barrier, I contributed an additional desktop computer and a laptop computer. Mrs. Calhoun provided a portable stereo with access to a CD player.

During phase one of our study, Mrs. Calhoun and I recognized that the quality of the technology provided also had the potential to serve as a barrier. As students worked at the fluency center described in previous sections, I observed that the condition of the portable stereo inhibited students from completing the activities designed by Mrs. Calhoun. On numerous occasions, the portable stereo malfunctioned. In her effort to address this obstacle, Mrs. Calhoun used other technology resources available within the classroom. She explained (Interview, March 2, 2010):

> Right now, I'm playing [the audio CD] on the computer… [Students] listen to it in the morning when they first [come] in… instead of them actually getting to do it [at the fluency center] because our boom box has been broken. That needs to switch. I need to

get that fixed… I have the batteries today [to see if that resolves the issue]. I've been borrowing our next door neighbor's boom box, but she needed it today so I didn't have it.

In addition to problems with the functioning of the portable stereo, students also experienced difficulty as they were required to use multiple technological devices to complete the activities within the fluency center. First, Mrs. Calhoun expected students to use the portable stereo or computer to listen to the audio CD of the text being read aloud. Then, students switched over to using the traditional cassette player to record their voices and listen to the recordings. As a way to address this barrier to integration, I provided a karaoke machine with all inclusive access to a cassette player, CD player, and a microphone to use during phase two of the study. Figure 4.7 illustrates the karaoke machine used within the fluency center.

Figure 4.7. Karaoke machine used in fluency center.

Students expressed an appreciation for improved quality of technology as evidenced by their reaction when Mrs. Calhoun introduced the modified fluency center. As she explained to students that I contributed the karaoke machine to the fluency center, one striving learner

exclaimed, "Ms. Baxter is the bomb!" (Observational fieldnotes, March 15, 2010). Additionally, students revealed a preference to use technology that they perceived as better quality. The data excerpt presented below occurred after completion of a guided reading lesson as Mrs. Calhoun sent students to work independently at computers.

> S1: [The other students are] already calling who gets which computer.
> *S1 is complaining to Mrs. Calhoun.*
> S2: She said she gets the teacher's computer!
> *S2 points to the black computer.*
> *In response to student complaints, Mrs. Calhoun assigns students to various computers. Students have preferences for the "teacher computers" (black computers) and the laptop because they are newer. Students perceive black computers as "teacher computers" because Mrs. Calhoun's teacher computer is black.*
> (Observational fieldnotes, February 24, 2010)

As evidenced above, students noticed differences in the quality of technology devices offered within the classroom. In sum, Mrs. Calhoun and I addressed difficulty with technology as a barrier by increasing the amount of technology available and also offering higher quality technology.

Teacher Decision Making

Mrs. Calhoun, as a first year classroom teacher, searched for ways to improve the instructional opportunities she provided to her striving learners. During the baseline data collection phase of the study, I discovered that she used the teacher's guide as her primary resource to direct the instructional decisions she made in the classroom (Observational fieldnotes, February 18, 2010). In order to effectively integrate the AWARD Reading resources into her everyday instruction, Mrs. Calhoun recognized that she had to play an active role in decision making and implementation in order to support her striving learners in developing specific pedagogical goals with these materials. During phase one, she explained (March 2, 2010):

> If I just [leave] them on their own, they [aren't] successful… If there was a teacher who said, okay, go on the computer, listen to the book, and do the story, and you weren't interacting with the pupils, too… it wouldn't work… It could become somebody's babysitter.

However, as evidenced in previous sections, Mrs. Calhoun possessed limited knowledge of teaching strategies she could use to meet the individual needs of her students. In order to overcome this barrier, Mrs. Calhoun and I collaborated during the decision making process. During data analysis described in chapter three, I identified two key ways that teacher collaboration supported integration of AWARD Reading resources. First, we decided to incorporate procedural teaching and explicit teaching to further improve the striving learner experience at the fluency center. Second, we devised a plan to improve behavior management to increase the amount of time students were actively engaged with AWARD Reading resources.

Procedural teaching. By integrating an all inclusive technology resource into the fluency center, Mrs. Calhoun decreased the amount of technology required for use by learners thereby allowing them to focus their cognitive attention on specific literacy goals. However, students continued to experience difficulty in two ways. First, students remained confused on how to use the various technology features available on the karaoke machine.

> Mrs. Calhoun troubleshoots the karaoke machine for students at the fluency center. The CD is stuck at the top. She fixes the CD and gives instructions to students concerning how to choose the appropriate number on the CD and how to turn on the microphone when they prepare to record to hear their voices.
> (Observational fieldnotes, March 15, 2010)

Secondly, students behaved inappropriately as they listened to the voice recordings of one another reading the text. In order to overcome these barriers, Mrs. Calhoun and I brainstormed possible reasons that these student difficulties could be occurring. We concluded that students

needed more explicit teaching on how to use the technology and on how to complete the final listening activity at the fluency center.

Initially, as Mrs. Calhoun introduced the fluency center with the karaoke machine to students she only explained one feature stating "the tape is in there already and if you hit record – it will record" (Observational fieldnotes, March 15, 2010). Mrs. Calhoun and I decided to further provide procedural teaching focused on the specific steps students must take in order to effectively use the technology equipment. Additionally, students needed a reference at the center that could be used as a reminder of the steps during independent work. Mrs. Calhoun devoted thirty minutes of her literacy instructional block to teaching students the specific steps required to use the karaoke machine. She used a procedure reference sheet, that we created together during an informal meeting, to guide her students through each step. Stickers that were included on the procedure reference sheet coordinated with stickers on the karaoke machine for ease in student use. Figure 4.8 illustrates the procedure reference sheet and the karaoke machine with the procedure reference sheet placed in close proximity for student use.

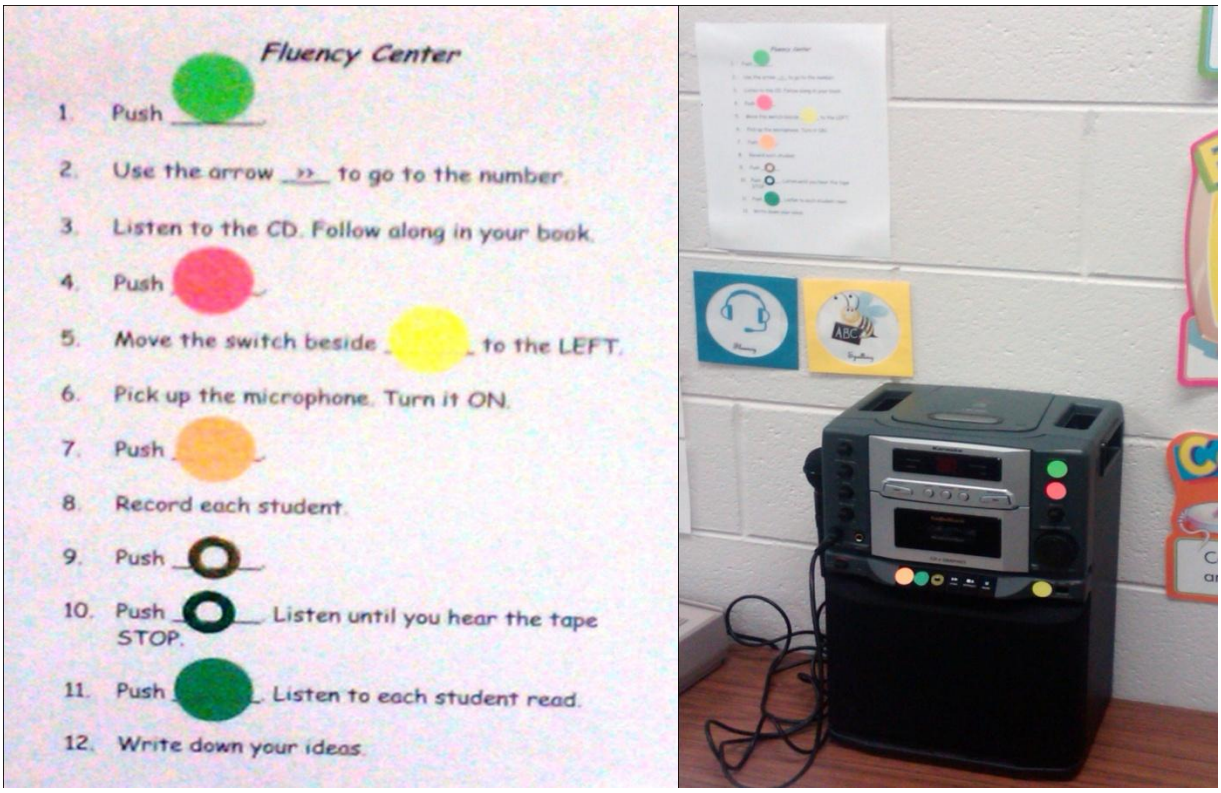


Figure 4.8. Fluency center procedural modifications.

Explicit teaching. Students also needed explicit teaching on fluency expectations in order to be able to evaluate their own reading and the reading of others. As evidenced in previous sections, Mrs. Calhoun focused a large portion of her instruction on emphasizing fluency due to pressures from school administration. However, in teaching students how to read fluently, she focused on the development of reading rate in order to improve student performance on DIBELS testing (Interview, March 2, 2010). With speed of reading as the focal point of instruction, students developed a skewed perspective concerning what constitutes fluent reading. When asked how he works on his fluency, Sam explained (March 2, 2010), "I just try to read as fast as I can."

Through ongoing informal conversation, Mrs. Calhoun revealed an uncertainty about how to teach students what it means to be a fluent reader. She explained (Interview, February 17, 2010):

> A lot of teachers can check it off and say they've gotten this done… um but I tend *(trails off)* I have a lot of low kids in my class too so *(trails off)* we all just keep plugging away… [but] I need strategies. What can I do for this?

As a participant-observer in this study, I engaged in co-teaching alongside Mrs. Calhoun at her request for support in offering additional strategies to improve fluency instruction for her striving learners. The following data excerpt describes how we introduced expectations for fluent reading and provided a reference chart for students to access during the listening evaluation activity of the fluency center.

> I co-taught a lesson today in Mrs. Calhoun's classroom to improve the fluency center with the students. We walked students initially through what it takes to be a good reader. Students were asked to explain how they knew I made a miscue in the following sentence - "The pretty woman wanted a shiny new bracelet." when I read it as "The beautiful woman want an ugly new bracelet." As Mrs. Calhoun and I facilitated discussion, students drew the following conclusions: 1) When I read pretty for the word beautiful – that didn't look right, 2) When I read want for the word wanted – that didn't sound right, and 3) When I read hideous for the word shiny – that didn't make sense. Upon completion of the discussion, we created a chart – "How's My Reading?" with the following comments: 1) Read with expression and 2) Ask yourself – A. does it look right?, B. does it make sense?, and C. does it sound right? We posted the chart above the fluency center for student to use in directing their discussions during the listening activity. (Observational fieldnotes, March 19, 2010)

As Mrs. Calhoun and I co-taught this introductory lesson, we provided direct instruction to students on how to self evaluate and evaluate others for fluent reading. Students used this knowledge to hold themselves and one another accountable as they listened to their voice recordings during the final activity of the fluency center. Mrs. Calhoun explained (Interview, March 19, 2010), "when I actually started teaching it and talking about… writing down the

words that you missed or having the other learners help you with your miscues… That kept them engaged… and helping each other." In order to overcome this barrier to integration, Mrs. Calhoun and I had to work together to reflect on how to improve the learning experience. When asked how she would advise other teachers wanting to integrate a fluency center using AWARD Reading resources, Mrs. Calhoun stated (Interview, March 19, 2010):

> I definitely would say… taking the time to teach it, how to use it, explaining why it is important for fluency. When we talked briefly the other day about the fluency center, I hadn't thought about the questions you ask yourself. I think it's [also] important that you make sure that you post what you're expecting them to do… [but] I would have never thought of that without our conversations and without my teaching my expectations for the center activity.

Behavior Management. Through informal conversations, Mrs. Calhoun and I recognized that additional time for student use was needed in order to use the AWARD Reading resources most effectively. When asked about barriers to integration during phase one, Mrs. Calhoun stated (Interview, March 2, 2010):

> I need to do better about getting the book read and giving them a good twenty minutes to follow up with the games because the games are all reinforcing what they're learning, and [also] when I talk to them about it afterwards or if I sit down beside them while they're doing it… and [ask] them, either comprehension questions or vocabulary questions… they're getting it. The two that aren't, I really am thinking more of they just need more time.

Upon acknowledgement of time constraints as a barrier to integration, Mrs. Calhoun and I considered possible reasons students were losing instructional time. We agreed that students

were losing instructional time due to requirements of school administration to practice for the CRCT (Observational fieldnotes, March 10, 2010) and student practice for the annual school program (Observational fieldnotes, March 1, 2010). However, Mrs. Calhoun explained that these areas could not be adjusted.

At this point, I suggested incorporating additional strategies to improve the behavior management of students during literacy instruction. I noticed that Mrs. Calhoun was consistently losing eight to twelve minutes of literacy instructional time each day due to behavior management of students and providing directions for independent learning activities (Observational fieldnotes, March 18, 2010). With this in mind, Mrs. Calhoun and I worked together to devise a system that would be used to direct students to their literacy centers without having to waste time providing instruction each day. Mrs. Calhoun assigned each student to a group. Upon implementation, students found their group number on a literacy icon chart to determine which independent learning activities they would be completing that day. When students left at the end of each school day, Mrs. Calhoun moved the literacy center icons so that students would visit a new center each day during the literacy instructional block. Figure 4.9 illustrates the center icon chart used to improve behavior management during literacy instruction.

Figure 4.9. Literacy center icon chart.

Upon implementation of the literacy center management system, Mrs. Calhoun used the literacy instructional block more effectively. She explained (April 15, 2010)

> I've… noticed that I start faster… Before, [my students would] come back and interrupt me [during guided reading]…. But [now]… I'll see them out of the corner of my eye, and they're standing over there [by the literacy center icon chart] going, we need to ask Mrs. Calhoun, and somebody always says… the first thing she's going to say [is check the chart], and I thought, I should have been doing this all year.

Summary

In this chapter, I have employed a traveling metaphor to explain the journey of technology integration in Mrs. Calhoun's classroom with striving learners in order to answer all four research questions. First, I described the travel conditions of Mrs. Calhoun and her striving learners prior to integration of the AWARD Reading resources. Second, I described the decision making process of Mrs. Calhoun in her selection and resultant use of technology resources to aid the development of striving learners toward particular pedagogical goals. Third, I provided data evidence to shed light on the unique literacy learning experiences provided to striving learners with technology integration. Finally, I discussed barriers to integration and described how we addressed these barriers to increase success in the classroom. In Chapter 5, I summarize and discuss these findings and offer implications for future research and classroom practice.

CHAPTER 5

SUMMARY, DISCUSSION, and IMPLICATIONS

In the previous chapter, I used a traveling metaphor to describe our experiences as the classroom teacher integrated technology in ways that she believed would propel striving learners toward achievement of particular pedagogical goals. As I described the unique experiences of participants, I also offered my interpretation of how these experiences fit together to tell our story. Within this chapter, I summarize and discuss my findings by situating them within and across my theoretical frameworks. I am in agreement with Labbo and Reinking (1999) that research within the field of new literacies is complex and multifaceted, therefore requiring a juxtaposition of multiple perspectives in seeking explanation. I interweave description of the notion of Design (New London Group, 1996) as an instructional practice, the principles undergirding the Universal Design for Learning (Rose & Meyer, 2002), and sociocognitive theory (Vygotsky, 1986; Wertsch, 1985) with explanation of how these theories connect to my findings. After a theoretical interpretation of my findings, I discuss the limitations of my study and offer suggestions for future research and practice. I conclude this chapter with final thoughts on the study.

Summary and Discussion of Findings

The purpose of this study was to explore how and why a classroom teacher chose to integrate specific technological components found within a comprehensive set of resources, termed AWARD Reading, to encourage unique literacy learning experiences for striving learners. The following four research questions were explored:

1. *Baseline*: How are the current instructional resources and approaches used by a third grade teacher supporting or inhibiting the literacy development of striving learners?
2. What AWARD Reading resources does a third grade teacher select to use in creating opportunities for unique literacy learning to occur for striving learners? Why?
3. What literacy learning opportunities are being provided to meet the pedagogical goals set by a classroom teacher when using AWARD Reading resources?
4. Are any barriers to effective integration of AWARD Reading resources for the purposes of providing unique literacy learning opportunities for striving readers observed? How are these barriers addressed?

Promising Learning Opportunities for Striving Readers

According to the New London Group (1996), a classroom teacher should consider three essential elements when planning instructional opportunities for students based on the concept of Design. First, the teacher must recognize those resources, or available designs, accessible to each individual student during the meaning making process. Consideration must be given to whether the available designs are relevant and adequate for development of new understandings to occur for students within the particular area of inquiry. Second, the teacher must understand how particular learners will situate new available designs introduced during instruction within given available designs during the process of Designing. In order for meaningful learning of students to occur, a teacher must reflect on how instructional resources should be used as additional available designs to increase the likelihood that students will experience success during Designing. Finally, the teacher must evaluate the Redesigned of students in order to determine if students generated transformed cognitive understandings related to the pedagogical goals.

Within the contemporary school setting, educators identify striving students based on the intense effort they exert during the Designing process in order to reach a successful Redesigned of print as a traditional technology (Dalton & Strangman, 2006). As these striving students evidence a need for additional cognitive energy to be used during the Designing process with traditional print, researchers explain that the expectations for literate individuals are increasing to include a new set of abilities required for use with emerging technologies (Burnett, Dickinson, Myers, & Merchant, 2006; Cope & Kalantzis, 2000; Labbo, Reinking, & McKenna, 1998). In order to ensure that the achievement gap for students already striving to meet grade level expectations using traditional print is not widened, teachers must begin to consider how incorporation of technology could influence student learning opportunities by providing occasions for growth in terms of new literacies while simultaneously increasing the available designs for students during the Designing process with traditional print. It is also worth noting that availability and accessibility of technology is crucial in order for teachers to improve learning opportunities for students using present-day literacy tools.

Within my study, I found that the classroom teacher used AWARD Reading resources as additional available designs for striving learners to access during the Designing process to improve the process of Designing. Mrs. Calhoun transformed the textual landscape (Carrington, 2005) for students with incorporation of additional available designs using multimodal resources. Students, previously unable to unlock the Redesigned, accessed illustrative graphics, videos, sound, and animation to improve their meaning making experiences with technology. I believe the benefit for students of these interactions with technology were two-fold. First, students used technology tools to develop the new literacy skills that are proving to be so relevant to academic success (Leu, Kinzer, Coiro, & Cammack, 2004). Second, students selected and utilized the

multimodalities (New London Group, 1996) that enhanced their literacy experience and lead to success during Designing thereby customizing their learning.

Individuals advocating for a Universal Design for Learning (UDL) encourage customization of literacy learning opportunities to benefit the broadest range of learners within the classroom. According to Rose and Meyer (2002), learning designs should be flexible accounting for the specific needs and preferences of striving learners. During my study, I discovered that Mrs. Calhoun used the AWARD Reading resources to accommodate her striving literacy learners offering multiple representations of information, providing varied ways for expression of knowledge, and differentiating the levels of engagement for students. As a range of technological tools were incorporated into everyday literacy instruction, the classroom teacher made it possible for striving learners to utilize resources as needed or even to combine use of resources to make literacy experiences more meaningful thereby generating deeper levels of understanding (Mayer, 2008).

Mrs. Calhoun used the AWARD Reading resources as assistive technologies increasing access to text with compensatory tools and offering practice of literacy skills with remedial tools. According to McKenna, Labbo, and Reinking (2004) "no one views stairs leading from one floor to another as a complicated technology – except someone who is confined to a wheelchair" (p. 275). Mrs. Calhoun applied the UDL framework to her teaching practices incorporating innovative technology instructional materials to improve the potential for learning of striving students previously limited by the constraining features of traditional print technology. Additionally, she used the AWARD Reading resources to transform the way she presented reading to her students by describing the network of processing that occurs as a reader thinks within, about, and beyond the text.

According to sociocognitive theory, readers link together and use individual cognition, language, social interaction, society, and culture in the production of meaning (Vygotsky, 1986; Wertsch, 1985). Mrs. Calhoun used the AWARD Reading resources to support the construction of meaning by her striving learners as a situated action linking new information to their experiences, perspectives, and previous knowledge (Gee, 2001). Within the context of small group reading instruction, the classroom teacher facilitated conversation among the readers directing their attention to particular aspects of a text and prompting them to make connections between what was happening in a story and their thinking. She explained (Interview, March 2, 2010), "I was excited… I've used it [with my striving learners]... seeing the difference… I read through it and try to lean towards [meaningful discussion]… [If] I just left them on their own, I don't think it'd be as successful."

It is also worth noting that ongoing reflection and social interactions between me and the classroom teacher influenced the way the AWARD Reading resources were used with striving students in important ways. As a former elementary literacy teacher with more experience, I encouraged Mrs. Calhoun to focus her literacy goals for her striving learners and offered suggestions on how she might improve use of the technology resources to benefit students in specific ways. Table 5.1 shows the shift in learning objectives outlined by Mrs. Calhoun from phase one to phase two with one of the AWARD Reading resources.

Table 5.1

Teacher Shift in Phase One and Phase Two Learner Objectives

Phase One	**Phase Two**
1. To increase student comprehension focusing specifically on A) Comparing and Contrasting, B) Sequencing, and C) Inferencing	1. To increase student comprehension focusing specifically on A) Fact versus Opinion, B) Analyzing Story Elements, C) Cause and Effect, D) Inferencing main idea/details, E) Author's Purpose,

	F) Comparing/Contrasting, and G) Summarizing 2. To increase student's repertoire of word solving methods with a specific emphasis on decoding strategies 3. To prompt students to self-monitor whether their reading makes sense

Study Limitations and Suggestions for Future Research and Practice

In order to frame discussion on the potential for future research within the field, I now turn my attention to the limitations of the present study and the connections between my findings and those of other researchers. The striving learners within my study improved their reading experience by selecting to use particular multimodal resources available within a suite of technology tools offered by the classroom teacher during the meaning making process. This finding is significant because it begins to answer the call issued by Dalton and Strangman (2006) for researchers to investigate the effect on striving readers when comprehensive access to technology-based literacy support is offered. Findings from my study also support research by others who have documented a positive effect on the literacy experiences of young children (Hassett, 2006; Labbo, 1996; Levy, 2009) and striving learners (Judge, 2005; Macaruso & Walker, 2008; Tracey & Young, 2007) when digital cues beyond those of traditional print are provided by the classroom teacher.

One limitation of this study was the amount of time spent during implementation. I cannot ignore the possibility that allowing only eight weeks for technology integration could have limited my opportunity to observe additional influences on the literacy experiences of striving readers with AWARD Reading resources. To illustrate this limitation, during an interview with Mrs. Calhoun on the last day of our study, I commented (Interview, April 15, 2010):

> [One striving learner] said today, I read differently when I know I'm going to get to write a newspaper about it, and I said, what do you mean?... He said, "Well, I have to remember things more. I have to know what I'm going to write about."… So [this] made me think to myself… [Does] knowing that the [digital] newspaper follow-up is there [increase striving learner] attention and [make] them focus in on what's most important?

Therefore, I agree with the conclusions drawn by Macaruso and Walker (2008) that one implication for future research is that lengthier studies must be conducted to examine the long term effects of technology integration during literacy instruction on striving learners. Also, increasing the amount of time devoted specifically to the implementation of formative experiments will give researchers the chance to look for other barriers to integration and to determine whether particular adjustments made to the research environment would improve conditions (Reinking & Watkins, 2000).

A second limitation of this study relates to my decision to focus solely on one classroom teacher and her group of third grade striving readers. Limiting the participants within my study narrowed the possibilities for discovery. For this reason, another implication for future research is that studies must take a broader look at how incorporation of a comprehensive set of technology tools during literacy instruction might offer unique opportunities for literacy learning of students at varying ages and abilities. It will be important to investigate whether the experiences of participants within this study parallel the experiences of teachers and striving learners within other classroom settings. According to Dyson and Genishi (2005), future research must consider whether the situated representation described within my study represents a larger phenomenon within elementary classrooms.

In suggesting that future studies begin to look across cases to determine if the experiences of striving readers and classroom teachers are representative of a larger population, I challenge researchers to trouble their definition of the larger phenomenon. Within my study, I limited my exploration by choosing to broadly define striving learners as those on the threshold of meeting grade level literacy expectations (Booher-Jennings, 2005). As the United States becomes increasingly more ethnically and linguistically diverse (Federal Interagency Forum on Child and Family Statistics, 2009), researchers must give focused consideration to the highly individualized needs of striving literacy learners.

Findings from this study underscore research of others who have cited the benefits of using technology to increase access to text and to offer remedial support to enhance the literacy skills of our students (Dalton & Strangman, 2006; Doty, Popplewell, & Byers, 2001; Edyburn, 2006; Pearman, 2008). My findings also support claims of former research that teachers can use technology to differentiate and accommodate for varied learning styles and abilities (Edmunds, 2008; Reinking & Watkins, 2000). However, future studies should explore effective uses of comprehensive access to technology-based literacy supports on specific culturally diverse groups of learners (Abraham, 2008; Bernhardt, 2006; Dalton & Strangman, 2006; Judge, 2005; Proctor, Dalton, & Grisham, 2007; Segers & Verhoeven, 2002). As researchers look for ways to meet the particular needs of the continuously growing ethnically and linguistically diverse populations within the United States, they should also go one step further. Future studies might also want to investigate the particular ways teachers may choose to use technology to encourage intercultural sensitivity among students in order to develop a global awareness preparing them for a world that is increasingly connected due to technological innovations and increased migration (Graff & Labbo, 2009).

The classroom teacher in this study used a suite of innovative technology resources to offer customized learning opportunities for striving learners and to expand formerly held perceptions of reading to incorporate a network of processing systems to promote richer literacy experiences. This finding is consistent with former research from those who have noted that the success of any instructional resources is largely contingent upon the decisions and implementation of the classroom teacher (Bond, Dykstra, Clymer, & Summers, 1997; Neuman & Dickinson, 2002). Current research also suggests that the classroom teacher plays an important role in technology integration as resources are used in particular ways that can either facilitate or hinder student progress in literacy (Edmunds, 2008; McKenney & Voogt, 2009). With this in mind, I am in agreement with Chen and Chang (2006) that future studies should be conducted to investigate how the design of professional development for practitioners could improve the decision making processes of teachers so that technology can be used in more meaningful ways for student learning. Additionally, I believe that future studies might investigate the role that technology training in pre-service teacher education programs may play in preparing future teachers to provide effective instruction for increasingly technologically savvy generations entering modern day classrooms (Taffe & Gwinn, 2007).

This study also sheds light on how researchers can employ a formative experiment to address obstacles encountered within the field. This type of knowledge is especially useful for educational policymakers, school administrators, and classroom teachers who may encounter similar barriers within the field that must be addressed in order to improve the quality of education for students. In this study, the first year teacher identified a lack of experience and knowledge of instructional strategies as a barrier. Collaboration served as the primary means for overcoming this barrier to integration of the AWARD Reading resources. As a more experienced

former classroom teacher, reading specialist, and participant-observer in the study, I seamlessly transitioned into the role of literacy coach for Mrs. Calhoun as needed. According to Casey (2006):

> In our roles as coaches, we are poised to actually craft ongoing and supportive learning opportunities for teachers… [to] address our specific contexts, our students, our concerns, and needs… [by] problem solving how to meet the needs of our students… [by spending] time together in classrooms… figuring out what needs to happen for our students and for us to increase student achievement (p.1).

The classroom teacher and I worked together during the goal setting and decision making process to identify and plan the way our resources would be used to facilitate learner progress toward particular pedagogical goals. Throughout implementation, I also encouraged Mrs. Calhoun to reflect on the specific ways she might improve the learning opportunities being provided to striving readers and offered suggestions to direct her line of thinking toward best teaching practices.

Researchers have demonstrated that the quality of classroom instruction provided by the teacher is often the most powerful indicator concerning how successful children will be in developing abilities as readers and writers (Allington, 2006; Pressley et al., 2001). Findings from this study similarly evidence the important role of improved teaching practices in advancing the literacy development of striving learners regardless of the instructional resources used. The classroom teacher within this study expanded her knowledge of and ability to implement best instructional practices when she was supported by the literacy coaching of a reading specialist. Literacy coaching has been identified as a promising approach to improving the quality of instruction offered by elementary literacy teachers (Elish-Piper & L'Allier, 2010). One final

implication for future research and practice is that there is a need to explore how we might most effectively foster the development of teacher expertise so that the instruction offered to our striving literacy learners promotes high levels of achievement.

Final Thoughts

As I come to the close of this dissertation study, I feel inclined to offer a few final thoughts on the transformation that has occurred as a result of my research. Am I alluding to a transformation that took place on the part of the classroom teacher or the striving learners with whom I traveled on this exploratory journey? Though I may not have stated it in explicit terms, I certainly set out to transform the lives of my participants in meaningful ways and hope that I did so. However, I would like to close by discussing how I have been changed on account of this research experience.

Prior to implementation of this formative experiment, I took great pride in my self-proclaimed commitment to seeing that striving students within our literacy classrooms were given the greatest possible opportunity to experience success in learning. I hoped that my love and passion of working with students exerting great effort to meet grade level objectives would be contagious to those with whom I worked. After all, I thought the field would benefit if others have a perspective similar to mine. Throughout this study, I came to realize that the open mindedness I thought I possessed wasn't really open mindedness at all. In closing, I'd like to introduce you to a student who changed my life.

Upon entering the classroom of Mrs. Calhoun, several teachers warned me of the behavior problem. Yes, they described Austin as "the behavior problem". No one told me anything about his background. No one told me anything about his cognitive abilities. No one described his strengths or weaknesses. In the eyes of many at Georgia Elementary School, Austin

was simply the behavior problem. In hearing of this particular child described as a behavior problem, I felt optimistic that technology may encourage him to become engaged in his learning. I admit now that I assumed that if this child were acting out it must be because he was striving to reach grade level objectives that seemed unattainable to him. I introduced myself to Austin personally on the first day of the study. I explained that I had heard a lot about him. I assumed that a student who was well known for acting out would be excited for this social interaction. However, I noticed that as I talked to Austin, he looked down at the ground and did not offer a verbal or even a nonverbal response. I left the classroom that day perplexed by my interaction with this child. Later, in talking to Mrs. Calhoun I expressed my interest in working with Austin for the study. Much to my surprise, she explained to me that Austin was not identified as a striving reader in her classroom. Again, she emphasized like all the others that he was "just a behavior problem".

As I formally observed the striving readers throughout the study, I also made it a point to notice Austin. On many occasions during literacy instruction, Austin would leap from his seat and scream out his thinking in excitement. His ideas were indicative of higher order thinking processes that he utilized when engaging in literacy activities. Austin was a class star in the fluency center. He often adjusted the intonation, speed, and pitch of his voice to make the characters and the events in a story come to life. I found myself wondering if this student should be tested for the gifted education program. How could the child I'm describing to you possibly be identified by school faculty as a behavior problem?

Now, I'd like to offer the rest of the story to you. Based on the observations I described, I saw great potential for Austin to develop as a strong literate individual and to influence the development of other learners in the classroom in a positive way. However, I realized that the

perspective of the teacher and other school faculty can have an enormous impact on the experiences of children at school. Mrs. Calhoun saw a child who did not follow the routines of the classroom. In her mind, Austin should raise his hand prior to speaking as this was the expectation within this social context. Mrs. Calhoun heard students laughing at the fluency center and immediately corrected Austin for leading the group toward off task behavior. Other students noticed these interactions as well (Interview, April 12, 2010).

I: What are you doing at the fluency center now?

Nakia: Reading.

Hayden: Trying to read [but not] make people laugh with expression.

I: Tell me more about that… What do you mean?

Autumn: We can't make people laugh in the thing or we miss recess.

Nakia: Yeah…

Hayden: Austin did that and we didn't…

Kaitlyn: [So] Austin missed recess.

I further noticed the way that Austin frequently slumped down in his seat or chose to distract others around him by throwing pencils or other materials from his desk. When students complained that Austin was a nuisance, Mrs. Calhoun suggested that classmates learn to ignore him because of his socially inappropriate behaviors. Students therefore isolated Austin from peer interactions. My heart broke for this misunderstood child.

As I observed these encounters within the classroom, I began to recognize a pattern in the behaviors of Austin. He usually expressed an initial interest in the literacy lessons offered by Mrs. Calhoun. Due to his excitement to share his ideas, he would shout out his thinking without following the classroom protocol of raising your hand to be given permission to speak by the teacher. Ignoring the relevance and high sophistication of Austin's thoughts on a text, Mrs.

Calhoun focused attention on his inappropriate communication methods. Upon receiving a reprimand from the teacher concerning his behavior despite his appropriate response, Austin began to disengage from the lesson.

I wondered if his cultural background made it difficult for him to understand the communicative practices of the literacy classroom (Heath, 1983). I questioned whether Austin was bored with the level of material and exploratory options he was presented (Gross, 2003). Could it be that the school faculty set higher expectations for this student due to perpetuating stereotypes of Asian American students (Lee, 2008)? I began to make a deliberate effort to work closely with Austin when I was in the classroom conducting research. As he exhibited behaviors typical to those he usually engaged in prior to complete disengagement, I would ask if he would like to sit beside me in the back of the room. I remember the surprised look on his face the first time I made this offer to him. It led me to question whether this could be one of the first times he experienced a positive social interaction at school. Many times throughout the rest of the study Austin made the decision to sit beside me during my observations.

With Austin in close proximity, I could hear the ideas he mumbled to himself under his breath in response to the questions of Mrs. Calhoun. Wow! Other learners in the classroom were really missing out in not hearing his complex ideas about literacy. I began to playfully nudge him as I heard him whisper his thinking so as to prompt him to raise his hand to share. I also requested that Mrs. Calhoun intentionally call upon Austin whenever he raised his hand to participate. As I interacted with the students during informal interviews or co-teaching with Mrs. Calhoun, I made a deliberate effort to praise Austin for his advanced thinking describing him to others in the class as our “literacy king”. As Austin began to experience literacy learning in increasingly positive ways, I noticed that he was more engaged and spent less time in the office

for inappropriate behavior. Austin was not only becoming a member of the literacy community, he was also becoming a well-respected one.

I will never forget the smile that spread across Austin's face on the last day of the study during our final conversational exchange. Answering his question of when he would see me again, I explained that I wasn't entirely sure but that I wondered if I would walk into a doctor's office one day for a check-up and jump back in surprise to see "Dr. Austin". In response, Austin puffed out his chest with pride and strutted over to his seat. A few moments later, he approached me again to explain that he wouldn't be "Dr. Austin" but instead he would be "Dr. Powell" because doctors go by their last names. Smiling, I thanked Austin for making that clarification for me. Where was the child who wouldn't even make eye contact with me at the beginning of the study? Throughout the time we spent together, Austin developed confidence in his ability to achieve and began to exert purposeful behaviors during literacy learning.

When I entered the classroom of Mrs. Calhoun, I was blissfully unaware of the limitations I placed on myself as I worked diligently toward making a difference in the lives of students. I defined striving learners as those exerting great effort to reach grade level objectives. In working with Austin, I realized that there are far more students striving in our classrooms than simply those currently performing below grade level standards. Are we meeting the needs of our students who feel restrained by grade level objectives and are striving to excel even further in their literacy development? Are we meeting the needs of our students of color who may be striving to situate new understandings and communicative roles within their culturally linked knowledge base? Are we meeting the needs of second language learners striving to use their unique intellectual capacities in academic achievement?

In conducting this dissertation study, I discovered the limitations that my former assumptions placed on my potential to influence the field in powerful ways. I have expanded my personal notion of the striving learner. As I move forward with this research, I want to take a broader look at how we can improve the quality of teaching in specific ways to meet the particular needs of our students who regardless of ability level are all striving for achievement in distinct ways. As demonstrated by the picture given to me by Austin on our last day together, I want to do all that I can to keep a happy world from becoming a sad world.

Figure 5.1. Picture given as a gift from Austin Powell.

REFERENCES

Abraham, L.B. (2008). Computer-mediated glosses in second language reading comprehension and vocabulary learning: A meta analysis. *Computer Assisted Language Learning, 21*(3), 199-226.

Allington, R. L. (2006). *What really matters for struggling readers: Designing research-based programs* (2nd ed.). Boston, MA: Pearson/Allyn and Bacon.

Anfara, V.A., Brown, K.M., & Mangione, T.L. (2002). Qualitative analysis on stage: Making the research process more public. *Educational Researcher, 31*(7), 28-38. doi: 10.3102/0013189X031007028

Atkinson, R. C., & Hansen, D. N. (1966). Computer-assisted instruction in initial reading: The Stanford project. *Reading Research Quarterly, 2*(1), 5-25.

AWARD reading: Teachers' guide: A fresh 21st-century perspective on teaching literacy using modern technology. (2008). New York, NY: Wendy Pye Publishing, Ltd.

Bentz, V.M., & Shapiro, J.J. (1998). *Mindful inquiry in social research*. Thousand Oaks, CA: Sage Publications, Inc.

Bernard, M.L., Chaparro, B.S., Mills, M.M., & Halcomb, C.G. (2002). Examining children's reading performance and preference for different computer-displayed text. *Behaviour & Information Technology, 21*(2), 87-96.

Bernhardt, E.B. (2006). Real and imagined roles for technology in acquiring second-language literacy. In M. McKenna, L. Labbo, R. Kieffer, & D. Reinking (Eds.), *International*

handbook of literacy and technology: Volume two (pp. 355-361). New Jersey: Lawrence Erlbaum Associates, Inc.

Bezemer, J., & Kress, G. (2008). Writing in multimodal texts: A social semiotic account of designs for learning. *Written Communication, 25*(2), 166-195.

Bilal, D. (2000). Children's use of the Yahooligans! web search engine: Individual cognitive, physical, and affective behaviors on fact-based search tasks. *Journal of the American Society for Information Science, 51*(7), 646-665.

Blok, H., Oostdam, R., Otter, M.E., & Overmaat, M. (2002). Computer-assisted instruction in support of beginning reading instruction: A review. *Review of Educational Research, 72*(1), 101-130.

Bloomberg, L.D., & Volpe, M. (2008). *Completing your qualitative dissertation: A roadmap from beginning to end*. Thousand Oaks, CA: Sage Publications, Inc.

Boettcher, J.V. (2006). *Taking off with distance learning- are you there yet? are you ready? is that where you want to go?* Retrieved from http://www.designingforlearning.info/services/writing/taking.htm

Boling, C., Martin, S.H., & Martin, M.A. (2002). The effects of computer-assisted instruction on first grade student's vocabulary development. *Reading Improvement, 39*, 79-88.

Bolter, J.D. (1998). Hypertext and the question of visual literacy. In D. Reinking, M.C. McKenna, L.D. Labbo, & R.D. Keiffer (Eds.), *Handbook of literacy and technology: Transformations in a post-typographic world* (pp. 3-13). Mahwah, NJ: Erlbaum.

Bond, G.L., Dykstra, R., Clymer, T., & Summers, E.G. (1997). The cooperative research program in first-grade reading instruction [reprint]. *Reading Research Quarterly, 32*(4),

345-427.

Booher-Jennings, J. (2005). Below the bubble: "Educational triage" and the Texas accountability system. *American Educational Research Journal, 42*(2), 231-268.

Brabham, E., Murray, B. & Bowden, S. (2006). Reading alphabet books in kindergarten: Effects of instructional emphasis and media practice. *Journal of Research in Childhood Education, 20*(3), 219–236.

Britsch, S.J. (2005). 'But what did they learn?' Clearing third spaces in virtual dialogues with children. *Journal of Early Childhood Literacy, 5*(2), 99-130.

Brooks-Gunn, J., & Duncan, G. J. (1997). The effects of poverty on children. *The Future of Children, 7*(2), 55-71.

Burnett, C. (2009). Research into literacy and technology in primary classrooms: An exploration of understandings generated by recent studies. *Journal of Research in Reading, 32*(1), 22-37.

Burnett, C., Dickinson, P., Myers, J., & Merchant, G. (2006). Digital connections: Transforming literacy in the primary school. *Cambridge Journal of Education, 36*(1), 11-29.

Carrington, V. (2005). New textual landscapes, information and early literacy. In J. Marsh (Ed.), *Popular culture, new media, and digital literacy in early childhood* (pp. 13-27). New York, NY: Routledge.

Casey, K. (2006). *Literacy coaching: The essentials*. Portsmouth, NH: Heinemann.

Cassidy, J., & Cassidy, D. (2008). What's hot for 2008 [cover story]. *Reading Today, 25*(4), 1-11.

Chambers, B., Slavin, R. E., Madden, N. A., Abrami, P. C., Tucker, B. J., Cheung, A., Gifford, R. (2008). Technology infusion in success for all: Reading outcomes for first graders. *The Elementary School Journal, 109*(1), 1-15.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Thousand Oaks, CA: Sage Publications, Inc.

Chen, J. & Chang, C. (2006). Using computers in early childhood classrooms: Teachers' attitudes, skills, and practices. *Journal of Early Childhood Research, 4*(2), 169-188.

Chera, P., & Wood, C. (2003). Animated multimedia 'talking books' can promote phonological awareness in children beginning to read. *Learning and Instruction, 13*, 33-52.

Christ, T., & Wang, X. C. (2008). Negotiation of `how to' at the cross-section of cultural capital and habitus: Young children's procedural practices in a student-led literacy group. *Journal of Early Childhood Literacy, 8*(2), 177-211.

Clark, R. (1985). Confounding in educational computing research. *Journal of Educational Computing Research, 1,* 137-148.

Clements, D. H. (1999). Effective use of computers with young children. In J. V. Copley (Ed.), *Mathematics in the early years* (pp. 119-128). Reston, VA: National Council of Teachers of Mathematics.

Coiro, J. (2005). Making sense of online text. *Educational Leadership, 63*(2), 30-35.

Coiro, J., Knobel, M., Lankshear, C., & Leu, D. (2008). H*andbook of research on new literacies*. New York, NY: Lawrence Erlbaum Associates.

Comaskey, E.M., Savage, R.S., & Abrami, P. (2009). A randomised efficacy study of web-based synthetic and analytic programmes among disadvantaged urban kindergarten children. *Journal of Research in Reading, 32*(1), 92-108.

Cook, S.R. (2005). "Behind closed doors": Discovering the literacies in our children's everyday lives. *Language Arts, 82*(6), 420-430.

Cope, B., & Kalantzis, M. (Eds.) (2000). *Multiliteracies: Literacy learning and the design of social futures*. New York, NY: Routledge.

Creswell, J.W. (2002). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Merrill Prentice Hall.

Creswell, J.W. (2007). *Qualitative inquiry & research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Cuban, L. (2003). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.

Cuddeback, M. J., & Ceprano, M. A. (2002). The use of accelerated reader with emergent readers. *Reading Improvement, 39*(2), 89-96.

Dalton, B., & Strangman, N. (2006). Improving struggling readers' comprehension through scaffolded hypertexts and other computer-based literacy programs. In M. McKenna, L. Labbo, R. Kieffer, & D. Reinking (Eds.), *International handbook of literacy and technology: Volume two* (pp 75-92). New York, NY: Lawrence Erlbaum Associates, Inc.

Davis, F.B. (1968). Research in comprehension in reading. *Reading Research Quarterly, 3*(4), 499-545.

de Jong, M.T., & Bus, A.G. (2004). The efficacy of electronic books in fostering kindergarten children's emergent story understanding. *Reading Research Quarterly, 39*(4), 378-393.

Denzin, N.K., & Lincoln, Y.S. (Eds.). (2008). *Collecting and interpreting qualitative materials*. Thousand Oaks, CA: Sage Publications, Inc.

Dillon, D.R., O'Brien, D.G., & Heilman, E.E. (2000). Literacy research in the next millennium: From paradigms to pragmatism and practicality. *Reading Research Quarterly, 35(1),* 10-26.

Doty, D.E., Popplewell, S.R., & Byers, G.O. (2001). Interactive CD-ROM storybooks and young readers' reading comprehension. *Journal of Research on Computing in Education*, *33*(4), 374-384.

Dove, M.K., Fisher, S.C., & Smith, D.L. (2001). Internet learning connections between second-graders and university teacher education electronic mentors. *Computers in the Schools, 16*(2), 45-58.

Dyson, A.H., & Genishi, C. (2005). *On the case: Approaches to language and literacy research*. New York, NY: Teachers College Press.

Edmunds, J.A. (2008). Using alternative lenses to examine effective teachers' use of technology with low-performing students. *Teachers College Record, 110*(1), 195-217.

Edyburn, D.L. (2006). Assistive technology and mild disabilities. *Special Education Technology Practice*, 8(4), 18-28.

Elish-Piper, L., & L'Allier, S. (2010). Exploring the relationship between literacy coaching and student reading achievement in grades K-1. *Literacy Research and Instruction, 49*, 162-174.

Exley, B. (2008). Communities of learners: Early years students, new learning pedagogy, and transformations. In A.Healy (Ed.), *Multiliteracies and diversity in education: New pedagogies for expanding landscapes* (pp. 126-143). South Melbourne, Australia: Oxford University Press.

Federal Interagency Forum on Child and Family Statistics. (2009). *America's children: Key national indicators of well-being, 2009*. Washington, DC: U.S. Government Printing Office. Retrieved from http://www.childstats.gov

Fielding, L., & Pearson, P.D. (1994). Reading comprehension: What works? *Educational Leadership, 51*(5), 62-67.

Flick, U. (2006). *An introduction to qualitative research* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Fountas, I. C., & Pinnell, G. S. (1996). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.

Fountas, I. C., & Pinnell, G. S. (2001). *Guiding readers and writers, grades 3-6: Teaching comprehension, genre, and content literacy*. Portsmouth, NH: Heinemann.

Fountas, I. C., & Pinnell, G. S. (2006). *Teaching for comprehending and fluency: Thinking, talking, and writing about reading, K-8*. Portsmouth, NH: Heinemann.

Gambrell, L.B. (2006). Technology and the engaged literacy learner. In M.C. McKenna, L.D. Labbo, R.D. Keiffer, & D. Reinking (Eds.), *International handbook of literacy and technology* (Vol. 2) (pp. 289-294). Mahwah, NJ: Lawrence Erlbaum Associates.

Gaskins, I.W. (2003) A multidimensional approach to beginning literacy. In D.M. Barone & L.M. Morrow (Eds.), *Literacy and young children: Research-based practices* (pp. 45-60). New York, NY: Guilford Publications, Inc.

Gee, J.P. (2001). Reading as situated language: A sociocognitive perspective. *Journal of Adolescent and Adult Literacy, 44*(8), 714-725.

Gee, J. P. (2004). *Situated language and learning: A critique of traditional schooling*. New York, NY: Routledge.

Gee, J. P. (2007). *What video games have to teach us about learning and literacy*. New York, NY: Palgrave Macmillan.

Gee, J. P. (2008). *Social linguistics and literacies: Ideology in discourses* (3rd ed.). New York, NY: Routledge.

Gillen, J. (2002). Moves in the territory of literacy? The telephone discourse of three- and four-year-olds. *Journal of Early Childhood Literacy, 2*(1), 21-43.

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.

Good, R. H. I.,II, Simmons, D. C., & Smith, S. B. (1998). Effective academic interventions in the United States: Evaluating and enhancing the acquisition of early reading skills. *School Psychology Review, 27*(1), 45-56.

Graff, J.M., & Labbo, L. (2009). Globalization & immigration: Aligning education with shifting demographics. *Journal of Reading Education, 35*(1), 21-30.

Gross, M.U.M. (2003). *Exceptionally gifted children* (2nd ed.). New York, NY: Routledge.

Guha, M.L., Druin, A., Montemayor, J., Chipman, G., & Farber, A. (2007). A theoretical model of children's storytelling using physically-oriented technologies (spot). *Journal of Educational Multimedia and Hypermedia, 16*(4), 389-410.

Halliday, M.K. (2004). The place of dialogue in children's construction of meaning. In R. Ruddell & N. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed.) (pp. 133-145). Newark, DE: International Reading Association. (Reprinted from *Theoretical models and processes of reading* (4th ed.), pp. 70-82, by R. Ruddell, M. Ruddell, & H. Singer, Eds., 1994, Newark, DE: International Reading Association)

Hammerberg, D. D. (2004). Comprehension instruction for socioculturally diverse classrooms: A review of what we know. *The Reading Teacher, 57*(7), 648-658.

Hart & Risley. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore, MD: Brookes Publishing Company.

Hassett, D.D. (2006). Signs of the times: The governance of alphabetic print over 'appropriate' and 'natural' reading development. *Journal of Early Childhood Literacy*, *6*(1), 77-103.

Haugland, S. W., & Wright, J. L. (1997). *Young children and technology: A world of discovery*. Boston, MA: Allyn and Bacon.

Healy, J. (1998). *Failure to connect: Why computers are damaging our children's minds*. New York: Simon & Schuster.

Heath, S. B. (1983). *Ways with words: Language, life, and work in communities and classrooms*. New York, NY: Cambridge University Press.

Hines, S.J. (2009). The effectiveness of a color-coded, onset-rime decoding intervention with first-grade students at serious risk for reading disabilities. *Learning Disabilities Reseach & Practice*, *24*(1), 21-32.

Hoeschmann, M., & Low, B.E. (2008). *Reading youth writing: "New" literacies, cultural studies, and education*. New York, NY: Peter Lang.

Holum, A., & Gahala, M.A. (2001). Using technology to enhance literacy instruction. Retrieved from http://www.ncrel.org/sdrs/areas/issues/content/cntareas/reading/li300.htm

Howell, R.D., Erickson, K., Stanger, C. & Wheaton, J.E. (2000). Evaluation of a computer-based program on the reading performance of first grade students with potential for reading failure. *Journal of Special Education Technology, 15*(4), 5-14.

Hunsberger, P. (2007). "Where am I?" a call for "connectedness" in literacy. *Reading Research Quarterly, 42*(3), 420-424.

Hyun, E., & Davis, G. (2005). Kindergartners' conversations in a computer-based technology classroom. *Communication Education, 54*(2), 118-135.

International Reading Association. (1999). *Using multiple methods of beginning reading instruction. A position statement of the international reading association.* Newark, DE.

Ivey, G., & Broaddus, K. (2007). A formative experiment investigating literacy engagement among adolescent Latina/o students just beginning to read, write, and speak English. *Reading Research Quarterly, 42*(4), 512-545. doi:10.1598/RRQ.42.4.4

Jones, I. (2003). Collaborative writing and children's use of literate language: A sequential analysis of social interaction. *Journal of Early Childhood Literacy, 3*(2), 165-178.

Judge, S. (2005). The impact of computer technology on academic achievement of young African American children. *Journal of Research in Childhood Education, 20*(2), 97-107.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology, 80*(4), 437-47.

Kamil, M.L. (2004) Vocabulary and comprehension instruction: Summary and implications of the National Reading Panel Findings. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research*. Baltimore, MA: Paul H. Brookes Publishing Co.

Kamil, M.L., & Lane, D.M. (1998). Researching the relation between technology and literacy: An agenda for the 21st century. In D. Reinking, M.C. McKenna, L.D. Labbo, & R.D. Kieffer (Eds.), *Handbook of literacy and technology: Transformations in a post-typographic world.* Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Karchmer-Klein, R. (2007). Audience awareness and internet publishing: A qualitative analysis of factors influencing how fourth graders write electronic text. *Action in Teacher Education, 29*(2), 39-50.

Kemker, K., Barron, A.E., Harmes, J.C. (2007). Laptop computers in the elementary classroom: Authentic instruction with at-risk students. *Educational Media International, 44*(4), 305-321.

Klemm, E.B., & Tuthill, G. (2003) Virtual field trips: Best practices. *International Journal of Instructional Media*, *30*(2), 177-193.

Kominski, R., & Newburger, E. (1999). *Access denied: Changes in computer ownership and use: 1984-1997*. Paper presented at the Annual Meeting of the American Sociological Association, Chicago, IL. Retrieved from http://www.census.gov/population/socdemo/computer/comfpap99.pdf

Kress, G. (2003). *Literacy in the media age*. New York, NY: Routledge.

Kress, G. (2005). Gains and losses: New forms of texts, knowledge, and learning. *Computers and Composition, 22*(1), 5-22.

Kuiper, E., Volman, M., & Terwel, J. (2009). Developing web literacy in collaborative inquiry activites. *Computers and Education*, *52*, 668-680.

Kulik, J.A. (2003). *Effects of using instructional technology in elementary and secondary schools: What controlled evaluation studies say*. Arlington, VA: SRI International.

Labbo, L.D. (1996). A semiotic analysis of young children's symbol making in a classroom computer center. *Reading Research Quarterly*, *31*(4), 356-385.

Labbo, L.D. (2006). *Literacy pedagogy and computer technologies: Toward solving the puzzle of current and future classroom practices*. Retrieved from http://www.alea.edu.au/site-content/publications/documents/ajll/Labbo.pdf

Labbo, L. D., Baxter, J., & Huddleston, A. (2009). *Word World Goes to School: Results of a Formative Experiment.* Research Poster Session presented at the annual conference of the International Reading Association (Chicago, IL, April 25-28, 2010).

Labbo, L.D., Eakle, A.J., & Montero, M.K. (2002). Digital language experience approach: Using digital photographs and software as a language experience approach innovation. *Reading Online, 5*(8). Retrieved from http://www.readingonline.org/electronic/elec_index.asp?HREF=labbo2/index.html

Labbo, L.D., & Kuhn, M. (2000). Weaving chains of affect and cognition: A young child's understanding of CD-ROM talking books. *Journal of Literacy Research, 32*(2), 187-210.

Labbo, L.D., & Reinking, D. (1999). Negotiating the multiple realities of technology in literacy research and instruction. *Reading Research Quarterly, 34*(4), 478-492.

Labbo, L.D., & Reinking, D. (2003). Computers and early literacy education. In N. Hall, J. Larson, & J. Marsh (Eds.), *Handbook of early childhood literacy*. New York, NY: Sage Publishing.

Labbo, L.D., Reinking, D., & McKenna, M. C. (1998). Technology and literacy education in the next century: Exploring the connection between work and schooling. *Peabody Journal of Education, 73*, 273-289.

Laffey, J.M., Espinosa, L., Moore, J., & Lodree, A. (2003). Supporting learning and behavior of at-risk young children: Computers in urban education. *Journal of Research on Technology in Education, 35*(4), 423-440.

Lankshear, C., & Knobel, M. (2003). New technologies in early childhood literacy research: A review of research. *Journal of Early Childhood Literacy, 3*(1), 59-82.

Lee, S.J. (2008). Model minorities and perpetual foreigners: The impact of stereotyping on Asian

American students. In M. Sadowski (Ed.), *Adolescents at school: perspectives on youth, identity, and education* (2nd ed.) (pp. 41-29). Cambridge, MA: Harvard Education Press.

Lenski, S.D. (2001). Intertextual connections during discussions about literature. *Reading Psychology*, *22*, 313-335.

Leu, D.J., Kinzer, C.K., Coiro, J.L., & Cammack, D.W. (2004). Toward a theory of new literacies emerging from the internet and other information and communication technologies. In R. Ruddell & N. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed.) (pp. 1570-1613). Newark, DE: International Reading Association.

Levy, R. (2009). 'You have to understand words… but not read them': Young children becoming readers in a digital age. *Journal of Research in Reading*, *32*(1), 75-91.

Littleton, K., Wood, C., & Chera, P. (2006). Interactions with talking books: Phonological awareness affects boys' use of talking books. *Journal of Computer Assisted Learning, 22*, 382-390.

Love, M.S.W. (2007). *Teachers' perceptions and practices on using technology to facilitate literacy instruction in kindergarten classrooms* (Doctoral dissertation). Retrieved from http://www.galileo.usg.edu/express?link=zzge

Lyon, G.R. (2009). *Learning to read: A call from research to action*. Retrieved from http://www.ncld.org/in-the-home/supporting-learning-at-home/especially-for-young-children/7-learning-to-read-a-call-from-research-to-action

Macaruso, P., Hook, P.E., & McCabe, R. (2006). The efficacy of computer-based supplementary phonics programs for advancing reading skills in at-risk elementary students. *Journal of Research in Reading*, *29*(2), 162-172.

Macaruso, P., & Walker, A. (2008). The efficacy of computer-assisted instruction for advancing literacy skills in kindergarten children. *Reading Psychology, 29*, 266-287.

MacLeod, J. (1995). *Ain't no makin' it: Aspirations & attainment in a low-income neighborhood*. Boulder: Westview Press.

Mallette, M.H., Henk, W.A., & Melnick, S.A. (2004). The influence or accelerated reader on the affective literacy orientations of intermediate grade students, *Journal of Literacy Research, 36*(1), 73-84.

Marshall, C., & Rossman, G.B. (2006). *Designing qualitative research* (4th ed.). Thousand Oaks, CA: Sage Publications, Inc.

Mathes, P.G., Torgeson, J.K., & Allor, J.H. (2001). The effects of peer-assisted literacy strategies for first-grade readers with and without additional computer-assisted instruction in phonological awareness. *American Educational Research Journal, 38*(2), 371-410.

Mavers, D. (2007). Semiotic resourcefulness: A young child's e-mail exchange as design. *Journal of Early Childhood Literacy, 7*(2), 155-176.

Maxwell, J.A. (2006). Literature reviews of, and for, educational research: A commentary on Boote and Beile's "scholars before researchers". *Educational Researcher, 35*(9), 28-31.

Mayer, R.E. (2008). Multimedia literacy. In J. Coiro, M. Knobel, C. Lankshear, & D.J. Leu (Eds.), *Handbook of research on new literacies* (pp. 359-376). New York, NY: Lawrence Erlbaum Associates.

McKenna, M.C., Labbo, L.D., & Reinking, D. (2004). Effective use of technology in literacy instruction. In R. Robinson, M. McKenna, & J. Wedman (Eds.), *Issues and trends in literacy education* (3rd ed.) (pp. 259-278). Boston, MA: Allyn and Bacon.

McKenney, S., & Voogt, J. (2009). Designing technology for emergence literacy: The PictoPal initiative. *Computers & Education, 52*, 719- 729.

McLaren, P. (2007). *Life in schools: An introduction to critical pedagogy in the foundations of education* (5th ed.). Boston: Pearson/Allyn and Bacon.

Merchant, G. (2009). Literacy in virtual worlds. *Journal of Research in Reading, 32*(1), 38-56.

Merriam, S.B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

Meyer, A., & Rose, D.H. (2005). The future is in the margins: The role of technology and disability in educational reform. In D. Rose, A. Meyer, & C. Hitchcock (Eds.), *The universally designed classroom: Accessible curriculum and digital technologies* (pp. 13-35). Cambridge, MA: Harvard Education Press.

Mioduser, D., Tur-Kaspa, H., & Leitner, I. (2000). The learning value of computer-based instruction of early reading skills. *Journal of Computer Assisted Learning, 16*, 54-63.

Mitchell, M.J., & Fox, B.J. (2001). The effects of computer software for developing phonological awareness in low-progress readers. *Reading Research and Instruction, 40*(4), 315-332.

National Research Council (U.S.). Committee on Scientific Principles for Education Research, Shavelson, R. J., & Towne, L. (2002). *Scientific research in education*. Washington, DC: National Academy Press.

National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Washington, DC: National Institute of Child Health and Human Development.

Neuman, S.B., & Dickinson, D.K. (2002). Introduction. In S. Neuman & D. Dickinson (Eds.),

Handbook of early literacy research (pp. 3-10). New York, NY: The Guilford Press.

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60-92.

Nixon, H. (2003). New research literacies for contemporary research into literacy and new media? *Reading Research Quarterly, 38*(3), 407-413.

Oakley, G., & Jay, J. (2008). "Making time" for reading: Factors that influence the success of multimedia reading in the home. *The Reading Teacher, 62*(3), 246-255. doi:10.1598/RT.62.3.6

Owston, R., Wideman, H., Ronda, N.S., & Brown, C. (2009). Computer game development as a literacy activity. *Computers & Education, 53*, 977-989.

Paterson, W.A., Henry, J.J., O'Quin, K., Ceprano, M.A. & Blue, E.V. (2003). Investigating the effectiveness of an integrated learning system on early emergent readers. *Reading Research Quarterly, 38*(2), 172-207.

Patton, M.Q. (2002). *Qualitative research & evaluation methods* (3rd Ed.). Thousand Oaks, California: Sage Publications, Inc.

Pearman, C.J. (2008). Independent reading of CD-ROM storybooks: Measuring comprehension with oral retellings. *The Reading Teacher, 61*(8), 594-602.

Pelletier, J., Reeve, R., & Halewood, C. (2006). Young children's knowledge building and literacy development through knowledge forum. *Early Education and Development, 17*(3), 323-346.

Pindiprolu, S.S., & Forbush, D. (2009). Computer-based reading programs: A preliminary investigation of two parent implemented programs with students at-risk for reading failure. *The Journal of the International Association of Special Education, 10*(1), 71-81.

Pinkard, N. (2001). Rappin' reader and say say oh playmate: Using children's childhood songs as literacy scaffolds in computer-based learning environments. *Journal of Educational Computing Research, 25*(1), 17-34.

Pinnell, G.S., & Fountas, I.C. (2008). *When readers struggle: Teaching that works*. Portsmouth, NH: Heinemann.

Planty, M., Hussar, W., Snyder, T., Kena, G., KewalRamani, A., Kemp, J. … Dinkes, R. (2009). *The Condition of Education 2009* (NCES 2009-081). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Pressley, M. (2006). *Reading instruction that works* (3rd ed.). New York: Guilford Press.

Pressley, M., Wharton-McDonald, R., Allington, R.L., Block, C.C., Morrow, L., Tracey, D., … Woo, D. (2001). A study of effective first-grade literacy instruction. *Scientific Studies of Reading, 5*(1), 35-58.

Proctor, C.P., Dalton, B. & Grisham, D.L. (2007). Scaffolding English language learners and struggling readers in a universal literacy environment with embedded strategy instruction and vocabulary support. *Journal of Literacy Research, 39*(1), 71-93.

Ranker, J. (2006). "There's fire magic, electric magic, ice magic, or poison magic": The world of video games and Adrian's compositions about gauntlet legends. *Language Arts, 84*(1), 21-33.

Reinking, D., & Bradley, B.A. (2004). Connecting research and practice using formative and design experiments. In N.K. Duke & M.H. Mallette (Eds.), *Literacy research methodologies* (pp. 149-169). New York, NY: Guilford.

Reinking, D., & Bradley, B.A. (2008). *Formative and design experiments: Approaches to language and literacy research*. New York, NY: Teachers College.

Reinking, D., & Watkins, J. (2000). A formative experiment investigating the use of multimedia book reviews to increase elementary students' independent reading. *Reading Research Quarterly, 35*(3), 384-419.

Roberts, S., Djonov, E., Torr, J. (2008). "The mouse is not a toy": Young children's interactions with e-games. *Australian Journal of Language and Literacy, 31*(3), 242-259.

Rodrigo, M. M. (2003). Tradition or transformation?: An evaluation of ICTs in metro manila schools. *Information Technology for Development, 10*, 95-122.

Rojas-Drummond, S., Albarran, C. D., & Littleton, K. S. (2008). Collaboration, creativity and the co-construction of oral and written texts. *Thinking Skills and Creativity, 3*(3), 177-191.

Rose, D.H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

Rose, D.H., & Rappolt-Schlichtmann, G. (2008). Applying universal design for learning with children living in poverty. In S. Neuman (Ed.), *Educating the other America: Top experts tackle poverty, literacy, and achievement in our schools* (pp. 213-226). Baltimore, MD: Paul Brookes Publishing Co.

Ryan, T.C. (2008). *Using walk talk words to improve first-grade students' vocabulary development* (Doctoral dissertation). Retrieved from http://www.galileo.usg.edu/express?link=zzge

Schmid, R.F., Miodrag, N., & Francesco, N.D. (2008). A human-computer partnership: The tutor/child/computer triangle promoting the acquisition of early literacy skills. *Journal of Research on Technology in Education, 41*(1), 63-84.

Schumaker, J.B., Deshler, D.D., Woodruff, S.K., Hock, M.F., Bulgren, J.A., & Lenz, B.K. (2006). Reading strategy interventions: Can literacy outcomes be enhanced for at-risk adolescents? *TEACHING Exceptional Children, 38*(3), 64-68.

Segers, E., & Verhoeven, L. (2002). Multimedia support of early literacy learning. *Computers & Education, 39,* 207-221.

Shenton, A., & Pagett, L. (2007). From 'bored' to screen: the use of the interactive whiteboard for literacy in six primary schools in England. *Literacy, 41*(3), 129-136.

Shiratuddin, N, & Landoni, M. (2003). Children's e-book technology: Devices, books, and book builder. *Information Technology in Childhood Education Annual,* 105-138.

Snow, C. E., Burns, M. S., & Griffin, P. (1998). *Preventing reading difficulties in young children.* Washington, DC: National Academy Press.

Snow, C.E., & Sweet, A.P. (2003). Reading for comprehension. In A.P Sweet & C.E. Snow (Eds.), *Rethinking reading comprehension* (pp. 1-11). New York, NY: The Guilford Press.

Stanovich, K.E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360-407.

Stein, P. (2008). Multimodal instructional practices. In J. Coiro, M. Knobel, C. Lankshear, & D.J. Leu (Eds.), *Handbook of research on new literacies* (pp. 871-898). New York, NY: Lawrence Erlbaum Associates.

Strangman, N., & Dalton, B. (2005). Using technology to support struggling readers: A review of the research. In D. Edyburn, K. Higgins, & R. Boone (Eds.), *Handbook of special education technology research and practice* (pp. 545-569). Whitefish Bay, WI: Knowledge by Design.

Taffe, S.W., & Gwinn, C.B. (2007). *Integrating literacy and technology: Effective practice for grades k-6*. New York, NY: The Guilford Press.

Takahira, M., Ando, R., & Sakamoto, A. (2008). Effect of internet use on development of information literacy: A panel study with Japanese elementary school children. *Computers in the Schools, 24*, 65-82.

Teale, W. H., & Sulzby, E. (1986). *Emergent literacy: Writing and reading*. Norwood, N.J.: Ablex Publishing Corporation.

Tondeur, J., van Braak, J., & Valcke, M. (2007). Towards a typology of computer use in primary education. *Journal of Computer Assisted Learning, 23*, 197-206.

Topping, K.J., & Paul, T.D. (1999). Computer-assisted assessment of practice at reading: A large scale survey using accelerated reader data. *Reading and Writing Quarterly, 15*, 213-231.

Torgeson, J. K. (1998). Catch them before they fall: Identification and assessment to prevent reading failure in young children. *American Educator, 22*, 32-39.

Tracey, D.H., & Young, J.W. (2007). Technology and early literacy: The impact of an integrated learning system on high-risk kindergartners' achievement. *Reading Psychology, 28*, 443-467.

Turbill, J. (2001). A researcher goes to school: Using technology in the kindergarten literacy curriculum. *Journal of Early Childhood Literacy, 1*(3), 255-279.

van der Veer, R. (1998). From concept attainment to knowledge formation. *Mind, Culture, and Activity, 5*(2), 89-94.

Van 'T Hooft, M. (2008). Envisioning the future of education: Learning while mobile. *Learning & Leading with Technology, 35*(6), 12-16.

Verhallen, M.J., Bus, A.G., & de Jong, M.T. (2006). The promise of multimedia stories for kindergarten children at risk. *Journal of Educational Psychology, 98*(2), 410-419.

Voogt, J., & McKenney, S. (2008). Using ICT to foster (pre)reading and writing skills in young children. *Computers in the Schools, 24*(3), 83-94.

Vygotsky, L. S. (1986). *Thought and language* (A. Kozulin, Ed. & Trans.) Cambridge, MA: MIT Press.

Walsh, M. (2008). Worlds have collided and modes have merged: Classroom evidence of changed literacy practices. *Literacy, 42*(2), 101-108.

Ware, P.D. (2006). From sharing time to showtime! Valuing diverse venues for storytelling in technology-rich classrooms. *Language Arts, 84*(1), 45-54.

Wells, J., & Lewis, L. (2006). *Internet access in U.S. public schools and classrooms: 1994–2005* (NCES 2007-020). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Wertsch, J. V. (1985). *Vygotsky and the social formation of mind*. Cambridge, MA: Harvard University Press.

Whipple, G. (Ed.). (1925). *The twenty-fourth yearbook of the National Society for the Study of Education: Report of the National Committee on Reading*. Bloomington, IL: Public School Publishing Company.

Yatvin, J. (2004). *A room with a differentiated view: How to serve all children as individual learners*. Portsmouth, NH: Heinemann.

Yelland, N. (2005). The future is now: A review of the literature on the use of computers in early childhood education (1994-2004). *Association for the Advancement of Computing in Education Journal, 13*(3), 201-232.

Yong, T.L., & Ping, L.C. (2008). Engaging academically at risk primary school students in an ICT mediated after school program. *Australasian Journal of Educational Technology, 24*(5), 521-539.

Zucker, T.A., Moody, A.K., & McKenna, M.C. (2009). The effects of electronic books on pre-kindergarten-to-grade-5 students' literacy and language outcomes: A research synthesis. *Journal of Educational Computing Research, 40*(1), 47-87. doi: 10.2190/EC.40.1.c

SOFTWARE

Microsoft Outlook [Computer software]. (2007). Redmond, WA: Microsoft Corporation.

Microsoft Word [Computer software]. (2007). Redmond, WA: Microsoft Corporation.

QSR NVivo 8.0 [Computer software]. (2008). Victoria, Australia: QSR International Pty Ltd.

APPENDIX A

STUDIES INVESTIGATING TECHNOLOGY AND MULTIMODALITY WITHIN LITERACY EDUCATION

Researcher	Year	Methodology	Purpose	Findings
Bernard, Chaparro, Mills, & Halcomb	2002	Quantitative	To examine the actual and perceived reading on computer screen with varying fonts/sizes by 27 nine to eleven year olds.	14-point font considered to be more 'readable' as reported by participants; Courier Font suggested to be more difficult to read.
Hassett	2006	Research Analysis	To challenge alphabetic print literacy as a political and historical sign of the times and to reframe educational reasoning about appropriate early reading instruction in terms of new technologies, changing text types, and sociocultural forms of literacy.	Shifts for appropriate early reading instruction: (1) paradigmatic shift towards sociocultural theories of literacy, (2) ontological shift in texts used, and (3) pedagogical shift in thinking concerning 'appropriate' student.
Verhallen, Bus, & de Jong	2006	Experimental	To explore the effects of multimedia (video, sound, music) stories versus oral readings with static pictures on narrative comprehension and language skills of kindergarten second language learners.	Children benefit more from multimedia story interactions as opposed to static picture interactions – specifically with events that are implied in the story.
Ware	2006	Dual Case Study	To explore the multimodal storytelling of two nine year old students and the social dynamics of storytelling that take place around technology.	Students bring varied experiences to the use of storytelling with technology.
Shenton & Pagett	2007	Qualitative	To explore: (1) How are IWBs being used in primary school literacy classrooms?, (2) How is IWB use being supported and	IWBs offer a multimodal approach to teaching that is beneficial to learners, teacher training is needed – though limited – to increase teacher complexity in use of the IWB to

			resourced in primary school literacy classrooms?, (3) How is IWB use impacting on classroom literacy practice?, and (4) On what area/s of literacy practice have IWBs had the most impact?	maximize learning potentials, children were more engaged and motivated when IWB was used, and teachers used IWB more in other subject areas than literacy – though links to literacy in lessons were observed.
Chambers, Slavin, Madden, Abrami, Tucker, Cheung, & Gifford	2008	Experimental	To explore the effects of embedded multimedia combined with a computer-assisted tutoring model when compared to a control group receiving neither intervention.	Suggest that infusing multimedia content throughout class lessons and tutoring sessions appears to help make concepts clear and memorable to children – supporting notion that auditory/visual content is retained better than any type alone.
Takahira, Ando, & Sakamoto	2008	Panel Study	To empirically examine the effect of internet use on skills for practical use of information of Japanese elementary students.	Suggests that use of the internet in the context of communication with others is the most effective in improving skill for practical use of information.
Walsh	2008	Case Study	To explore: (1) What are the literacy strategies that students need for reading, using and producing multimodal texts? and (2) What is the relevant and explicit pedagogy appropriate for integrating multimodal literacies with conventional literacy practices?; Researchers considered questions w/in implementation of two projects: (1)	Multimodal literacy definition clarified, to read and produce these texts students must combine traditional literacy with new technologies. Call to investigate interrelationships of modalities in meaning construction of multimodal text/activity.

			podcasting in 3rd grade classrooms (2) Multimodal learning in 1st and 4th grade classrooms.	
Levy	2009	Collective Case Study	To understand what is happening in the space 'in between' the discourses of home/school to five 3-4 year old children's perceptions of reading and meaning making.	Adds to the discussion ways children are conversing and combining 'funds of knowledge' between home/school to establish perspectives on reading; Early childhood must build on children's early constructions of meaning and incorporate home literacies (digital and multimodal).
Merchant	2009	Case Study	To investigate primary aged children's experience in the virtual world of Barnsborough.	Extends understandings that more research is needed to understand the complex relationships and types of literacy developed in virtual environments.

APPENDIX B

STUDIES INVESTIGATING COMPUTER SOFTWARE

WITHIN LITERACY INSTRUCTION

Researcher	Year	Methodology	Purpose	Findings
Topping & Paul	1999	Large Scale Survey	To apply a computer based measure of reading practice (Accelerated Reader) to explore whether differences in reading practice might explain some of the differences in student reading performance.	Further evidence confirming a positive relationship between the amount of reading practice and ability in reading; a major factor in reading disability might simply be that weak readers get less practice; The current study suggests that higher levels of reading practice can yield higher reading achievement, but especially when the reading practice is engaged, systematically differentiated or supported, successful, accountable, monitored, diagnosed, and intervened. New learning information system technologies can make this viable for the busy teacher. These developments might prove particularly valuable for students with reading difficulties.
Boling, Martin, & Martin	2002	Experimental	To investigate whether a computerized multi-sensory approach (*WiggleWorks* program) within the teaching of reading would increase first graders' vocabulary development.	Strong readers worked somewhat independently, average-ability students were at an instructional level with reading and technology skills, while students with less reading ability needed assistance with reading and technology. Students in the experimental group (computer storyboards) were greatly motivated by the use of computers.
Jones	2003	Qualitative	To examine the sequential interactions of first graders during collaborative writing tasks on the computer using *KidWorks* software that allows beginning readers/writers to express themselves	Suggest that peer interaction has significant effect on children's cognitive processes in collaborative writing.

			using words and pictures.	
Shiratuddin & Landoni	2003	Case Studies (3)	To evaluate how children accept e-book technology devices (2) and to test the ease of use for an existing e-book builder for student use.	Suggests that children are at ease with e-book technology and e-book builder software can be utilized with minimal effort.
Malette, Henk, & Melnick	2004	Experimental	To analyze the influence of Accelerated Reader (created under idea of 'guided independent reading') on reading attitudes and self-perceptions of 358 fourth and fifth graders.	Suggest that AR positively influences reader attitude towards academic reading – but not recreational reading, but does not encourage children to read more outside of school (which is important in reading achievement).
Pelletier, Reeve, & Halewood	2006	Experimental	To explore whether Knowledge Forum (KF) would provide a particular context for literacy learning for 22 four-year olds v. a comparison group of 20 five-year olds that differed from "print" contexts and to explore differences in boy v. girl implementation.	Young children capable of using technology as a social tool for knowledge building – and doing so contributed to literacy development as a beneficial by-product; KF puts children's ideas at the center of knowledge building and allows for construction of understanding – rather than skill and drill, is motivating for young children, provides a scaffold for generation of theories, and is more motivating for boys than paper and pencil.
Karchmer-Klein	2007	Qualitative	To investigate how 23 fourth graders translated their teacher's literacy instruction into an understanding of audience awareness when writing for internet publishing.	Students considered the learning level of the audience (gradient of text), personal feelings of appearance, and computer challenges when creating electronic research reports.
Owston, Wideman,	2009	Mixed Methods	To explore: (1) Can computer game	No significant differences in terms of basic literacy skills

Ronda, & Brown			development as a pedagogical activity lead to improved learning of basic literacy skills?, (2) What new digital literacy skills do students acquire as a result of this activity?, (3) What is the impact of game development on student classroom engagement?, and (4) How do teachers adopt and shape the practice of student game development in the classroom?	development from one assessment – but sentence construction improved via the writing assessment instrument used, opportunities for exploration of digital literacies were provided, game construction was engaging for students because they potentially saw the usefulness of what they were learning, teachers felt more time was needed to teach method.

APPENDIX C

STUDIES INVESTIGATING CREATIVE RESPONSE USING TECHNOLOGY WITHIN LITERACY INSTRUCTION

Researcher	Year	Methodology	Purpose	Findings
Dove, Fisher, & Smith	2001	Case Study	To explore the influence of e-mail exchange between 23 2nd grade students and secondary education students using *Time for Kids* as a springboard for discussion to promote reading/writing and technology skills.	Suggests that electronic exchanges served to motivate and improve 2nd graders reading, writing, and computer literacy skills and also encourages secondary education students implementation of technology in classroom considerations.
Burnett, Dickinson, Myers, & Merchant	2006	Case Study	To examine e-communication between year 3 and 4 children of a rural school district with year 5 children of an urban school district as they work to produce a joint Power Point presentation on their views and interests.	Suggests that technology transforms the way children write and the types of texts they produce; Suggests e-mail partnerships worthwhile b/c they encourage communication in authentic ways while also actively engaging children in use/exploration of new mode of communication; Motivation also increased.
Britsch	2005	Qualitative	To explore interactions in the third space of learning (e-mail) between adults and children dialoguing concerning a geology teaching.	Suggest that it is not possible to dictate the writing that is to occur in third spaces.
Ranker	2006	Case Study	To explore Adrian's connection between the digital technology of a video game and his writing process.	Suggests that teachers use the writing conference as a medium to prompt discussion w/ students concerning popular culture and media influences on learning opportunities within composing/writing.
Guha, Druin, Montemayor, Chipman, & Farber	2007	Case Study	To understand the storytelling experiences of 18 young children (aged 5-6) using	Unique child and context determine most appropriate degree of control over the technology tool (passive, constrained, active), degree of

			StoryRoom – a physical storytelling technology.	control over story content (open or close-ended), and physical activity of the child (constricted or unconstructed) – all which produce a unique storytelling experience.
Mavers	2007	Qualitative	To explore the resourcefulness of a six-year old in shaping meaning via spontaneous on-line communication via e-mail exchange.	Extended understanding that different kinds of writing are appropriate for varying contexts; Provides insight into a young child's literate capacities in the present.
Rojas-Drummond, Albarran, & Littleton	2008	Qualitative	To analyze the creativity of primary school children within the context of multimodal collaborative writing embedded within an instructional program called 'Learning Together'.	Effective collaborative efforts in classrooms must emphasize co-construction and creativity of students, but also explicit forms of reasoning in talk.
Kuiper, Volman, & Terwel	2009	Multiple Case Study	To explore possibilities and limitations of collaborative inquiry activities as a context for fifth grade student development of Web literacy skills to acquire content knowledge.	Thematic inquiry activities can provide a useful context for teaching web literacy skills particularly when collaborative learning is also involved. Influencing factors: 1) Formulating appropriate research questions, 2) Collaborative Work Conditions, 3) Availability of Basic Inquiry Skills, and 4) Teaching Style. Collaborative Inquiry activities are meaningful to learners b/c they require application of skills in authentic context.

APPENDIX D

STUDIES INVESTIGATING TECHNOLOGY INTEGRATION FOR DEVELOPMENT OF EARLY READING SKILLS

Researcher	Year	Methodology	Purpose	Findings
Mathes, Torgeson, & Allor	2001	Experimental	To examine peer-assisted first grade learning strategies (PALS) w/ and w/o CAI in phonological awareness using *Daisy Quest* and *Daisy's Castle* to determine the effects on struggling readers.	1st grade PALS enhanced the reading performance for all – but not equally among all learner types; CAI in phonological awareness was unsuccessful in accelerating the reading growth of low achieving children beyond that achieved with 1st grade PALS.
Gillen	2002	Qualitative	To explore how 3 and 4 year olds spontaneous discourse with a play telephone demonstrates a proximity to the symbolic meaning-making processes of literacy (print),	Suggests that telephone talk can contribute to the relationship between oracy and literacy and calls for exploration of telephone talk effects on development of skills and understandings pertinent to print literacy. Shows how telephone provides a context for children to develop and explore important aspects of communication.
Paterson, Henry, O'Quin, Ceprano, & Blue	2003	Mixed Methods	To identify pertinent classroom factors that might influence the Waterford Early Reading Program's success or failure in supporting early reading learning.	WERP did not produce any statistically significant effects on reading or literacy learning in general; Suggests that more gains may be made in reading achievement by focusing on classroom environments that align with good literacy practices.
Hyun & Davis	2005	Qualitative	To examine emerging inquiries (questions children ask while using computers) and dialogue of kindergartners taking place around computers as they work on a mapping project in a technologically-rich classroom environment.	Reveals how kindergartners engage in exploratory talk to test emergent ideas about using word processors as they learn to use them and demonstrates powerful role of collaborative dialogue b/t teacher and learner in scaffolding knowledge of how to function in a technologically-rich classroom.

Brabham, Murry, & Bowden	2006	Experimental	To examine differences in 152 kindergartners literacy learning within meaning-emphasis and phoneme-emphasis groups as teachers read aloud popular ABC books and combined this experience with a computer center experience w/ animated CD-ROM telling the story or audiotape listening center w/ hard copy text.	Suggests that combinations of instructional emphasis and media interactions play a significant role in phoneme identities of students (Phoneme emphasis combined with audiotape listening/practicing reading the book was significantly more effective than other combinations).
Macaruso, Hook, & McCabe	2006	Experimental	To follow-up on the 1996 study by exploring the effects of a phonics based software program, *Early Reading* (Lexia Learning), on kindergarteners and to determine effects on low-performers as a supplement to regular classroom instruction.	Kindergarten students in the treatment group benefitted in terms of phonological awareness – particularly the low-performers showed most gain in post-test; Time limitation identified as students needing more experience with the software.
Roberts, Djonov, & Torr	2008	Qualitative	To analyze the responses of four 4-5 year olds while interacting w/ e-texts (I-Spy Games).	Certain skills must be in place before children can learn to play e-games; children benefit from focused, sensitive attention; children shift between styles depending on context – as well as gender.
Voogt & McKenney	2008	Experimental	1st Study: To examine how PictoPal, a software package using image/text for reading, writing, & authentic	Suggests that regular and frequent use of technology with 4-5 year olds, with an adult presence, has positive effects on early literacy skill development; Larger studies needed to strengthen confidence in results.

			applications, enhances literacy development of 4-5 year old: 1) Do students possess skills to utilize PictoPal?, 2) Does PictoPal contribute to early literacy learning of 4-5 year olds? 2nd Study: To explore effects of PictoPal 3 using open assignments on literacy skills.	
McKenney & Voogt	2009	Design Research	To investigate how the technology-supported learning environment, *PictoPal*, might contribute to furthering linguistic concept formation for kindergartners regarding the nature and function of written language by producing and using texts.	*PictoPal* can contribute to furthering linguistic concept when students receive initial adult guidance to ensure successful technology use, encourages learner engagement on-screen which is additionally stimulated w/ a guide (adult), and can contribute to literacy development but particularly when integration with off-computer activities is present.

APPENDIX E

STUDIES INVESTIGATING ELECTRONIC TALKING BOOKS WITHIN LITERACY INSTRUCTION

Researcher	Year	Methodology	Purpose	Findings
Labbo & Kuhn	2000	Case Study	To examine one student's experience w/ considerate/inconsiderate multimedia on reading comprehension.	Multimedia are identified as considerate when the multimodal sources are integrated in ways to support the meaning making process of the reader.
Doty, Popplewell, & Byers	2001	Experimental	To investigate whether 39 2nd graders score higher on oral retellings and comprehension questions when reading the print version of Thomas' Snowsuit or when reading the same story from an interactive CD-Rom storybook.	Indicates that use of CD-Rom storybooks has positive effects on young reader comprehension by decreasing decoding burden for students and providing immediate assistance when needed thus eliminating teacher responsibility at time of reading.
de Jong & Bus	2003	Qualitative	To explore to what extent commercially available electronic books on CD-Rom for children aged 3-7 are equipped w/ multimedia and/or interactive options that are supportive of children's emergent literacy (Reviewed books available in the Netherlands from 1995 to 2002).	Suggest that availability of electronic books on CD-Rom represent weak selection in terms of opportunities for literacy engagement of young children; Encourages companies to develop electronic books that incorporate more multimedia and interactivity in productive ways.
Littleton, Wood, & Chera	2006	Experimental	To investigate 18 5-6 yr old boys interactions w/ Chera's (2000) ETB's asking whether boys w/ low attainment of phonological awareness would make greater improvement after a ETB's intervention than boys w/ higher levels of phonological awareness and exploring how varying leveled readers would use the software in support of their literacy development (Would changes in reading	Suggests that boys in the beginning reading phase may benefit from interaction w/ software utilized in particular contexts (groups, settings, etc).

			strategies be observed? Can these be attributed to software interactions?).	
Oakley & Jay	2008	Mixed Methods	To discover what factors influenced the implementation of ETB home programs for 41 fourth grade reluctant readers.	Factors - Facilitating: (1) Student computer ability, (2) parent attitude, (3) Presentation of ETB's by schools, (4) Easy-to-use and varied software relating to student interest Inhibiting: (1) Unable to 'hold' book or other interests, (2) Lack of access to computer, (3) lack in peace/quiet, (4) Lack in parental support, (5) Lack in teacher 'buy in' and follow-up, (6) Lack in availability of affordable and appropriate ETB's; Limitation of Study – Time; Majority of students did read more w/ ETB's in home.

APPENDIX F

STUDIES INVESTIGATING THE ROLE OF THE LITERACY TEACHER WITHIN TECHNOLOGY INTEGRATION

Researcher	Year	Methodology	Purpose	Findings
Reinking & Watkins	2000	Formative	To investigate how a computer-based instructional intervention (creating multimedia reviews of books) might be implemented to achieve a specific pedagogical goal (increasing the amount and diversity of elementary students' independent reading).	Progress towards the identified pedagogical goal was not attained simply from interaction w/ the multimedia book review process – but also from technology challenges dealt w/ by teachers/students; counters suggestions that developing technological expertise can occur only at the expense of other content knowledge.
Turbill	2001	Ethnography	Question began how are teachers of young children incorporating technology into their early literacy programs? But became why do teachers of early literacy find it difficult to implement technology into their literacy curriculum in this school?; Participants: teachers in year 1 and K classrooms; Primary Research site became one particular K classroom; Purpose: provide sense of 'what was going on' in	Technology use/principles outlined within a number of settings based on descriptive experience of researcher in a particular classroom.

			classroom.	
Rodrigo	2003	Quantitative	To evaluate status of ICT's in Metro Manila (Philippines) schools asking what are educators' goals for using ICT's? Do schools have necessary tools to reach these goals? Are schools using ICT's in ways consistent w/ goals? How do public and private schools compare?	At primary school level, data gathered suggests that emerging uses of ICT were not a priority, but were being used as learning aids and to encourage independent learning; Learning outcomes tended to be based on computer skill acquisition
Chen & Chang	2006	Experimental	To gather detailed information about 297 state pre-k teachers of early childhood computer use in terms of attitudes, skills, and classroom practices.	Suggests that ECE teachers are not ready to implement computers and technology into classrooms and issue a call for improved technology training to increase teacher competence.
Edmunds	2008	Collective Case Study	To answer: How do effective teachers of low-performing students use technology in their instruction to enhance the achievement of these students?; To what extent are teacher's instructional practices with technology consistent with the research on effective	Effective Teachers use technology in ways that enhance learning in the following categories: Differentiation, Accommodating for learner styles, student collaboration opportunities, facilitating teacher-guided instruction, accessing higher order thinking for students, remediation/reinforcement, motivation, self-esteem, increasing access, and technology skills.

			instructional use of technology?	

APPENDIX G

STUDIES INVESTIGATING TECHNOLOGY INTEGRATION SPECIFICALLY WITHIN THE LITERACY TEACHING OF STRIVING LEARNERS

Researcher	Year	Methodology	Purpose	Findings
Howell, Erickson, Stanger, & Wheaton	2000	Experimental	To investigate the effects of a computer-based balanced reading instruction approach (IntelliTools reading software program) on the early reading abilities of striving first grade students in terms of 1) onset-rime word decoding skills, 2) phonemic awareness skills, 3) sight word recognition skills, and 4) developmental writing and spelling skills.	Potential for literacy learning within a short period of time is great – although additional research should be conducted as one of the primary limitations was experience of the 'ceiling' effect among the criterion group in post assessments.
Mioduser, Tur-Kaspa, & Leitner	2000	Experimental	To answer 2 questions: (1) Is there added learning value in the use of computer based materials for training early reading skills of pre-school children who are at-risk for RD?, and (2) Which specific/relevant features of the computer technology are most related to specific outcomes regarding children' acquisition of early reading skills?	Children striving for RD receiving printed and computer-based materials within their reading program had made significant improvements in phonological awareness, word recognition, and letter naming skills in comparison to their peers w/in groups 2-3.
Mitchell & Fox	2001	Experimental	Two explore the following questions: (1) Can phonological awareness of at-risk kindergartners and first graders be enhanced by CAI?, (2) How effective is phonological awareness CAI when compared with teacher-delivered instruction?, and (3) Is the effectiveness of these instructional methods influenced by grade level?	Phonological awareness of at-risk kindergartners and first graders can be enhanced with CAI and teacher-delivered instruction; Future research should explore the type of technology knowledge and skills needed by students, long term impact of CAI on children's reading and writing, evaluating effect of novelty of computer on future learning.
Pinkard	2001	Experimental	To explore how culturally	Improvement in sight word

			defined oral language skills possessed by African-American children can serve as critical bridges for developing early literacy skills and acquire a written language – and to investigate how two computer-based learning environments (*Rappin Reader* and *Say Say Oh Playmate*) benefit these children's engagement in the reading process within an after school setting.	vocabulary and motivation observed; African-American children also performed as well or better than their European-American counterparts.
Cuddeback & Ceprano	2002	Case Study	To determine if Accelerated Reader is beneficial to the reading development of young emergent at-risk reader's comprehension; More specifically, will AR cause young struggling readers' comprehension skills and attitudes to improve so that they can more easily become true independent readers?	Within a summer school setting, AR did contribute to children's reading comprehension improvement when utilized in conjunction with other materials and teaching procedures.
Segers & Verhoeven	2002	Experimental	To investigate the ergonomic and educational potential (learning new words and vocabulary) of a child-friendly computer software program on the enhancement of early literacy skills of kindergartners in the Netherlands.	Suggests that computer support has a positive effect on vocabulary development of kindergartners from a minority background.
Laffey, Espinosa, Moore, & Lodree	2003	Experimental	To answer: (1) Can an ICT treatment effect achievement in mathematics for the children in the primary grades of this urban	ICT experiences provided scaffolding for appropriate behavior, individualized feedback, and the opportunity for a successful academic experience; ICT

			school?, (2) Does risk factor status predict achievement in mathematics in the regular classroom settings and/or in the ICT treatment?, and (3) Does risk factor status predict behavior (e.g., attention, enthusiasm, and engagement) during the ICT treatment?	may contribute to academic learning and appropriate behavior of very high-risk young children.
Judge	2005	Experimental	To describe young low-income African American children's access to computers as they start school and to examine the relationship between academic achievement and computer use.	Academic achievement of kindergarten and first grade African American students is positively affected by access to and use of computers at home and in school, child/computer ratio, and appropriate software.
Kemker, Barron, & Harmes	2007	Case Study	To explore the learning opportunities made possible when laptop computers were provided to elementary students in a low SES school and authentic learning tasks and effective teacher management were considered.	Authentic learning opportunities were being provided when laptops were integrated in this classroom; Authentic tasks and technology are a feasible combination for 'striving' learners.
Proctor, Dalton, & Grisham	2007	Experimental	To investigate 30 (16 Spanish-speaking ELL's and 14 EO's) fourth grade reader experience with a universal literacy environment (ULE) to answer: (1) What is the effect of working in the ULE on students' vocabulary and comprehension growth? (2) Do reading gain scores differ as a function of language status (ELL vs. EO)?, and (3) Is the use of digitally embedded vocabulary acquisition and	ULE environment was useful to both Spanish-speaking ELL's and struggling readers - Use of comprehension-based embedded supports (ex-strategy coach) increased gains in comprehension for students; Students who made use of embedded supports appeared to be interacting meaningfully with texts – as indicated by individual student responses; Researchers feel that a contributing factor to students accessing supports

			comprehension strategy support over the course of the intervention related to vocabulary and comprehension gains?	at a greater rate than past studies was the intentional embedding of a meaningful purpose for accessing supports (ex – requirement to add words to 'my glossary').
Tracey & Young	2007	Experimental	To explore the cognitive benefits on literacy development of the *Waterford Early Literacy Software Program* on 265 kindergarten students in an urban high-risk community.	Suggests a positive correlation between kindergarten interaction with this particular ILS and literacy development necessary for successful integration into 1st grade.
Macaruso & Walker	2008	Experimental	To follow-up on the 1996 study by exploring the effects of a phonics based software program, *Early Reading* (Lexia Learning), on kindergarteners and to determine effects on low-performers as a supplement to regular classroom instruction.	Kindergarten students in the treatment group benefitted in terms of phonological awareness – particularly the low-performers showed most gain in post-test; Time limitation identified as students needing more experience with the software.
Schmid, Miodrag, & Di Francesco	2008	Qualitative	To investigate how computer interaction might influence tutoring of 'at-risk' early readers (Tutor/Child/Computer Relationship); To answer: What are the key behaviors exemplified by the tutors and children that represent constructive (and inhibitive) instructional/motivational factors in interaction w/ the computer?	Three Themes: Rapport, Motivation, and Instructional Scaffolding; Study suggests that well designed technology/software tools implemented w/ human element can bridge gap for struggling early readers.
Yong & Ping	2008	Case Study	To investigate whether a 3-D multi-user virtual environment (MUVE) – Quest Atlantis, coupled with inquiry based learning, could engage 14 academically at-risk 11	Time needed to develop student interest in program; Teacher role pertinent to attendance (especially in initial term); Students were motivated and enjoyed the 3-D space more so than they

			year olds in an after-school program with learning and motivate attendance.	engaged in the quests (academic learning tasks).
Comaskey, Savage, & Abrami	2009	Experimental	To explore whether two computer-based literacy interventions from the ABRACADABRA literacy program (synthetic and analytic phonics) have an effect on 53 disadvantaged kindergarteners' early phonological abilities and reading skills.	Results suggest that synthetic/analytic programs have different effects on children's phonological development, but these differences did not have any qualitatively different effect in the way children undertook word reading or non-word decoding.
Hines	2009	Experimental	To investigate whether a color coded onset-rime decoding intervention would be effective in improving performance on taught words for at-risk first grade readers.	The intervention was effective in teaching instructional and near-transfer words to at-risk first grade readers in a one-on-one setting.

APPENDIX H

INITIAL MEETING AGENDA

Initial Meeting Agenda

Date: _____

Georgia Elementary School
1035 Scruffy Boulevard
Cullen, GA 31794
Teacher: _____

Technology in Literacy: Exploring the Possibilities
Can technology integration enhance
the reading experience for striving learners?

1. **Introduction to Award Materials**
   - Genre Book Collection (2-3) / Rhyme, Song, Play Collection (K-1)
   - Leveled Books (6) with CD-Rom interaction/activities
   - Informational Text with interactive CD-Rom
   - Literacy Icons within Lessons with activities (example on TG: p.76-77)
   - Assessments Available On-line
   - Online Resource: "Lettergetter"

2. **Requirements for Participation in Study**
   - Weekly Informal Observations (at least twice per week)
   - Ongoing Informal Interviews (as needed)
   - Three Pre-determined Interviews

   RESEARCH TIMELINE
   1. *Baseline Collection*: Feb. 1-5, Feb. 8-12
   2. Goal Setting/Selection of Materials Interview: _____
   3. *Phase One* – Integration of AWARD: Feb. 15-19, 22-26, Mar. 1-5, 8-12
   4. Evaluation/Goal Setting/Selection of Materials Interview: _____
   5. *Phase Two* – Revised Integration of AWARD: Mar. 15-19, 22-26, Mar. 29-Apr. 2, Apr. 5-9
   6. Final Review Interview: _____

   *Spring Break: April 19-23

3. **What's Important Now?**
   - Need a list of reading levels for all students in the class
   - Send home consent forms
   - Set up time to observe three times during the next two weeks during the literacy block
     * Focus on resources/strategies currently in place for vocabulary/ comprehension development of 'striving/struggling' literacy learners

APPENDIX I

TEACHER CONSENT FORM

The University of Georgia

Teacher Consent Form

I, _______, agree to participate in a research study titled, "Technology in Literacy: Exploring the Possibilities - Can technology integration enhance the reading experience for striving learners?". This study is being conducted by Jessica Baxter from the Department of Language & Literacy Education at the University of Georgia (542-4526) under the direction of Dr. Linda Labbo, Department of Language & Literacy Education, University of Georgia (542-4526). I understand that participation is entirely voluntary and I can choose not to participate or to withdraw my consent at any time without penalty or loss of benefits to which I am otherwise entitled and have the result of my participation, to the extent that it can be determined, returned to me, removed from the research records, or destroyed.

The following points have been explained to me:

1. The purpose of this study is to explore, field test, and develop specific guidelines for classroom use of the AWARD Reading Program with striving third grade literacy learners.
2. There are no direct benefits associated with participation. However, theoretical contributions will be made to the scholarly educational field concerning how to situate the most up-to-date technological classroom resources within the theoretical context of multiliteracies and the theory of new literacies.
3. Data will consist of any lesson plans I write to integrate the AWARD Reading Program into everyday literacy instruction, written reflections on the lessons, field note observations of one hour taken by the primary investigator of AWARD Reading Program integration in my classroom, and open-ended interviews lasting fifteen minutes to a maximum of one hour that will be audio recorded by the researcher. Audio recordings will be immediately destroyed upon completion of transcription/analysis by the researcher. Data will be collected from 2/1/10 until the end of May, 2010.
4. No discomforts, stresses, or risks are foreseen.
5. The results of this participation will be confidential and will not be released in any individually identifiable form without my prior consent, unless otherwise required by law.
6. The researcher will answer any further questions about the research, now or during the course of the project, and can be easily reached by telephone at 229-402-2765 or via e-mail at jessbax@uga.edu.
7. I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Researcher	**Signature**	**Date**
Jessica M. Baxter		
Name of Teacher	**Signature**	**Date**

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutitional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-mail Address: IRB@uga.edu.

APPENDIX J

PARENTAL CONSENT FORM

The University of Georgia

Parental Consent Form

I agree to allow my child, _____, to participate in a research study titled, "Technology in Literacy: Exploring the Possibilities - Can technology integration enhance the reading experience for striving learners?". This study is being conducted by Jessica Baxter from the Department of Language & Literacy Education at the University of Georgia (542-4526) under the direction of Dr. Linda Labbo, Department of Language & Literacy Education, University of Georgia (542-4526). I understand that participation is entirely voluntary and I can choose not to participate or to withdraw my consent at any time without penalty or loss of benefits to which I am otherwise entitled and have the result of my participation, to the extent that it can be determined, returned to me, removed from the research records, or destroyed.

The following points have been explained to my child and me:

1. The purpose of this study is for my child's teacher to explore, field test, and develop specific guidelines for classroom use of the AWARD Reading Program with striving literacy learners.
2. There are no direct benefits associated with participation. However, theoretical contributions will be made to the scholarly educational field concerning how to situate the most up-to-date technological classroom resources within the theoretical context of multiliteracies and the theory of new literacies.
3. Students will work on classroom assignments that the teacher designs, based on training with the primary investigor with the AWARD Reading Program. These activities will be part of the regular curriculum and activities that the teacher will do no matter whether the child participates or not. The teacher will bring copies of lesson plans and examples of student-created products to meetings – which will occur as needed. Should you choose not to allow your child to participate in this study, his/her school work will not be used.
4. The primary investigator will schedule times to observe use of AWARD Reading materials within the everyday literacy instruction by the classroom teacher. The researcher will document these observations using field notes only.
5. Students may be asked to tell a researcher about their work with the AWARD Reading program. These conversations will be audio recorded by the researcher. Audio recordings will be immediately destroyed upon completion of transcription/analysis by the researcher. Additionally, pseudonyms will be used in place of your child's name in the transcription process to eliminate the possibility that he/she could be identified. Copies of work may be made with the students' name hidden.
6. The project will begin on 2/1/10 and will continue until the end of May, 2010.
7. No discomforts, stresses, or risks are foreseen.
8. The results of this participation will be confidential and will not be released in any individually identifiable form without my prior consent, unless otherwise required by law.
9. The researcher will answer any further questions about the research, now or during the course of the project, and can be easily reached by telephone at 229-402-2765 or via e-mail at jessbax@uga.edu.
10. I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to allow my child to participate in this study. I have been given a copy of this form.

Name of Researcher	**Signature**	**Date**
Jessica M. Baxter		
Name of Parent or Guardian	**Signature**	**Date**

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutitional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-mail Address: IRB@uga.edu.

APPENDIX K

STUDENT ASSENT SCRIPT

Child Assent Script/Form

I want to see if you would be willing to help me with a research project about how using the computer may change how you read and understand what you are reading. I may ask you questions but it is different from school because there are no right or wrong answers. I will record our conversations – but will destroy our tape once I have written down all of your thoughts and ideas. Also, I will give you a secret name – which you may choose – so that no one will ever know that you were the one doing the talking. I want to know what you really think. I will also be watching you and taking notes as you use the use the computer and other materials given to you by your teacher during the literacy block of your day. You should never feel nervous when I am taking notes while you are using these materials because I am only taking notes so that I can think about how these materials may be used to help students in their reading in the future. Nothing that I am writing down will be used to give you a grade. My notes are only to help me think.

If you decide to do the project with me, your ideas and my notes will be kept just between you, me, and sometimes your teacher. I may not be able to keep this promise if you tell me that you or another child is being hurt in some way, or if a judge asks me for some information. If that were happening, I would tell someone to help keep you or the other child safe. You can also decide to stop at any time or can choose not to answer questions that you don't want to answer.

Do you have any questions? Would you be willing to do the project with me?

_____

Child's Signature (when age appropriate)

APPENDIX L

FORMATIVE GOALS DECISION GUIDE

AWARD Reading Formative Goals Decision Guide

Spring 2010

Teacher Name:
Date:

Identification of Pedagogical Goals

Overall AWARD Reading Goal(s):

Selection of Materials

AWARD Reading Materials:	Learner Objectives and Outcomes:

AWARD Reading Ongoing Assessment and Evaluation

Evaluation of Student Learning	Rationale

Teacher Questions Guiding Research

I want to know…

Teacher Activities and Integration of Materials

What will I do first? (Include materials, teacher-guidance/modeling, etc.)

Dates/Times for Observation of AWARD Reading Integration:

APPENDIX M

OBSERVATION GUIDE FOR BASELINE DATA COLLECTION

Name of Fieldnote File:	**Time Began Observation:**
Name of Observer:	**Time Ended Observation:**
Date of Observation:	**Date of Expanded Fieldnotes:**
Place of Observation:	**Name of Expanded Fieldnote File:**
Comments:	

Observation Guide:

- Describe the approaches used by the classroom teacher to support the literacy development of striving learners
- Detail the conversations taking place among striving learners and teachers
- Note the levels of engagement among striving learners during literacy instruction
- Explain any instructional strategies used by the teacher to influence the literacy instructional experience for striving learners
- Comment on any factors that inhibit or enhance progress toward the pedagogical goals of the classroom teacher.

APPENDIX N

BASELINE INTERVIEW GUIDE

Baseline Interview Guide for Teacher/Paraprofessional

1. Tell me about yourself. How did you decide to go into teaching elementary students?
2. What is your favorite part of teaching? Least favorite part of teaching?
3. Talk to me about the striving students in your classroom. What kinds of specific struggles do you observe with these students?
4. Are there any particular resources you use to improve the learning experience for these students?
5. Do you use any specific teaching strategies to improve the literacy instruction of your striving learners?
6. How do you support their reading if they come to a word they don't know?
7. How do you support student comprehension of stories read during literacy instruction?
8. Is there anything else you feel is important for me to understand about the literacy learning of your striving readers within your classroom?

Baseline Interview Guide for Striving Students

1. Would you like to choose your secret name?
2. Tell me about yourself.
3. What is your favorite part of the school day? Least favorite part of the school day?
4. Do you enjoy reading and the literacy block within Mrs. Calhoun's classroom?
5. Can you describe the activities that you participate in during the literacy block?
6. Are you usually working with large groups of students, small groups, or individually with Mrs. Calhoun? What is different when you work with large groups, small groups, or individually with Mrs. Calhoun?
7. What materials do you use during literacy instruction with Mrs. Calhoun?
8. If you come to a word you don't know as you are reading – how do you handle that situation?
9. What do you do if you realize that you aren't understanding what you are reading?
10. Is there anything else I should know about literacy teaching in Mrs. Calhoun's classroom?

APPENDIX O

CONCLUSION OF PHASE ONE FORMAL INTERVIEW GUIDE

Interview Guide

Beginning Phase Two

March 19, 2010

1. I want to begin our conversation talking about your experience using AWARD thus far. In our informal conversation yesterday – you explained that you're "out of your comfort zone – but it has you thinking which is a good thing". Could you explain a little more about what you meant?
2. *Prior to using AWARD – what resources did you use to design your literacy learning opportunities for your lower level students? Does use of AWARD change the way you think about designing your instruction?*
3. For our first phase – you selected specific materials to meet specific goals. I'd like to talk a bit about your feelings concerning whether the AWARD materials were useful in achieving your goals.

   A) You wanted to use the guided reading books and interactive CD-Roms to increase student comprehension focusing specifically on comparing/contrasting, sequencing, and inferencing. *Why did you select these particular materials to teach these specific skills?*

   I'd like for you to now focus on giving me some specific examples of how you were able to use the AWARD resources to meet your goals. Feel free to pull the actual AWARD resources that you have used if they would help you explain.

   *In what ways have you used guided reading books and the interactive CD-Roms to teach **comparing and contrasting**? Was your teaching effective? What made it effective?*

   *In what ways have you used guided reading books and the interactive CD-Roms to teach **sequencing**? Was your teaching effective? What made it effective?*

   *In what ways have you used guided reading books and the interactive CD-Roms to teach **inferencing**? Was your teaching effective? What made it effective?*

   Do the guided reading books and interactive CD-Roms allow you to meet your overall goals of increasing comprehension, vocabulary, and fluency for your lower-level students in ways that differ from other resources you've previously used in your classroom?

   B) You wanted to use the interactive CD-Rom games to improve spelling skills and to increase student motivation. *Why did you select these particular materials to teach these specific skills?*

   In what ways have you used the interactive CD-Rom games to improve spelling skills?

In what want have you used the interactive CD-Rom games to increase student motivation?

Do the interactive CD-Rom games allow you to meet your overall goals of increasing comprehension, vocabulary, and fluency for your lower-level students in ways that differ from other resources you've previously used in your classroom?

C) Your final goal was to use the audio CD and accompanying AWARD Collection small books to increase student fluency focusing specifically on student expression while reading. *Why did you select these particular materials to teach these specific skills?*

In what ways have you used the audio CD and accompanying AWARD Collection small books to increase student fluency focusing specifically on student expression while reading?

Do the audio CD and accompanying AWARD Collection small books allow you to meet your overall goals of increasing comprehension, vocabulary, and fluency for your lower-level students in ways that differ from other resources you've previously used in your classroom?

4. You opted to use the AWARD interactive games, AWARD assessment, and anecdotal notes to provide evidence of student growth in achieving the literacy goals you set for them. *Have you seen literacy growth in your lower-level learners in the areas of comprehension and vocabulary? What evidence could you provide of this learning?*
5. Lastly, I want to know if you've begun to answer the questions you initially had about AWARD Reading.

   Did using the AWARD resources within your everyday literacy instruction get your kids excited about reading?

   Did use of the AWARD resources within your everyday literacy instruction increase student fluency?

   Did use of the AWARD resources increase the base knowledge of your students?

   Did use of the AWARD resources improve the language arts skills of students in your classroom?

6. *Within the phase one period of AWARD implementation – you opted to use the assessment feature within a whole group setting to work on the testing genre. How was that experience? Was it useful in meeting your literacy goals in ways that differed from other resources you've used?*

7. *Have there been any unanticipated outcomes or effects on your lower-level students' literacy learning through use of AWARD?*

8. *Did any specific instructional moves on your part or specific classroom conditions contribute to more efficient use of the AWARD materials in meeting your literacy goals?*

9. *Were there any factors that served as a barrier in your use of the AWARD materials in meeting your literacy goals?*

10. At this point in our study – we will revisit the goals you initially set for your lower-level literacy learners. We can choose to adjust the resources you are using and we can choose to adjust the goals to meet the current needs of the learners in your classroom. Let's start first exploring what's working and what's not working.

    What do you feel is currently working well to meet the literacy goals you've set for your lower-level learners? What do you feel is not working well in the process of increasing your student's literacy development through use of AWARD Resources?

11. We used the AWARD assessment prior to implementation. Yesterday – we repeated the AWARD assessment to see how your students are progressing after four weeks of literacy teaching integrated with AWARD resources. *What can you tell me about the literacy development of your students as evidenced by the assessment print outs? How will you use this information to plan for future instruction?*

12. *What overall goals would you like to set for phase two of our study?*

13. *Which materials do you feel will help you to meet your overall goal? Why do you feel these materials are best? What do you feel will contribute to effect use of these materials?*

14. *What specific learner outcomes/objectives would you like to see in using these AWARD resources? How will you evaluate whether your learners are meeting these outcomes/objectives? What is your rationale for using these specific evaluations?*

15. *What questions would you like answered as we begin phase two of AWARD integration?*

16. *What times should I come to observe for the next four weeks?*

APPENDIX P

CONCLUSION OF PHASE TWO FORMAL INTERVIEW GUIDE

Interview Guide

Ending Phase Two

April 15, 2010

1. *Has use of AWARD continued to change the way you think about designing your instruction? What differences are you seeing in your thinking?*
2. For our second phase – you selected specific materials to meet specific goals. I'd like to talk a bit about your feelings concerning whether the AWARD materials were useful in achieving your goals.
   A) You wanted to continue to use the guided reading books and interactive CD-Roms to increase student comprehension – but you wanted your focus to be more specifically linked to learner objectives of fact versus opinion, analyzing story elements, cause and effect, inferencing main idea/details, author's purpose, and comparing/contrasting. You also set a goal of encouraging students to self-monitor and decide if their reading made sense. *Why did you select these particular materials to teach these specific skills?*

   I'd like for you to now focus on giving me some specific examples of how you were able to use the AWARD resources to meet your goals. Feel free to pull the actual AWARD resources that you have used if they would help you explain.

   *In what ways have you used guided reading books and the interactive CD-Roms to teach specific **comprehension skills**? Was your teaching effective? What made it effective?*

   *In what ways have you used guided reading books and the interactive CD-Roms to teach **word solving strategies**? Was your teaching effective? What made it effective?*

   *In what ways have you used guided reading books and the interactive CD-Roms to teach **self-monitoring of comprehension**? Was your teaching effective? What made it effective?*

   B) You wanted to continue use of the interactive CD-Rom games to increase student motivation and to provide opportunities for independent practice of the comprehension/decoding/self-monitoring skills you were teaching within guided reading. *Why did you select these particular materials to teach these specific skills?*

   In what ways have you continued to use the interactive CD-Rom games to increase student motivation? Has anything changed with your use of these games to increase student motivation since phase one?

   In what want have you used the interactive CD-Rom games to provide independent practice for students? Is it working?

   C) You wanted to continue use of the audio CD and accompanying AWARD Collection small books to increase student fluency focusing specifically on student expression while reading. However, we updated our equipment from a traditional cassette recorder to a karaoke machine. *Why did you select these particular materials to teach these specific*

skills? Did adapting the technology resources improve the learning opportunities provided here for the students? How?

D) You wanted to use the AWARD assessment for whole group instruction to teach the testing genre by exploring steps used by effective test takers. *Why did you select these particular materials to teach these specific skills? Did it work? Were students more engaged – as you hoped?*

E) You wanted to use the AWARD text, The Watchdog Who Wouldn't, with the accompanying AWARD Newspaper Response to Literature to increase motivation for students writing a response to literature and to provide another outlet for students to develop comprehension strategies by thinking about and beyond the text through writing. *Why did you select these particular materials to teach toward these specific learner objectives? Did use of the technology prompt unique literacy learning opportunities for your lower level readers? Would you adapt the way you used this technology in the future?*

3. You opted to use the AWARD interactive games, AWARD assessment, and teacher observation via anecdotal notes to provide evidence of student growth in achieving the literacy goals you set for them. *Have you seen literacy growth in your lower-level learners in terms of their literacy development? What evidence could you provide of this learning?*
4. Lastly, I want to know if you've begun to answer the questions you initially had about AWARD Reading.

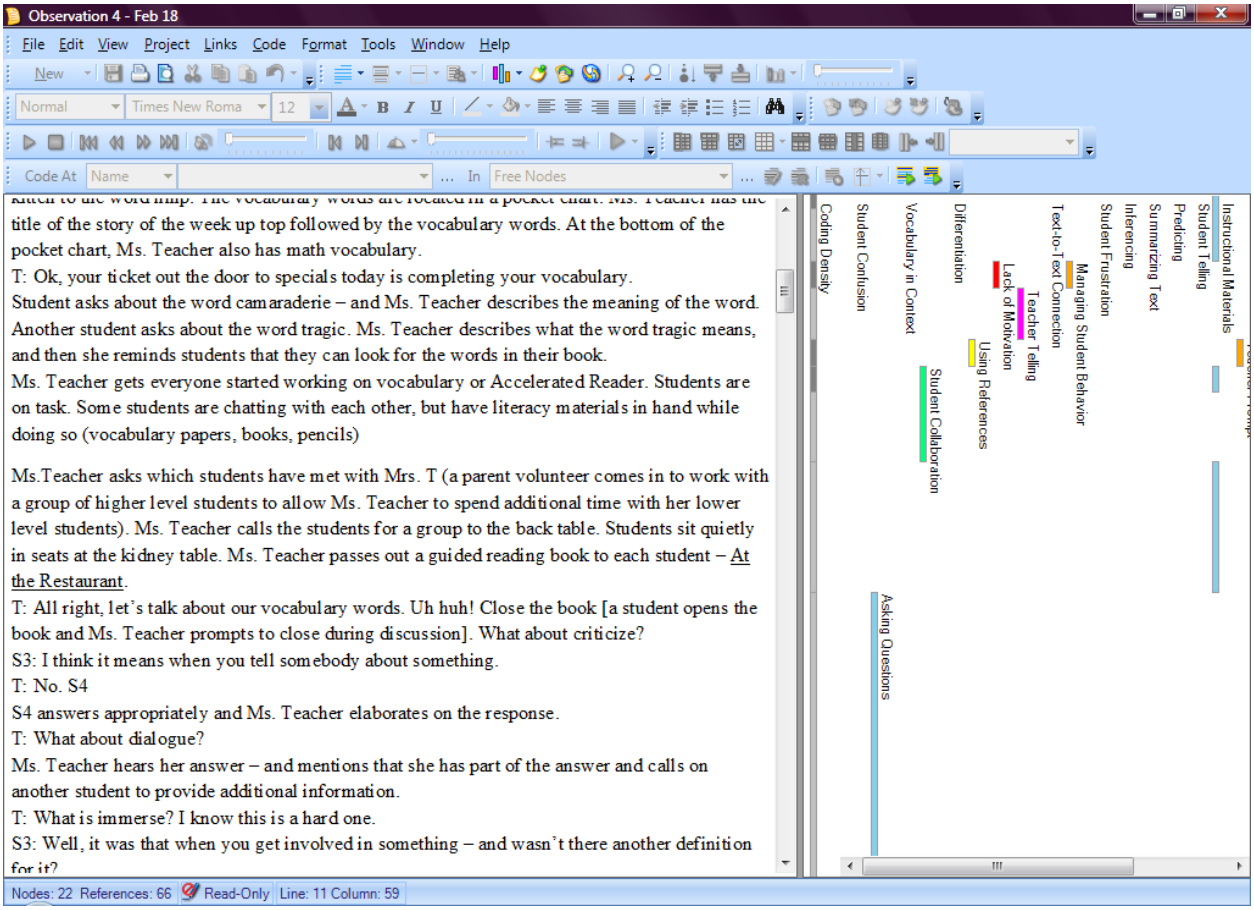
   Will using the AWARD assessment to teach the testing genre increase student engagement?

   Will use of the AWARD resources within everyday literacy instruction increase student comprehension and resultant self-monitoring?

   Will the modifications made to the fluency center make learning opportunities more accessible for students?
5. Overall, throughout our integration of AWARD resources within your literacy instruction - have there been any unanticipated outcomes or effects on your lower-level students' literacy learning through use of AWARD?
6. Did any specific instructional moves on your part or specific classroom conditions contribute to more efficient use of the AWARD materials in meeting your literacy goals?
7. Were there any factors that served as a barrier in your use of the AWARD materials in meeting your literacy goals?
8. How would you advise future teachers wanting to use AWARD Reading materials to provide literacy learning opportunities for lower level readers?

APPENDIX Q

OPEN AND INCIDENT TO INCIDENT CODING IN A QSR NVIVO 8.0 PROJECT


Observation 4 - Feb 18
File Edit View Project Links Code Format Tools Window Help
title of the story of the week up top followed by the vocabulary words. At the bottom of the pocket chart, Ms. Teacher also has math vocabulary.
T: Ok, your ticket out the door to specials today is completing your vocabulary.
Student asks about the word camaraderie – and Ms. Teacher describes the meaning of the word. Another student asks about the word tragic. Ms. Teacher describes what the word tragic means, and then she reminds students that they can look for the words in their book.
Ms. Teacher gets everyone started working on vocabulary or Accelerated Reader. Students are on task. Some students are chatting with each other, but have literacy materials in hand while doing so (vocabulary papers, books, pencils)
Ms.Teacher asks which students have met with Mrs. T (a parent volunteer comes in to work with a group of higher level students to allow Ms. Teacher to spend additional time with her lower level students). Ms. Teacher calls the students for a group to the back table. Students sit quietly in seats at the kidney table. Ms. Teacher passes out a guided reading book to each student – At the Restaurant.
T: All right, let's talk about our vocabulary words. Uh huh! Close the book [a student opens the book and Ms. Teacher prompts to close during discussion]. What about criticize?
S3: I think it means when you tell somebody about something.
T: No. S4
S4 answers appropriately and Ms. Teacher elaborates on the response.
T: What about dialogue?
Ms. Teacher hears her answer – and mentions that she has part of the answer and calls on another student to provide additional information.
T: What is immerse? I know this is a hard one.
S3: Well, it was that when you get involved in something – and wasn't there another definition for it?
Instructional Materials
Student Telling
Predicting
Summarizing Text
Inferencing
Student Frustration
Managing Student Behavior
Text-to-Text Connection
Teacher Telling
Lack of Motivation
Using References
Differentiation
Student Collaboration
Vocabulary in Context
Student Confusion
Coding Density
Asking Questions
Nodes: 22 References: 66 Read-Only Line: 11 Column: 59

APPENDIX R

MICROSOFT WORD TABLES USED TO ASSIGN OPEN CODES TO CATEGORIES

Research Question 1: How are the current instructional resources and approaches used by a third grade teacher supporting or inhibiting the literacy development of striving learners?	
Categories	**Codes**
Teaching Strategies	Questioning, Telling, Prompting, Round robin reading, Using references, Reading centers, Extra instructional time, Differentiation, Positive reinforcement, Redirection
Literary Elements	Author, Illustrator, Title, Fluency, Predicting, Connections
Teacher Pressures	Specific instructional materials, Required school assessments, Testing emphasis, Behavior management
Outside Influences	Teacher passion, Community/Home Influence, Teacher interest, Teacher collaboration
Striving Student Experiences	Confusion, Lack of motivation, Frustration

Research Question 2: What AWARD Reading resources does a third grade teacher select to use in creating opportunities for unique literacy learning to occur for striving learners? Why?	
Categories	**Codes**
Assistive Technology	Access to Text, Learner Objectives, Overall AWARD Goals, Instructional Methods, Audio Sources, Image Sources, Instructional Methods, AWARD as Incentive, Gaining Meaning from Text, Supporting Traditional Print Literacy
Embedded Multimedia	Audio Sources, Image Sources, Learner Objectives, Overall AWARD Goals

Research Question 3: What literacy learning opportunities are being provided to meet the pedagogical goals set by a classroom teacher when using AWARD Reading resources?	
Categories	**Codes**
Thinking Within the Text	Phonics, Sequencing, Vocabulary, Fluency, Student Accountability, Student Ownership
Thinking About the Text	Comprehension Strategies, Grammar and Spelling, Book Features, Student Accountability, Student Ownership
Thinking Beyond the Text	Inferencing, Predicting, Background Knowledge, T:S Connections, Beyond the Text
Extending Representation	Audio Sources, Image Sources, Gaining Meaning from Text, Supporting Traditional Print Literacy
Differentiated Levels of Engagement	Home and School Connections, Learner Reinforcement, AWARD as Incentive, Student Accountability, Student Engagement, Student Excitement, Strategies
Unique Occasions for Expression	Students Asking Questions, Learner Needs, Writing, Evidence of Student Learning, Testing Skills, New Literacy Skills

Research Question 4: Are any barriers to effective integration of AWARD Reading resources for the purposes of providing unique literacy learning opportunities for striving readers observed? How are these barriers addressed?	
Categories	**Codes**
Time Constraints	Access to Technology, Time Constraints, Difficulty with Technology, Student Misuse of Technology, Behavior Management
Modifications and Solutions	Instructional Approaches, Directing Student Attention, Literacy Coaching, Directing Student Attention, Establishing a Purpose for Student Use of Technology, Procedural Teaching, Teacher Enthusiasm, Teacher Modeling, Teacher Questioning, Teacher Thoughts for Future Teaching