Spring 5-12-2017

Digitally Sound? Teachers’ Use of Digital Literacies in Predominantly African American Classrooms in a Low SES Urban School Setting

Ruby Champion

Follow this and additional works at: http://scholarworks.gsu.edu/ece_diss

Recommended Citation
http://scholarworks.gsu.edu/ece_diss/30
ACCEPTANCE

This dissertation, DIGITALLY SOUND? TEACHERS’ USE OF DIGITAL LITERACIES IN PREDOMINANTLY AFRICAN AMERICAN CLASSROOMS IN A LOW SES URBAN SCHOOL SETTING, by RUBY NESBITT CHAMPION, was prepared under the direction of the candidate’s Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education and Human Development, Georgia State University.

The Dissertation Advisory Committee and the student’s Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.

__________________________________              _________________________________
Mona Matthews, Ph.D.                                       Joyce King, Ph.D.
Committee Chair                                             Committee Member

__________________________________              _________________________________
Diane Truscott, Ph.D.                                          Tisha Lewis-Ellison, Ph.D.
Committee Member                                              Committee Member

__________________________________
Date

__________________________________
Lynn Hart, Ph.D.
Chairperson, Department of Early Childhood and Elementary Education

__________________________________
Paul A. Alberto, Ph.D.
Dean
College of Education and Human Development
AUTHOR’S STATEMENT

By presenting this dissertation as a partial fulfillment of the requirements for the advanced degree from Georgia State University, I agree that the library of Georgia State University shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to quote, to copy from, or to publish this dissertation may be granted by the professor under whose direction it was written, by the College of Education and Human Development’s Director of Graduate Studies, or by me. Such quoting, copying, or publishing must be solely for scholarly purposes and will not involve potential financial gain. It is understood that any copying from or publication of this dissertation which involves potential financial gain will not be allowed without my written permission.

__________________________
RUBY LORRAINE NESBITT CHAMPION
NOTICE TO BORROWERS

All dissertations deposited in the Georgia State University library must be used in accordance with the stipulations prescribed by the author in the preceding statement. The author of this dissertation is:

Ruby Lorraine Nesbitt Champion  
Early Childhood and Elementary Education  
College of Education and Human Development  
Georgia State University

The director of this dissertation is:  
Dr. Mona W. Matthews  
Department of Early Childhood and Elementary Education  
College of Education and Human Development  
Georgia State University  
Atlanta, GA 30303
CURRICULUM VITAE

Ruby L. Nesbitt Champion

ADDRESS: 3999 Smithfield Trail
Ellenwood, GA 30194

EDUCATION:

Doctor of Philosophy 2016  Georgia State University
Department of Early Childhood and Elementary Education

Master of Education 2005  Georgia State University
Department of Early Childhood Education

Bachelor of Science 1996  Howard University
Biology

PROFESSIONAL EXPERIENCE:

2009-present  Teacher
J.W. Dobbs Elementary School

2006-2009  Doctoral Fellow
Georgia State University

2002-2006  Teacher/Team Lead
Capitol View Elementary
DIGITALLY SOUND?
TEACHERS’ USE OF DIGITAL LITERACIES IN
PREDOMINANTLY AFRICAN AMERICAN CLASSROOMS
IN A LOW SES URBAN SCHOOL SETTING

by

RUBY L. NESBITT CHAMPION

Under the Direction of Dr. Mona W. Matthews
ABSTRACT

While digital technologies have been recognized as a necessary part of school learning, a digital divide persists between those who have technological access and those without technological access. African American children in impoverished, urban areas may lack the same opportunities to use technology as children in higher socioeconomic status (SES) areas. Research demonstrates that schools may serve as an equalizer in bridging this digital divide. Thus, students who attend schools in low SES communities can benefit from the integration of Digital Literacies (DL) during literacy instruction. This qualitative study examined how teachers in an urban, low SES school struggled to utilize DL in ways that challenged traditional literacy practices. To understand these struggles, this study examined how elementary teachers within this demographic used DL in response to the demands for technology during literacy instruction. Guiding questions included: a) What pedagogical practices do teachers of African American children in urban, low SES classrooms use when integrating digital tools during their literacy instruction? b) How do these teachers’ perceptions of Digital Literacies’s usefulness impact the ways they use Digital Literacies during their literacy instruction? c) What challenges do the teachers face and how do they respond to these challenges as they integrate Digital Literacies in their classrooms? Data collected included observations of teachers during Digital Literacies lessons, individual and focus group interviews, audio-journals entries, curriculum maps, and lesson plans. Data were analyzed using a constant comparative method to allow themes to emerge. Results from this qualitative study revealed that teachers exhibited three levels of Implementation of DL, including Limited, Moderate, and Full Implementation. Examination of teachers’ pedagogical practices using the TPACK rubric and the SAMR model of integration revealed that a teachers’ willingness to implement DL is dependent upon variations in the level
of DL knowledge and intangible variables such as a teacher’s beliefs toward technology, a teachers’ comfort level, and the teacher’s response to challenges that occur. This study’s aimed to provide valuable information to the existing body of research on DL for teachers of African American students.

INDEX WORDS: Digital literacies, Urban education, Literacy, Technology, Teacher efficacy, African American children
DIGITALLY SOUND?
TEACHERS’ USE OF DIGITAL LITERACIES IN
PREDOMINANTLY AFRICAN AMERICAN CLASSROOMS
IN A LOW SES URBAN SCHOOL SETTING

by

Ruby L. Nesbitt Champion

A Dissertation

Presented in Partial Fulfillment of Requirements for the

Degree of

Doctor of Philosophy

in

Early Childhood and Elementary

in

Department of Early Childhood and Elementary Education

in

The College of Education and Human Development

Georgia State University

Atlanta, GA
2016
Copyright by
Ruby L. Nesbitt Champion
2017
DEDICATION

This work is dedicated to my beautiful parents, Rosa and Reuben Nesbitt, my supportive and loving husband Alfonso Champion, and my wonderful daughter, Zoë Champion. Anything is possible when you have the unwaivering love and support of a beautiful family. Thank you for believing in me, even when I didn’t believe in myself.
ACKNOWLEDGMENTS

It has been such a blessing to have been given the opportunity to grow as a scholar. I have grown in ways that I could never have imagined and it has been such a privilege to have had some of the most extraordinary people guide me along the way. First, I would like to thank my husband, Alfonso, for his love and support, and for making such a sacrifice of his time to do things for our family when I could not. I would also like to thank my parents, Rosa and Reuben Nesbitt for ALWAYS loving, nuturing, and supporing me unconditionally. It is because of you, that I am! I would also like to thank my beautiful blossom, Zoë, for always making mommy smile with your hugs and kisses that filled my soul with love.

Lisa and Carla, my GSU “cohort” sisters, I could not have made it through this process without you. You have both been such dynamic role models, personal cheerleaders, and sources of inspiration for me, and I am honored to have taken this journey with both of you. I would also like to also acknowledge my mentors, Dr. Asa Hilliard and Dr. Floretta Thornton-Reid. While they are both no longer here on this Earth in the physical form, they passed on their wisdom and knowledge and helped me to build confidence in myself as a young, African American scholar. Their impact will forever be felt and I thank them for the seeds that they planted within me. I also must thank Dr. Joya Carter Hicks for pushing me to begin this doctoral program in the beginning. Had it not been for you, I would have never even attempted to pursue this endeavor.

To my J.W. Dobbs close friends and colleagues, I thank you for supporting me and pushing me to keep going so that I can continue to make education better for our students. Ashley, Angel, and Bernadine, thank you for embracing me, lifting me up, and believing in me as I had to navigate being a teacher and a student simultaneously! You all supported me on some of my most difficult days and I am forever grateful for your friendship. To the Starbucks
baristas, thank you for knowing my order before I even opened my mouth. To my extended family and best friends, Monique, MoiseKapenda, Tene, Rabi, Patrice, Keona, Erika, Kisha, Mimi and the Norths, I am eternally thankful for all that you have done for me and for my family when we needed your support the most. You all kept me grounded, lended me your hand or shoulder when I needed it, and most importantly, you always told me that I could do it!

I would be remissed if I did not take time to thank the outstanding participants of this study. You willingly allowed me to examine your teaching. Thank you for opening my eyes to your world.

Finally, I would like to extend my most sincere gratitude to my dissertation committee, Dr. Mona Matthews, Dr. Joyce King, Dr. Diane Truscott, and Dr. Tisha Lewis-Ellison. I am beyond fortunate to have had such a dynamic, supportive, knowledgeable and dedicated group of academics to guide me with my work. I want to extend a special thanks to my committee chair, Dr. Mona Matthews. You have been the epitome of excellence and I thank you for providing your continued support and valuable feedback. I will forever be thankful for your tireless work, and the countless late nights and early mornings and weekend “get-aways” that you spent with me to help me to accomplish my goals as a scholar.

While this journey has been one of the most challenging experiences of my life, I am all the more blessed by GOD to have endured! Much love and appreciation.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>INTRODUCTION</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Research Questions</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Rationale</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Theoretical Orientation</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Conclusions</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Limitations</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Overview of the Study</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>REVIEW OF THE LITERATURE</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Background</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Use of Digital Literacies in Today’s Classrooms</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Teachers Use of Informational Computer Technology (ICT)</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Challenges to Teachers’ Use of Digital Literacies</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Using Digital Literacies with African American Students in Urban Low SES Classrooms</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Evaluating Teachers’ Knowledge and Use of Digital Literacies</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Conclusion</td>
<td>42</td>
</tr>
<tr>
<td>3</td>
<td>METHODS</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Background</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Methodology</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Context</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Participants</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>Data Collection</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Teacher Data</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Administrative Team Data</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Data Analysis</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Data Management</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Researcher Role</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Ensuring Trustworthiness</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Ethical Considerations</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Expectations</td>
<td>74</td>
</tr>
<tr>
<td>4</td>
<td>RESULTS</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Administrative Perceptions of the School and the...</td>
<td>iv</td>
</tr>
</tbody>
</table>
Use of DL..............................................................................................................76
Students of Thera and Their Academic Needs:
Administrative Participant Overview ..........................................................77
Selection of Technology for DL: The Selection, Purchase, and Use of Technology for Student Instruction .............81
Teacher Preparation and Professional Development:
Ensuring Teachers Were Prepared to Implement DL During Literacy Lessons.................................................................83
Curricular Goals Related to Implementation of DL at Thera Elementary ............................................................86
Three Levels of DL Implementation Observed During DL Lessons Based on TPACK and SAMR Model ..........94
If This Then That ..........................................................................................138
If I Don’t Teach it Who Will ........................................................................157
Critical Race Theory:
Using the Teachers’ Voice to Create a Narrative of their Experience Teaching Predominantly African American Children ........................................174
Conclusion ........................................................................................................186

5

DISCUSSION ........................................................................................................189
Insights Gained From Critical Race Theory ..................................................194
Instructional Implications .............................................................................199
Research Implications ..................................................................................201
In Conclusion ....................................................................................................202

References ........................................................................................................204
LIST OF TABLES

Table 1. Data Collection Timeline..........................................................49

Table 2. Using Theory as a Methodological
Guide in a Study of Elementary Teachers
use of DL with their AA students: Critical Race
Theory..........................................................58

Table 3. Using Theory as a Methodological
Guide in a Study of Elementary Teachers
use of DL with their AA students: Digital Literacy
Perspectives..........................................................59

Table 4. Using Theory as a Methodological
Guide in a Study of Elementary Teachers
use of DL with their AA students: Sociocultural
Theory..........................................................61

Table 5. Data Analysis Table for Focus Group
Interview of Teacher Participants, Example 1.................................66

Table 6. Data Analysis Table for Focus Group
Interview of Teacher Participants, Example 2.................................67

Table 7. Connection between TPACK Scores
and SAMR Levels.........................................................141
LIST OF FIGURES

Figure 1. Theoretical Frameworks and Conceptual Framework used to examine the teachers’ pedagogical practices during Digital Literacies……………………………………………………….14

Figure 2. TPACK Framework………………………………………………………………………39

Figure 3. TPACK Technology Integration Rubric…………………………………………………41

Figure 4. The SAMR Model …………………………………………………………………………42

Figure 5. Mrs. Bryson’s Scored TPACK Rubric
Observed Lesson 12.10.15 ………………………………………………………………………102

Figure 6. Page 92 from Code.org Lesson Planner ………………………………………………112

Figure 7. Page 93 from Code.org Lesson Planner ………………………………………………113

Figure 8. Mrs. Carter’s scored TPACK Rubric
from Observed Lesson …………………………………………………………………………117

Figure 9. Ms. Olson’s Scored TPACK Rubric
from Observed Lesson …………………………………………………………………………135

Figure 10. Digital Literacies Pedagogical
Algorithms different combinations of variables that impact teachers implementation and frequency of DL use ………………………………………………………………………143
ABBREVIATIONS

CAEP—Council for the Accreditation of Educator Preparation

CCSS—Common Core State Standards

CRT—Critical Race Theory

DL—Digital Literacies

ICTs—Information and Communications Technology

MLP—Multiple Literacies Perspective

NCLB—No Child Left Behind

NLS—New Literacy Studies

NLG—New London Group

SAMR—Substitution, Augmentation, Modification, and Redefinition Model

SES—Socioeconomic Status

STEM—Science Technology Engineering and Mathematics

TPACK—Technological Pedagogical Content Knowledge
1 THE PROBLEM AND RATIONALE FOR THE STUDY

Technology has invaded our lives through the use of computers, iPod, iPads, eBooks, video games, and cell phones. These significant technological developments have altered the landscape of communication by allowing individuals to communicate instantly and globally, and thus, have become integral to the way we learn, communicate, and interact with one another, and exist in a global society. Newer technologies, such as digital technologies, have expanded the communication landscape even more. Digital technologies enable individuals to accomplish tasks with small hand-held devices that they once could perform only on a desktop computer. With digital technologies one can generate, record, process, receive, transmit, and display information. These advances have led to significant developments including the Internet, texting, eBooks, digital apps, and games for cell phones, and hand-held devices, as well as a multitude of other new technological advances. Furthermore, technologies once used originally for communication, and entertainment purposes now are used to accomplish everyday practices as menial as making simple phone calls and data entry to more complex tasks of developing intricate platforms and serving as the foundations for communication business infrastructures.

Further, these newer technologies transmit information by using multiple symbol systems, (visual, auditory, and gestural) where users easily switch from using one mode of communication to another (Kist, 2005). As a consequence, newer technologies have created new forms of communication ranging from relatively simple communications such as emails and instant messaging to more complex forms such as social networking software, interactive video games, and multimedia authoring tools (Hsi, 2007; Littlejohn, Beetham & McGill, 2012). These significant technological developments, evident in the landscape of communication via the
Internet; texting; computers; and cell phones, allow us to communicate both instantly and globally with diverse groups of people.

These changes have impacted not only the ways we communicate and perform everyday tasks, but they have led to calls for changes in school curricula. For children who live in the 21st century to be successful in this technology-infused society, they need to learn the new operational systems required to access these changing forms of how people communicate in their daily lives for work, civic, and personal practices (Cope & Kalantzis, 2000). Most notably, these changes in communication have expanded conceptions of literacy. Traditional conceptions of literacy as processes involving printed text have given way to expanded definitions that encompass multiple ways of reading and writing through digital literacies (Alvermann, 2002; Lankshear & Knobel, 2003; Levy, 2009; Merchant, 2008). Specifically, digital literacies include the capabilities and digital skills required to thrive using a multitude of digital forms of information and communication in and beyond education (Littlejohn, Beetham, & McGill, 2012).

While changes in the use of digital devices outside of the classroom and in society are widespread, the use of digital technologies is not equally distributed. Typically, the extent to which communities, families, and children engage in the use of new technologies depends on multiple factors such as, economic resources, types of employment, and levels of education (Snyder & Prinsloo, 2007). Therefore, children who live in impoverished, low socioeconomic status (SES) areas often do not have the same access to the newer technologies as their more advantaged peers, and thus do not have the opportunities to develop the technological skills and knowledge. In these situations, exposure to digital technologies in schools can be a critical equalizer (Adeyemon, 2009). However, too often the inequities that exist in access to digital
technologies extend to schools. Research suggests that even when available, digital technologies may not be utilized by educators in ways that help children learn the new operational and cultural knowledge required to access the changing forms of how people communicate at work, in their communities, and in their homes (Cope & Kalantzis, 2000).

While many recognize digital technologies as a necessary part of school learning, a digital divide persists between those with technological access and those without such access (Henderson & Honan, 2008). This research suggests that African American children who live in impoverished urban areas do not receive the same opportunities to use technology within classroom settings as students who attend schools in higher SES areas. Such disparities prevent the children within these schools from acquiring the digital literacy competencies necessary to be successful in today’s hyper-technological 21st-century society (Gormley, & McDermott, 2014).

Given that for low SES African American children schools may provide the best opportunity for them to gain the knowledge needed to function in a technologically-driven society, it is critical to understand how their teachers use these technologies. Furthermore, because the use of these tools has had the most substantive influence on conceptions of literacy, it is important to understand how teachers use these tools during literacy instruction.

Research Questions

The specific questions that guided this investigation included:

- What pedagogical practices do teachers of African American children in urban low SES classrooms use when integrating digital tools during their literacy instruction?
- How do these teachers’ perceptions of digital literacies’ usefulness impact the ways they use digital literacies during their literacy instruction?
• What challenges do the teachers face and how do they respond to these challenges as they integrate digital literacies in their classrooms?

The Evolution of Literacy in Education Within the 21st Century

This section provides further context for the study. First, it discusses the evolution of digital literacies from traditional literacy practices and the movement towards the use of multimodal, digital tools or technologically-based platforms during literacy instruction. Then, it defines terms related to this evolution.

The literature on digital literacies includes research into the ways we have come to conceptualize literacy in the context of the influence of technology during the 21st century. The new millennium ushered in an evolution of literacy and shifted the way in which we understand and accept what constitutes literacy. Today’s conception of literacy continues to develop due to the emergence of an array of technical tools that have altered how we communicate. These changes challenge the narrowly held view that reading and writing within printed text is the primary method to acquire literacy skills. To understand why it is important to examine these changes within an educational context, one must understand how these changes developed. To that end, this section offers a brief description of the emergence of digital literacies from traditional literacy practices along with the movement towards the use of multimodal, digital tools, and technological platforms during literacy instruction.

This movement towards an entirely new way of thinking about literacy was ushered in through the extensive work of the New London Group (NLG), a collaborative group of literary scholars and researchers. They referred to this new movement as New Literacy Studies. In their seminal piece, A Pedagogy of Multiliteracies: Designing Social Futures, (Cazden, et al., 1996), The NLG introduced the construct of multiliteracies in response to the changing views of
literacy. By doing so, they challenged the limitations of a traditional print-based approach to literacy while emphasizing the multiple linguistic and cultural differences that exist in our society (Cazden, et al., 1996). Their article marked a shift from the conceptualization of literacy as a stagnant, linear, psychologically cognitive function; what Street characterized as an autonomous model of literacy; to a more socially constructed view of literacy known as the ideological model of literacy (Street, 1995).

Many researchers welcomed this more socially constructed view of literacy (Alvermann, 2002; Alvermann, Hinchman, Moore, Phelps, & Waff, 1998; Borawski, 2009; Cazden, et al., 1996; Gallego & Hollingsworth, 2000; & Kress, 1997, 2003. The term multiliteracies has come to symbolize this broader scope of literacy (Street, 2000). Kress (2000) offers an explanation of multiliteracies in the following statement:

*It is a term which attempts to capture and recognize the multiple forms, the multiple sites and the multiple purposes of communication, to show them in the social/cultural environments, link them to the demands of the society and its economy and to show them as the effects of the agentive, creative, transformative, designing action of individuals communicating in their social lives.*

*(p. 142)*

Street defines (1997) literacy practices that occur within these social/cultural environments as the "particularity of cultural practices with which uses of reading and or writing are associated in given contexts" (p.50). Furthermore, literacy events are acts situated in the relationships and communicative exchanges between people that involve reading, writing and speaking (Barton, 1994; Bloome & Egan-Roberson, 1993; Moje, Dillon, & O’Brien, 2000;
Scribner & Cole, 1981). Given that what constitutes literacy practices is influenced by individuals’ social and cultural purposes, these practices remain in a constant state of flux (Cervetti, Damico, & Pearson, 2006.)

In addition to expanding what constitutes literacy practices, the vast technological changes have altered the tools used to mediate literacy learning (Alvermann, Hagood, & Williams, 2001; Carrington & Marsh, 2005; Tyner, 1998). As ever-increasing technological advances continue to develop, shifts in the ways in which we communicate have become more evident and often vary across cultures and social groups (Cope & Kalantzis, 2000; Kist, 2005; Kress, 2003). We no longer rely solely on books and printed language to gain access to knowledge. Exposure to computers, the Internet, cell phones and an array of other technological tools has allowed us to use what Lankshear and Knobel (2003) described as new informational and technological literacies, (ICTs), that produce, distribute, exchange and receive texts through electronic means.

Further, the reconceptualization of what defines literacy and the changes in literacy practices brought on by new informational and technological literacies, have raised questions about what counts as literacy in schools. The technological revolution has changed dramatically the ways in which we live, work, and communicate. As a result, today learners must be able to function in multiple communities across multimodal forms of communication to make sense of the world around them (Cope & Kalantzis, 2000; Gee, 2003). Literacy events that occur outside of the classroom are informed by the social, cultural, historical, and institutional contexts in which those events occur (Barton, 1994; Scribner & Cole, 1981; Moje, Dillon, & O’Brien, 2000). These events result in the use of multiple meaning making systems, via print and non-print (Perry, 2006).
A Distinction of Terms: Multiliteracies, Multiple Literacies, and Digital Literacies

In the current literature, multiple terms exist to describe the changes in conceptions of literacy wrought by the influence of technology. Although each offers a slight but important difference, all represent a new way of looking at literacy and reference new forms of literacy (Lankshear, & Knobel, 2003). Ambiguity across the terms describing new conceptions of literacy presents one challenging aspect of examining teachers’ use of digital literacies. Hence, for clarity, this section defines three commonly used terms multiliteracies, multiple literacies, and digital literacies, and concludes with the definition of digital literacies adopted for this study.

**Multiliteracies.** The NLG used multiliteracies to represent an ideology within the field of New Literacies (Gee, 1996) that supports new dimensions of literacy development and pedagogy (Cervetti, Damico, & Pearson, 2006). Multiliteracy builds on two critical aspects of these new dimensions of literacy (Green, 1988; Cope & Kalantzis, 2000). One, multiliteracy brings attention to learners’ cultural and linguistic diversity by highlighting practices in which they participate in the economic, civic, and personal aspects of their lives. These practices are created in response to trends in the economic, civic, and personal aspects of their lives and significantly impact meaning making and literacy directly (Lo Bianco, 2000).

The second aspect moves beyond traditional print-based literacy and encompasses the multiplicity of media and modes used daily by learners both for purposes of formal schooling as well as for meaningful exchanges with others in their personal lives. Thus, the term multiliteracies accounts for the multiple modes of communication, which have evolved due to the technological advances, and the resulting expanded uses and functions of text (Gee, 1996; Lankshear & Knobel, 2003).
**Digital literacies.** What constitutes text is one of the most fundamental shifts in the field of NLS. *Digital literacies* (DL) reflects connections between former print based uses of text with the newer representations of text used within a digital landscape. *Text*, a term traditionally synonymous with print, now refers to the variety of forms generated from the technological advances in communication. *DL* (Lankshear & Knobel, 2003; Merchant, 2008) represents the ways of making meaning resulting from the intersection of reading and new technologies.

This view of DL aligns with Borawski’s (2009) definition. He explained that digital literacy involves "using digital technology, communication tools, and/or networks to access, manage, integrate, evaluate, and create information to function in a knowledge society" (Information and Communications Technology (ICT Literacy Panel May 2002). In Digital Transformation: A Framework for ICT literacy, in [www.ets.org/Media/Tests/Information_and_Communication_Technology_Literacy/ictreport.pdf](www.ets.org/Media/Tests/Information_and_Communication_Technology_Literacy/ictreport.pdf)

Guy Merchant (2008) added to the definition of DL. He offered that digital literacies is “reading and writing *with* new technologies—technologies which involve the semiotics of written representation” (Merchant, p. 39). Merchant noted that the use of digital literacies involves combining on-screen texts with writing and other modes of representation.

According to research (Levy, 2009), even young children use DL and begin their formal education with a wide variety of experience with multi-modal texts (Levy, 2009). Alvermann (2002) examined how adolescents engage in new literacies outside of schools, yet schools ignore such use. She noted that we are a society in the midst of a huge technological transformation. Finally, she posed the following question, "*How can schools and educators respond to these changes in a meaningful way?*"
The definition of DL I used reflected this evolution of literacy and guided my exploration of how the teachers in my study used digital media during literacy instruction. Specifically, for this study, Digital Literacies refers to the practice of using a variety of digitally-based technological tools to understand and synthesize the meaning of information presented in multimodal texts. These texts include, but not limited to, the information presented in print, audio, symbolic, visual and interactional forms used to communicate. Hence, DL serves as the intersection of traditional literacy practices with new representations of literacy.

Theoretical Framework

This section presents the theoretical assumptions that framed this investigation. Each theory offered a unique contribution to the study while collectively they provided a framework through which I examined how teachers of African American students in urban, low SES settings used digital literacies during their literacy instruction.

Sociocultural Theory

Sociocultural theory provided the overarching theoretical frame for this study. From a sociocultural stance, learning is a social phenomenon (Rogoff, 2003; Vygotsky, 1978). Werstch (1991) emphasizes three themes in a Vygotskian approach to learning. One, to understand current behavior one must understand the origins and transitions of that behavior. Two, learning is conceived as a social construct, and three, tools mediate humans interactions with the world and with others (Werstch, p. 24-27). Thus a Vygotskyian sociocultural approach situates learning within historical, social, and cultural contexts and that culturally ascribed tools mediate the interactions that occur within those contexts. Digital tools served as the tool of interest in this study. A lot of what children know about their use of these tools stems from observing and interacting with others, such as their parents, siblings, and friends' use these technologies for a
variety of purposes, including social communication, social play, and personal entertainment. Therefore, a sociocultural perspective offered a way to examine how the teachers used digital literacies within a highly social collaborative learning environment, their classrooms. Specifically, it offered a view of teaching as occurring within a cultural community, where children within that community used digital tools to mediate their interactions during learning.

For the study described herein, a sociocultural perspective brought attention to the teachers' views of digital literacies, their background and reasons for using digital literacies, and the ways they used digital literacies with their students during literacy instruction. Furthermore, it guided my understanding of the relevant social, cultural, and historical elements that influenced the teachers' use of digital literacies with their African American students. To gain such information, I examined how the teacher participants used digital literacies and how they situated that use within the highly social, collaborative learning environment of their classrooms. Further, a sociocultural lens brought attention to digital tools that mediated student learning.

**Critical Race Theory**

While a sociocultural theory views teaching as a social construct that occurs via interactions with others, Critical Race Theory (CRT) attends to the experiences unique to African Americans who have lived for centuries as a culture outside of the predominantly White American context. According to CRT, as a cultural group, African Americans have been told systematically they are inferior to the White middle-class and incapable of high academic achievement (Ladson-Billings, 2000). This sentiment is even more pronounced for children in urban low SES settings. Adding to this view of inadequacy, African American students too often experience education in ways that do not acknowledge the relevance of their culture's norms and practices. Instead, educators often subject African American children to a pedagogy that
proliferates the status quo, thereby encouraging hegemony. Often such instruction mirrors what has already been taught or includes content deemed acceptable in societal norms and practices for the culturally dominant group of individuals in the United States (King, 2005). Angela Valenzuela (1999) in her study of U.S.-Mexican American adolescents referred to such detrimental experiences as a ‘subtractive process.’ She described how students of color, especially African Americans and Latinos, are subjected to a ‘subtractive process’ wherein their social and cultural resources are discounted, i.e. subtracted, ultimately leaving them susceptible to academic failure.

Given the White, middle-class biases that exist in the US schooling process, CRT provided a lens to understand school learning and the academic achievement of minority students (Nasir & Hand, 2006), whose reality often exists outside the realm of the dominant White culture (Ladson-Billings, 1998). Moreover, for this study, CRT supported the view that African American children possess a rich bank of knowledge they bring with them when they enter the classroom. Louis Moll (2005) referred to this rich bank of cultural knowledge as their funds of knowledge, and although not considered formalized school knowledge in reading, writing or language skills; it is knowledge that can be used to help students attain academic success.

Also, I used the lens of CRT to examine teachers’ responses toward a student population traditionally identified as high-risk and academically deficient. Further, CRT enabled me to gain insight into how teachers of African American students situated themselves in their use of digital literacies in their efforts to assist their students to become academically successful. At the same time, CRT helped me gain a deeper understanding of how, cultural practices unique to African American children educated within the United States’ Eurocentrically-biased educational system where reproduction of the societal norms persists, were acknowledged during the use of digital
literacy. Furthermore, a CRT provided a lens through which I examined teachers' interpretations of their students' differences between the practices that occur at home and school (Delpit, 1995).

Another construct that CRT provides for my study is its central tenet that includes ‘the recognition of the experiential knowledge of people of color’ (Matsuda et al., 1993, p.6). Adrienne Dixson and Celia Rousseau (2006) assert that this recognition forms the basis for the construct of "voice." Specifically, they define voice as "the assertion and acknowledgment of the importance of the personal and community experiences of people of colour as sources of knowledge”) and serves as a frame within which to document the experiences of discrimination and inequity experienced by people of color. For example, Dixson and Rousseau (2006) used this construct of ‘voice’ to describe students of color’s perceptions and experiences within the k-12 and university levels of education. This research revealed a variety of systemic inequities the students experienced that ranged from lowered teacher expectations at the micro-level to institutional racism within school-wide programs at the macro-level. Thus, examining the ‘voice’ of people of color offers a means to affirm the relevance and importance of their personal experiences, thereby deepening our understanding of their educational experiences. Therefore, I applied the construct of voice from a CRT perspective, to examine the words “voiced” by the African American female participants in this study. I used their words to describe the teachers' experiences, both past, and present to gain a deeper understanding of the teachers’ implementation of Digital Literacies with their African American students. Examining the participants’ discussion of their experiences through this frame of “voice,” provided a way to use the broader theory of CRT to consider issues of discrimination and inequity that might have influenced their implementation of DL within the confines of Thera Elementary. Furthermore,
such an analysis could reveal the existence of a discourse surrounding the choices they made regarding DL implementation in this specific community.

**Multiple Literacy and Digital Literacies**

A Multiple Literacies perspective (MLP) served as a conceptual framework. This perspective guided my examination of how teachers used digital literacies during their Literacy instruction. This perspective defines digital literacies as the multiple ways to make meaning through reading and writing situated within the new technologies. As a result, literacy is comprised of the transfer of information from traditional print, and involves “using digital technology, communication tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society” (Information and Communications Technology (ICT) Literacy Panel, 2002). Additionally, because the use of digital literacies incorporates a variety of communication modalities, an MLP guided my examination of digital literacies (Tan & Guo, 2010; Tyner, 1998). Along with supporting a broader view of what constitutes literacy, an MLP complimented a sociocultural perspective. First, it accounted for the highly social use of digital tools at home, at school, for leisure, and in the community (Snyder & Prinsloo, 2007). Second, it offered a lens through which I examined the unique nature of the tools used during these social practices.

Figure 1 illustrates the three-part framework comprised of the two theoretical frames, Sociocultural and CRT, and the conceptual frame of ML/DL that helped me understand the teachers' pedagogical practices when using Digital Literacies with their predominantly African American students in a low SES, urban school setting.
Figure 1. Theoretical Frameworks and Conceptual Framework used to examine the teachers’ pedagogical practices during Digital Literacies.

**Conclusion**

In the same way as Gloria Ladson-Billings and Asa G. Hilliard recognized, acknowledged, and affirmed the rich African American culture, I hope my explorations into digital literacies, "help scholars and practitioners learn *from* and not merely *about* African American students" (Ladson-Billings, 2000, p.76). Furthermore, I hope that my examination of how teachers of African American students in a low SES urban school used digital literacies during literacy instruction provides useful information to others who seek to prepare students for the technological demands of the 21st century.

**Limitations**

All investigations carry limitations. The limitations of this study included the following. The study was conducted in one school and with a small number of teacher participants. Therefore the findings cannot represent adequately how teachers of African American children in other low SES urban schools use DL during their literacy instruction. Even though the study was
limited to one school in an urban low SES area and a small number of participants, it does offer an in-depth look at how these teachers in this school used digital literacies with their students during their literacy instruction. Another limitation is that I work in the same school as the teachers, and the teachers know I often use DL in my classroom. Therefore my role as a colleague who frequently uses DL may have influenced how they responded to me during the study. To minimize this influence, I continued to remind the teachers that I was not there to evaluate their use of DL rather I was interested in how teachers of African American children in low SES urban areas used DL during their literacy instruction. Finally, the study is limited by its short duration. The study took place over 16 weeks and the teachers’ use of DL revealed during this period may not represent their use throughout the school year. Even though the time was limited, I gathered data from multiple sources; this allowed me to analyze more deeply what occurred during the study period and to answer the research questions posed for the study.

**Overview of the Study**

This study explored how teachers of African American children in urban low SES classrooms used digital literacies during their literacy instruction. Specifically, this study examined how elementary teachers used digital literacies during literacy instruction with children who traditionally have had limited exposure to the use of technology. It looked at the pedagogical practices used by the teachers to better understand their decision to use digital literacies in their classrooms. Also, this study examined the teachers’ sense of efficacy in using digital literacies, via computer (internet blogs and websites), iPod/iPad applications and games, and interactive boards (Promethean Boards and Tables) during literacy instruction. Finally, this study examined factors that challenged the teachers’ use digital literacies with their students.
2 REVIEW OF THE LITERATURE

To understand how digital literacies are used in predominantly African American, low SES classroom, I conducted a review of research literature published between 1998 and the present. I limited the review to these years because this range represents the scope of New Literacies Studies (NLS) within the literature. My review began with an extensive search of databases at EBSCO Host including ERIC, and Academic Search Complete to cull information on digital literacies and on how teachers in urban classrooms use digital literacies. The search terms used for this literature included digital literacies and African American Children, Multiple Literacies, Young Children and digital literacies in Schools, and digital literacies in Schools with Students with Low Socioeconomic Status. The review also includes an examination of references from book chapters, related to the topic of new literacies, digital literacies and Multiliteracies, young African American literacy development, and African American education in urban schools written by prominent scholars. In addition, I performed an extensive examination of references from seminal articles.

The information garnered from this literature review provided the context for understanding the importance of implementing digital literacies during literacy instruction and their current use by teachers. That information guided my research and provided insight about how teachers of predominantly African American children in urban low SES schools used digital literacies during literacy instruction. I begin with a brief review of the use of digital literacies in today’s classrooms and the challenges that arise during its implementation. Next, I share a brief review of research that describes challenges teachers face with technology. I follow this with a brief presentation of research related to the use of digital literacies in low SES urban classrooms of African American children and the review concludes with a review of the tools I used to
evaluate teachers’ technology use. The chapter ends with a summary of what I learned from the relevant research examined and the gaps that exist in that research.

**Use of Digital Literacies in Today's Classrooms**

Current trends in literacy education call for children to use more technology and require schools to integrate these technologies in ways that prepare them for the demands of 21st Century jobs. Even instructional standards acknowledge the need to incorporate technology into the classroom. For example, the Common Core State Standards Curriculum (CCSS) contains references to digital literacies with phrases such as *using computers*, *critically reading webpages*, and *understanding how to view digital images*. These standards point toward the relevance of digital technologies in everyday communication skills and processes. Moreover, such standards bring focus to the expanded construct of text as an integral part of digital literacies developed out of the burgeoning technological revolution of the 21st Century. Given these pressures for teachers to prepare students for the changes wrought by this revolution, the next section reviews research related to teachers’ use of digital technologies.

**Teachers’ Use of Information Computer Technology (ICT) for Digital Literacies**

Hutchison, Beschorner, and Schmidt-Crawford (2012) studied how a fourth-grade teacher used iPads with her 23 students. Specifically, the researchers conducted an exploratory study to investigate how the teacher, who had never used iPads before, integrated them into her literacy instruction. Her goal was to continue with her print-based literacy goals but to use the iPad to enhance her lessons. The researchers observed the teacher every day for three weeks. Data collected included classroom observations and interviews with the teacher and the students. Although the teacher had not used iPads before with her students, she quickly developed instructional experiences that incorporated apps (such as games and eBooks) available through
the iPads. Also the teacher created learning opportunities using the iPads that helped her students learn literacy skills associated with 21st-century technologies. The features of the digital texts allowed the students to explore additional content-related information. For example, they used the dictionary feature to access definitions, and the sticky note feature offered a way for the students to communicate with each other about the texts they were reading. Students used their prior knowledge of digital literacy tools to help them use the iPad without their teacher’s instruction. Moreover, her students demonstrated high levels of engagement. The researchers concluded that this study supports the need for teachers to be intentional about integrating digital technologies into their literacy instruction and that teachers can meet their print-based literacy goals as they simultaneously introduce their students to 21st-Century technologies.

Gormley and McDermott (2013) conducted a case study that examined how teachers used digital literacies in an after-school program with students who struggled with reading and writing. Specifically, the researchers examined how teachers structured their lessons to integrate Digital literacies to enhance the students’ reading fluency, reading comprehension, and composing. The 12 participants participated in this program as a part of their final practicum for their master’s degree in either literacy education or literacy and special education. The lessons the teachers planned included an opening, which included a challenging question related to the instructional theme. The opening was followed by a focus on the students’ fluency. During this part of the lesson, the students recorded their reading on the Audacity website. In the next part of the lessons, the students created graphic panels using the website Kerpoorf. Gormley and McDermott found that even children with difficulties with reading and writing benefitted greatly from the teachers’ use of DL throughout their lessons. Also, the teachers indicated that thinking and planning the lessons provided opportunities to learn how to integrate these literacies into
their teaching. The use of digital literacies emphasized the social nature of learning with almost all children collaborating as they read, composed, and searched the Internet for information.

Sue Halsey’s (2007) describes in her self-study how her young primary-grade students responded to her use of newer technologies within her literacy instruction. Situated in New Zealand, this study focused on Halsey’s use of blogs, online publishing, digital cameras, and the Internet in tandem with notebooks for writing. She observed the children as they worked together and used Internet technologies via multimodal devices to gain a real audience for their writing. Halsey’s research revealed that her students’ use of a take-home digital camera enabled the students to gain a deeper understanding of their classmates’ lives outside of school. The digital camera and a stuffed animal, Timmy the Tiger, were sent home with each student to document the student’s afterschool experiences from the perspective of the stuffed animal. The children used traditional pen and paper to write their experiences down at home and later transferred that information to the class blog. Halsey noted that as the children transferred their writings to the blogs, they eagerly participated in this literacy event because they were writing for a global audience. She concluded that the use of blogs and the website as online tools appeared to evoke a deeper desire in the students to produce quality work because they knew a real audience would read their work. Furthermore, using the affordances of these newer technologies enabled her to build on the children’s interests. Plus, they offered choice in which books to review for podcasts. Building on the students’ interest and offering choice appeared to enhance the students’ engagement in the literacy events. This increased engagement, she believed, stimulated her students’ motivation to read. Sharing their views about the books with others via their podcasts and webpage led to students writing more. She concluded that integrating the newer technologies within her literacy instruction in these ways resulted in her
students thinking more deeply about components of the books such as the characters, illustrations, and story elements.

Rantala and Korhonen (2008) examined during one spring semester how a Finish teacher integrated digital literacies into her classroom literacy curriculum. Their ethnographic case study examined the teacher and her 18 eleven- to twelve- year old fifth-graders. During the study, the researchers’ noted a variety of ways the teacher used DL with her students. Their observations occurred during the 3-hour media workshop that met once a week in which the students used Kar2ouche, a commercial multimedia, authoring tool to create storyboards. This software offers elements (images, text, and sound) to create a movie as a form of storytelling using text and interactive images. The students first created written manuscripts and then transferred their ideas using Kar2ouche into movie form using images, text, and sound to deliver their storylines. During the study, the researchers’ noted a variety of ways the teacher used DL with her students. The students first created written manuscripts and then transferred their ideas using Kar2ouche into movie form using images, text, and sound to deliver their storylines. Even though the teachers faced challenges in their use of the digital technology, Rantala and Korhonen found the students’ use of digital literacies created a space where the students could negotiate their knowledge of digital media production with uses that allowed them to create and share meaning within a school space. Moreover, when the teacher meshed historically traditional concepts of knowledge about print and communication with the use of digital tools, the students developed deeper understandings. They noted the teacher needed to continue to create a path of learning where new and old literacies are not viewed as competitors, but rather as tools used to enhance student learning.
Burnett, Dickenson, and Merchant (2006), studied the influence of teachers' use of technology in the school curriculum and the practical implications of using new technologies to transform literacy instruction. This qualitative case study included two classrooms in English primary schools - one in a rural area and the other in an urban area. Data collected included student emails, observations of students' onscreen activity during email writing time, semi-structured small-group student interviews, the children's digital texts, and teacher interviews. Once the classrooms were identified, the researchers randomly selected six students, three boys, and three girls, ages 8 to 10, from each classroom. They partnered each child with another student of the same sex at the other primary school. Children used email to introduce themselves and to get to know one another and attached digital photographs to their emails. The children worked together to create a joint PowerPoint presentation and met twice face-to-face to discuss their ideas and the structure for their presentation. Analysis of the data revealed that the teachers' use of technology and digital literacies transformed the way their students wrote as well as impacted the types of texts they produced in three ways. First, the constant interplay between reading and writing and the need to negotiate the letters on the device seemed to encourage the children to edit and revise their work. The young writers seemed to pay closer attention to the accuracy of their spelling and the layout of the text on the screen. Second, particular features of the text within the digital media seemed to influence the verbal and visual elements of the students' work. The presence of pictures, the location of the pictures on the screen, and the process of attaching pictures to emails added meaning to the students' communications. Finally, the social aspect of using the new technology established a collaborative relationship between the partnered students. For example, students constantly asked each other "How did you do that (referring to a computer function)?" The use of emails to create digital texts encouraged the
children to communicate with others outside of their immediate sphere and provided tangible and
authentic purposes for writing and exchanging information with others. Moreover, the students
seemed motivated by the meaningful purpose for communication that was free from the
constraints of conventional classroom practices and illustrated they could use a wide range of
digital texts in meaningful ways.

Tierney, Bond, and Bresler (2006) examined how a group of 20 high school students
responded to their teachers’ use of digital technologies. The teachers embedded digital literacies
into their literacy curriculum. Their students were White Appalachian, African American, and
Asian American who lived in an economically challenged area. The researchers followed the 20
students in the program for ten years beginning in high school, through college, and during their
first jobs. They were interested in how the students had been impacted by the multilayered and
multimedia approach they experienced in high school. The students in this study acknowledged
that the multilayered nature afforded by digital technologies and multimodal representations
provided different means by which they could share ideas, contribute knowledge, and explore
their world. This is evident from the following statement describing the students' response to the
technologies once they graduated high school and in college. "…[The] graphic capabilities of
technology afforded them a means of developing and testing theories or to explore, reflect upon,
and expand their identities," (Tierney, Bond, & Brelser, 2006, p.364). The researchers
maintained such responses supports the importance for teachers to use digital modes of
technology for exploration, for communication, and for the synthesis of new information to
equip them with the skills needed to interact in multimodal exchanges of information used both
inside and outside of school required in this technologically diverse 21st century.
This body of research on the use of DL in today’s classrooms provides support for teachers to be intentional about integrating DL into literacy instruction. Appropriately planned lessons mesh the use of new and old literacy tools. Even though the use of DL appears to benefit all students, it especially benefits children with learning difficulties.

**Challenges to Teachers’ Use of Digital Literacies**

Teachers face multiple challenges when implementing digital literacies within their classrooms. Some of these exist within the changes brought on by new technologies, such as the meaning of what constitutes digital technologies. Other challenges exist within the teachers, such as their perceptions about the use of technology in the classroom or their knowledge of how to effectively use DL with their students. Other challenges result from external pressures, such as testing and curriculum demands. This section provides relevant research that addresses and explores the challenges of implementing digital literacies.

**New Definitions of Text**

David O’Brien and Cassandra Scharber's (2008) exploration of digital literacies revealed that problematic potholes and possibilities exist when teachers attempt to use digital literacies. They found that the realities of schools curriculum standards and constraining district policies often impede teachers’ use of technologies that support teaching and learning. They noted that even the term *digital literacies* could be a challenge to their use within schools because the term encompasses a wide variety of concepts and yields many results when searched including *digital media, new technologies, new literacies* or *New Literacy Studies* (NLS). Further, O'Brien and Scharber acknowledged the wide range of what constitutes digital literacies when they noted it could refer to products produced by digitally literate people, including, but not limited to, blogs;
wikis; and podcasts as well as to activities such as digital storytelling, social networking, and webpage creation.

What constitutes text presents other challenges. While text traditionally refers to written print on the printed page, it is represented in myriad ways when used within a digitalized apparatus such as a computer or an iPad. From the digital literacies perspective, text embodies more than just letters written on a printed page or a computer screen (Kress, G., & Jewitt, C., 2003). Text in these newer formats possess the capability of being a symbol that can immediately transform at the touch and by doing so opens up a whole new meaning for the reader. As a result, digital literacies has opened the world to new forms of text used for communication on multimodal devices that require an assortment of skills currently not a central focus in today’s classrooms (Kress, 1998; Kress, 2003. Thus, literacy scholars maintain that schools must consider that the modes of communication are just as important as the reasons for communicating (Kress, 2000).

Further, the prevalence of students’ use of these technologies outside of school serves as another challenge that requires teachers to be aware of and to incorporate these new forms of text within their school curriculum. Many researchers argue that students’ outside-of-school use of multimodal devices has made students familiar with their use and teachers need to use this familiarity to bridge the chasm that exists between outside-of-school-use and their use inside of a school. In spite of the pervasive use of these technologies outside of school, many teachers are yet to understand fully the need to incorporate these into their classroom literacy instruction (Gee & Levine, 2009; Jewitt, 2008; Kress, 2003; Wood, 2011). This lack of understanding is evident in the views, perceptions, and attitudes some teachers harbor about these new multimodal forms of communication.
Teachers’ Views of Digital Literacies

Studies suggest that the views, perceptions, and attitudes teachers’ hold toward DL often affect their vision of how digital literacies can be used effectively in the classrooms. (Gee & Levine, 2009; Jewitt, 2008; Kress, 2003; Wood, 2011). For example, many teachers still embrace a view of literacy that does not recognize the use of technology or Digital Literacies. Jeanine Staples (2010), an African American female teacher educator and New Literacies theorist examined ways in which a group of mostly White special education teachers was prepared to teach new reading pedagogies that integrated DL when teaching diverse learners. The study examined teachers who attended a Seminar on “Diversity and Disability.” During the study, Staples found the teachers held pedagogical disconnections within the “meta-context” or their personal beliefs toward DL during of the course. For instance, seminar instructors held strong beliefs about what constitutes reading education and what distinguishes reading from literacy. The seminar instructors’ beliefs about literacy focused on reader’s interactions were with print, from the aspect of decoding print, memorizing vocabulary lists, learning new sight words and assessing the students’ comprehension of traditional texts. Staples (2008) attributed this belief about literacy stemmed from the instructors’ lack of experience with new literacies or even “grappling with the expansive nature of the term(s)” (p. 75) new literacies and Digital Literacies. Staples also commented that the educators’ acknowledgment of the value of exposing future educators to DL might attribute to their belief that new literacies, such as DL, although useful to accomplish some instructional goals, such as offering a different way to understand and appreciate diverse students’ abilities, as a fad. This belief held by the seminar instructors suggests that when educators do not utilize DL with preservice teachers, it likely decreases their
students’ incorporation of DL in their future classrooms, which in turn likely contributes to their students not receiving the critical introduction of these new literacy pedagogies.

Hutchison and Reinking (2011) conducted a national survey of 1,441 U. S. literacy teachers across the country to examine teacher perceptions of the usefulness of integrating information and communication technologies into literacy instruction. The teachers included in the study consisted of teachers who taught literacy in grades kindergarten through the 12th grade and were members of either a state or local council of the International Literacy Association (formerly the International Reading Association). The researchers used a Likert scale and analyzed the responses using descriptive statistics and exploratory factor analysis to identify the types and levels of ICTs available, the use of ICTs by teachers, the teachers’ beliefs about the importance of integrating ICTs into literacy instruction, and the perceived obstacles they encountered when using ICTs. Hutchison and Reinking’s study revealed that many of the obstacles for technology integration that teachers faced related to the levels of integration used and were highly impacted by teachers’ perceptions of the technology resources. Overall, the study found relatively low levels of technology integration into the literacy curriculum despite the availability of digital literacy tools within the schools.

Research suggests that attitudes teachers hold toward the use of digital devices and implementation of a curriculum rich in digital literacies impacts if and how they may use these in their classrooms. According to Kimber and Wyatt-Smith (2006), teachers may be unwilling to experiment with digital technologies with which they are unfamiliar because of the attitudes they possess. Some teachers may possess negative attitudes towards their use and choose not to expand beyond traditional forms of literacy. Others believe that digital literacies may have entertainment value but limited instructional value (Hutchison & Reinking, 2011).
Halsey (2007), in a study, described previously, identified challenges she faced when she used newer technologies within her literacy instruction with her young students. Her findings revealed that she often felt guilty about using technology because she did not believe that use led to “real” literacy learning. Rather, she thought that when teachers used technology and digital tools they were simply letting the children play. Further, Halsey found that in many ways she still held a narrow definition of literacy that results in her predominant use of paper and print-based texts. She stated she continues to lack confidence in her abilities to use digital tools which gets in her way of teaching the skills her students need for their successful use of these same tools.

**Teacher self-efficacy and lack of skills in using digital literacies**

Evidence from research suggests that teachers’ sense of efficacy in using technology influences their use of Digital Literacies during literacy instruction. Based on Bandura's work (1977), Tschannen-Moran, Woolfolk and Hoy (2001) defined teacher efficacy as "a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783). Evidence from research suggested that teachers' perception of their capabilities, (i.e., their self-efficacy) in the use of digital literacies affects how they use digital literacies with their students.

To illustrate, in the aforementioned study conducted by Hutchison and Reinking (2011) on integrating information and communication technologies into literacy instruction also found that teachers’ sense of efficacy impacted teachers’ use of DL. Their survey data of 1,441 literacy teachers, revealed that while teachers recognized the need to integrate ICTs/digital literacies in
literacy many indicated that they did not feel competent to do so because they lacked the knowledge of how to do so.

Additional research suggests that some teachers may continue to experience difficulty implementing DL even when teachers have received professional development that addresses how to use digital literacies in their classrooms. For example, in Dixon, Yssel, McConnell and Hardin's (2014) study examined the role that efficacy plays in a teacher's willingness to use differentiation with their students. While this study focused on differentiation, it illustrated how teachers might hesitate to implement content or practices based on their lack of efficacy. Dixon’s et al., study, along with the findings by Tschannen-Moran, Woolfolk and Hoy, suggested that even though teachers may understand the importance of implementing certain strategies, they might not translate the information into meaningful classroom activities. Dixon, et al., (2014) offered possible insight into why this may occur. "Perhaps," they stated, "some teachers are not comfortable with their knowledge of teaching in their content area and therefore cannot be flexible in adjusting their lessons to the needs of their learners" (Dixon, et al., p. 115).

Also, they surmised, some teachers may conceptually understand the need to incorporate information, such as in the case of DL, into their instruction, but they lack the skills required to use them in their teaching. Dixon’s et al. research suggests that even when teachers participate in professional development, these experiences may not be sufficient to transfer the information into their instruction. For example, in a large-scale study of classroom practices of 50 schools in Singapore, Sam, Abd Rahim, Teng, Guo, and Luke (2007) found that teachers possessed limited knowledge of how to use new literacies during English instruction. In addition, their research showed gaps between teachers' understanding of the importance of new literacies and its use by educators in their classrooms. This finding is consistent with findings in additional studies (Luke,
Tierney, Bond, and Bresler (2006) in a study previously described examined how a group of 20 high school students was impacted by their teacher's use of digital technologies. They identified several challenges experienced by the teachers as they sought to integrate digital literacies within their literacy curriculum. Even though the teachers were aware of new literacies and the multiple modes of incorporating technology into their literacy instruction, they were challenged to do so in this era of accountability and high-stakes testing. Further, the teachers struggled with changing from teaching canned preset lessons to the use of digital technologies.

Rantala and Korhonen (2008) in a study described previously examined the challenges that arose when this Finish fifth-grade teacher integrated digital literacies into her classroom literacy curriculum. They noted the teacher was challenged to use Kar2ouche, a commercial multimedia, authoring tool to create storyboards. The teacher had to gain the necessary background knowledge in how to use the software. Another challenge she faced was using the software required extensive planning. These challenges were in addition to the teacher learning how to use the software effectively with the students in order to achieve the desired final product.

This research reviewed offered guidance for this study. One, teachers’ perceptions and attitudes influence if and how they use DL. Thus, this study considered the teachers’ perceptions, attitudes toward their use of DL as well as their sense of efficacy in using these tools in their classrooms. Two, teachers face a variety of challenges in their efforts to use DL with their students, so this study examined the teachers' use of digital literacies, must understand the challenges teachers face in that use.
Using Digital Literacies with African American students in Low SES Urban Schools

The literature examined in the previous sections explored teachers use of DL, their perceptions, attitudes, and views toward their use and the challenges that teachers face in that use. Given that my study examined how teachers explored how teachers of predominantly African American children in urban low SES schools used digital literacies during literacy instruction, it was important to examine what is known about how teachers who taught in similar contexts use DL within their literacy instruction. My search of the literature found few such studies. This section reviews those located. To understand the significance of the use of DL with African America students who attend urban schools in low SES areas, I briefly review how the lack of that use places an added academic burden on these students.

The educational achievement gap between children in urban and suburban schools is a pervasive issue acknowledged and researched by many educational scholars (Darling-Hammond, 2006; Farlas, 2004; Gormley & McDermott, 2016; Perry, Steel, & Hilliard, 2003). According to data from the National Assessment of Educational Progress (NAEP), commonly referred to as the Nation’s Report Card, African American fourth-graders’ reading achievement performed significantly lower than their White counterparts (National Center for Educational Statistics, 2015). According to that NAEP 2015 data, only 18% of fourth grade African American students scored “at or above Proficient,” while 46% of White students scored “at or above Proficient” in reading. NAEP’s 2015 data further identified that 48% of fourth grade African American students performed below the “basic” level of reading with only 52% performed above a basic level of proficiency. In contrast, only 21% of their White counterparts performed below a basic level of achievement, and 79% performed above a Basic Level of proficiency.
The difference between the number of African American students who do not even reach this basic level of achievement in comparison to their White counterparts demonstrates that African American students still experience disturbingly lower achievement. Now that the construct of literacy, and by consequence literacy instruction, continues to shift towards one that incorporates Digital Literacies, the issue of exacerbating that gap concerns many (Gormley & McDermott, 2014). Students today need to develop the technical skills required to be successful in the 21st Century (International Literacy Association, 2009). Unfortunately, the few studies that do exist suggest that teachers might not be ensuring their students develop these skills. Although teachers in many communities may not be using those tools to the extent needed to ensure their students develop those skills, this lack of use appears to be even more prevalent in economically disadvantaged areas.

For example, Gormley and McDermott’s (2014) mixed-methods study compared the knowledge of Digital Literacies possessed by fourth and fifth-grade students’ from middle-income suburban areas with that of students from low-income urban areas. The study examined students from five elementary schools across three school districts. Four of the schools were low-income urban schools, with one school comprised of predominantly African American and Latino and the remaining three schools comprised of predominantly White students. The student population in the sole middle-income suburban was predominantly White. The study examined how urban students compared to suburban students in their exposure to digital literacies in their school environments. The White middle-income suburban students reported more learning opportunities using Digital Literacies in school than the low-income urban students. The researchers then examined how the students differed in their knowledge and skills with Digital Literacies. They found that for the urban students there was little evidence from their
observations or interviews that the teachers’ integrated new literacies into their classroom practices that led to little to no development of skills using digital literacies for the urban students. Further, the urban students’ reported that their exposure to DL was limited to a visit to the computer lab once a week. From these experiences, the students developed rudimentary skills, such as how to use Google and how to conduct a search on the Internet. Nor were the urban students taught how to use the keyboard, conduct research, or use presentation software such as PowerPoint or Keynote. In contrast, the suburban students reported a variety of ways their teachers used Digital Literacies. A full-time, specialist librarian/media specialist taught the students’ keyboarding through a program called Type to Learn. Plus their librarian taught them how to conduct research for book reports and how to access information from electronic encyclopedias. Results from this study offer evidence that perhaps the pervasive achievement gap that exists in the African American populations in their knowledge of traditional literacy practices now exists in their knowledge of 21st-century literacies. No doubt, this lack of use and exposure may lead to negative implications for students who attend schools in low SES urban communities and by consequence their opportunity to attain the skills necessary to be academically successful now and to be successful in their ability to perform the skills required in the future.

In addition to the concerns about the gap in access to DL that exists between middle-class students in suburban schools and students who attend schools in low SES urban areas, another concern is that many teachers possess the attitude that digital tools have minimal usefulness with low SES urban students who lack basic literacy skills. Many view these tools as toys and therefore, hold little use in literacy instruction with their low SES students.
For example, in a 2000 report from the National Center for Education Statistics survey (Smerdon, Cronen, Lanahan, Anderson, Iannotti, & Angeles, 2000) of 1999 public school teachers’ use of computers and the Internet, found that teachers’ attitudes toward the use of DL with students of color, affected how they used them in the classroom. The report found that teachers are more likely to use technology and computers with students of color only to teach skills and to perform drills. In contrast teachers of White students were more likely to use the same technology and computers to cultivate their students' critical thinking abilities (Bigelow, 1999; DeVillar & Faltis, 1987; Gorski & Clark, 2001). Such research suggests implications for African American students in low SES areas. Most importantly, when teachers possess racial stereotypes about the use of digital literacies, students of color may not receive the opportunity to develop the skills required for success in the 21st century, thus adding to the digital divide (Gorski & Clark, 2001).

A more recent study suggests the results of the study published in 2000 continue to possess such attitudes and continue to influence if and how they use DL with their African American students. For example, Haddix and Sealey-Ruiz (2012), in a study described previously, found that teachers in suburban areas encouraged their students' use of digital tools in creative, curricula responsive ways (such as mobile devices, as they participate in literature circles and writing groups). This was not the case in low SES urban areas. Many teachers in these areas failed to implement digital tools in ways that mirror their use by their students outside the classroom. Therefore, they concluded that the attitudes teachers hold toward digital literacies likely limit access for children who live in low SES areas.
Benefits to Using Digital Literacies with African American Students in Low SES Schools

While the aforementioned studies present a picture of the disparities that exist in teachers’ implementation of DL with their African American students in urban settings, research does exist that demonstrates using DL with these students offers them important benefits. For example, Neuman, Grant, Lee, and Tecce DeCarlo (2015) examined the use of Digital Literacies in an urban school setting. The study was conducted in an urban school plagued with issues of instability due to threats of job eliminations for teachers. The school was located in a Philadelphia neighborhood where one in four students lived below the poverty level. Ninety-percent of the students were African American; only 3% of its students in grades 3-8 performed at the proficient level on the Pennsylvania System of School Assessment instrument in reading and math (School District of Philadelphia, 2012). They district designated this school as a troubled and under-performing school which threatened its closure. An interdisciplinary team of researchers with expertise in early childhood education, technology integration, K-12 literacy, and early literacy collaborated with four teachers to determine the value and utility of the I-LEARN model for improving the digital and information literacies of young students. The purpose for the implementation of I-LEARN was to help young urban children understand and complete research projects. The teacher participants did not have extensive experience with using technology for digital/information literacy. They were observed during professional development and their implementation of I-LEARN. One participant, Mrs. A was able to use her recent training to enhance her literacy instruction. In contrast, another participant, Mrs. B, provided far fewer opportunities for her second graders to develop a high level of knowledge of digital literacies. The researchers attributed this difference to the different approach the two teachers took to their respective teaching after their training. According to observations during
the professional development and in their classrooms, Ms. A’s approach to the I-LEARN project represented an embrace of 21st-century technologies in a project-based inquiry she crafted for her students to allow them to learn information technology. In contrast, Mrs. B remained tentative in her use of technology that limited her application in her classroom. Findings from the study illustrated once again the importance of providing information and digital literacy instruction in schools to prepare students for their adult lives. The research suggests that despite training given to teachers, they may remain hesitant in their implementation of technology with their students. The researchers stated their findings have implications for how to help teachers in other schools facing similar situations and where they might not effectively expose their students to 21st-century technologies and platforms needed for their future success.

For African American children in low SES, urban areas, researchers have found that the use of digital tools and popular literacies in their classrooms help to empower students to be, “producers and creators of knowledge within the classroom” (Haddix & Sealey-Ruiz, 2012, p. 190). Haddix & Sealey-Ruiz (2012) discussed the need to cultivate African American and Latino boys’ use of digital and Popular Literacies. They described how digital tools and their association with popular culture could engage students with unsuccessful educational experiences. Haddix and Sealey-Ruiz referenced findings from an earlier study (Haddix, 2009) to support their 2012 study. In the 2009 study, Haddix examined 12 Black and Latino males’, ages 16 to 19, use of digital literacies to engage in writing. The students paired their knowledge and use of technology with the use of cell phones. He found that when teachers acknowledged and affirmed their students’ use of digital literacy for communication, the students were more engaged and experienced more success with writing.
The studies reviewed in this section provided critical guidance for my study. The review demonstrates teachers face multiple challenges when implementing DL within their classrooms. Some of these exist within the changes brought on by new technologies, such as the meaning of a text. Other challenges exist within the teachers, such as their beliefs they do not possess sufficient knowledge to effectively use DL with their students. Other challenges result from external pressures, such as testing and curriculum demands. The limited research that examines the use of DL with African American students in low SES urban areas reveals extra challenges influence their teachers’ use of DL. Many of their teachers do not have access to the technology required to ensure their students develop the technical skills required to be successful in the 21st century (International Literacy Association, 2009). In some instances even if the technology is available, teachers do not use it. This research informed my study in several ways. My study examined teachers’ use of DL with their African American students who attend school in a low SES urban area. Within this setting, I sought to understand the unique challenges the teachers faced that influence how or even if they use DL. The study setting is technology rich. Therefore, I sought to understand how the teachers responded to the technology available. Given that little research exists that examines the challenges and use of DL by teachers and students within such settings, my study provides needed information. Information needed to ensure that the students in such schools acquire the technical skills required to be successful in the 21st century.

Evaluating Teachers’ Knowledge and Use of Digital Literacies

In this chapter, I reviewed studies that describe challenges that prevent or constrain teachers’ use of DL. I also reviewed studies that identified disparities in the use of DL with African American students in urban settings and the benefits to these students when these tools are effectively used. Further, even though the findings from these studies emphasize the need for
all students to experience the use of DL in their classrooms, such use by African American students who attend low SES urban schools appears stymied by several unique challenges. For teachers to meet effectively these challenges, they must possess the knowledge, skills, and attitudes related to that use (Doyle & Reading, 2012; Kihoza, Zlornikova, Bada & Kalegele, 2016). To evaluate such knowledge and skills by the teachers in my study, I used standards identified by the Council for the Accreditation of Educator Preparation (CAEP) used to review of teacher preparation programs, the Technology Integration Assessment Rubric TPACK, and the Substitution, Augmentation, Modification, and Redefinition (SAMR) model. I describe each briefly.

Teachers are now charged to use more technology in their classrooms. However, as suggested by the studies reviewed for this study, many lack the content and pedagogical knowledge necessary properly integrate DL in within their classrooms. Teacher educators of pre-service teachers use the CAEP standards, developed by the Council for the Accreditation of Educator Preparation, to guide their preparation of their students’ technology use. While CAEP standards were developed for use by teacher educators to guide their work with pre-service teachers, they offer research-based standards of what in-service educators should know and be able to do to ensure positive academic outcomes for their students. Even though CAEP provides standards for three areas, in this review, I only focus on Standard One, Content and Pedagogical Knowledge, because of its relevance to my study. This standard describes the “depth of understanding of critical concepts, theories, skills, processes, principles, and structures that connect and organize ideas within a field” (Council for the Accreditation of Educator Preparation, p. 4). Also, this standard supports the belief that teachers must understand subject matter deeply and be able to use that knowledge flexibly. Plus, it states teachers need to see how
ideas connect across disciplines and to everyday life. Teachers should have a comprehensive understanding of disciplinary knowledge as a foundation for pedagogical content knowledge so that teachers can teach in ways that make information accessible to others.

Standard one specifically addresses the goal of my study, to understand how elementary teachers in a school located within a large urban school district use digital literacies (DL) with their predominantly African American, low SES students during their literacy instruction. For the purpose of this study, I used this standard to guide my examination of the teachers’ pedagogical processes beginning with their selection of the curriculum content, the development of lessons and activities, the selection of technology, and the teachers’ understanding of how that technology should be used to meet their instructional goal. In Chapter three, I detail how I used the information from Standard One during my investigation.

In addition to CAEP Standard One, I used the Technological Pedagogical Content Knowledge, (TPACK) to guide my analysis of the teachers’ integration of digital technology into their literacy instruction. TPACK, an acronym originated from Mishra and Koehler (2006) to represent a comprehensive picture of the knowledge sources that exists when Information and communication technologies (ICT) are integrated into instruction and emerged from “interactions among content, pedagogy, and technology knowledge,” (p. 66, Koehler & Mishra, 2009). TPACK has been used in the context of teacher education to facilitate the development of pre-service and in-service teachers’ understanding of how to use ICTs (Mishra & Koehler, 2006; Thompson & Mishra, 2007-2008; Hutchison, Beschörner, Schmidt-Crawford, 2012). The framework (Figure 2) illustrates connections that exist among teachers’ Pedagogical Content Knowledge (PCK), Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). The TPACK guided my evaluation of my teacher participants’ knowledge of
technology and their application of that knowledge when they integrated digital technology into their literacy instruction (Hutchison & Woodward, 2014). Also, I used the TPACK framework to analyze what aspects of each component contributed to each teacher’s awareness and competencies that were needed for effective classroom technology integration necessary for DL (Brantley-Dias & Ertmer, 2013).

![Figure 2. TPACK Framework.](http://tpack.org, 2012.)

Specifically, I used a revised version of the Technology Integration Assessment Rubric created by Judi Harris, Neal Grandgenett, and Mark Hofer (2006) which they updated to include key constructs from the TPACK framework (Figure 2) to help me determine the viability of the teachers’ integration of digital literacies within their literacy lessons. As background, Harris, Neal and Hofer built their original rubric based on Jody Britten and Jerrel Cassady’s (2005) Technology Integration Assessment Instrument (TIAI) that used seven dimensions to assess technology integration in lesson plans created by educators. Because the TIAI had successfully been tested for reliability and validity, Harris, Neal, and Hofer updated the TIAI to reflect key
aspects of the TPACK construct not originally included in Britten and Cassady’s TIAI. The revised version of the Technology Integration Assessment Rubric (Figure 3), from here forward referred to as the TPACK rubric, provided a set of criteria to evaluate each participant’s pedagogy, knowledge, and technology use during DL in more detail.

In previous research, the TPACK-based Technology Integration Assessment Rubric was found to be an effective tool to assess pre-service teachers’ planning artifacts to determine the level of technology integration in their instruction (Harris, Grandgenett, & Hofer, 2010). Also, TPACK has been used to emphasize the fit between technology, pedagogy, and content (Hwee Ling Koh, J. 2013). Additional studies have used the TPACK framework to improve the ability of in-service teachers’ integration of technologies into their teaching (Niess, 2008). While other researchers have relied on TPACK to identify the pedagogical approaches of in-service teachers, I used the TPACK-based Technology Integration Assessment Rubric in conjunction with an open-ended interview protocol and the teachers’ audio journal entries to glean a complete picture of technology integration during the observed DL lessons. Harris, Grandgenett, and Hofer (2010), in their study of pre-service teachers’ integration of technology, state that additional research is needed in using the tool with more practiced educators as an observational tool. Using TPACK they suggested, along with teacher interviews, could be used instead of written planning documents to assess the quality of technology integration. My use of TPACK in conjunction with interviews to analyze the teacher participants’ technology use adds to the existing literature of the instrument’s usefulness.
### Technology Integration Assessment Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Curriculum Goals &amp; Technologies</strong></td>
<td>Technologies selected for use in the instructional plan are strongly aligned with one or more curriculum goals.</td>
<td>Technologies selected for use in the instructional plan are aligned with one or more curriculum goals.</td>
<td>Technologies selected for use in the instructional plan are partially aligned with one or more curriculum goals.</td>
<td>Technologies selected for use in the instructional plan are not aligned with any curriculum goals.</td>
</tr>
<tr>
<td>(Curriculum-based technology use)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Using technology in teaching/learning)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technology Selection(s)</strong></td>
<td>Technology selection(s) are exemplary, given curriculum goal(s) and instructional strategies.</td>
<td>Technology selection(s) are appropriate, but not exemplary, given curriculum goal(s) and instructional strategies.</td>
<td>Technology selection(s) are marginally appropriate, given curriculum goal(s) and instructional strategies.</td>
<td>Technology selection(s) are inappropriate, given curriculum goal(s) and instructional strategies.</td>
</tr>
<tr>
<td>(Compatibility with curriculum goals &amp;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>instructional strategies)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>“Fit”</strong></td>
<td>Content, instructional strategies and technology fit together strongly within the instructional plan.</td>
<td>Content, instructional strategies and technology fit together within the instructional plan.</td>
<td>Content, instructional strategies and technology fit together somewhat within the instructional plan.</td>
<td>Content, instructional strategies and technology do not fit together within the instructional plan.</td>
</tr>
<tr>
<td>(Content, pedagogy and technology together)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


3 “Technology Integration Assessment Rubric” by Judi Harris, Neal Grandgenett & Mark Hofer is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 United States License. ([http://creativecommons.org/licenses/by-nc-nd/3.0/us/](http://creativecommons.org/licenses/by-nc-nd/3.0/us/))

---

Figure 3. TPACK Technology Integration Rubric.

In addition to the TPACK rubric, I used the Substitution, Augmentation, Modification, and Redefinition (SAMR) model to determine the level technology integration exhibited by the teachers during the observed DL lessons. Originally created by Puentedura (2006), SAMR is a four-level, taxonomy-based approach used for selecting, using, and evaluating technology in K-12 settings (Puentedura, 2006). According to Hamilton, Rosenberg, and Akcaoglu in their (2016) evaluation of the SAMR hierarchical levels stated the SAMR model has the potential to guide practitioners in their efforts to integrate technology. While they concluded that the model
is absent of context and has a limited and focus on the end product, it can be used effectively to guide educators and researchers’ technology integration efforts. Even though SAMR has had limited use and its use is not represented widely in extant literature, the evidence exits that when coupled with the TPACK rubric it can be a valuable tool to examine the extent to which teachers integrate technology. Kihoza, Zlotnikova, Bada, and Kalegele (2016) found that in their analysis of 206 tutor and teacher trainees' implementation of ICTs using both the TPACK rubric and the SAMR can provide a better understanding of how teachers integrate technology to transform or enhance traditional pedagogies.

Figure 4. The SAMR model (Puentedura, 2006)

Conclusion

When examining the Digital Literacy practices of teachers, the research presented in this literature review indicate the need to acknowledge that teachers’ attitudes, perceptions, and views influence their use of DL within their literacy instruction. Also, teachers continue to be challenged in how to integrate traditional methods of literacy instruction with digital literacies. Moreover, minimal research exists that examines how teachers of African American students who attend schools in low-income urban areas use DL. The little research that does exist
suggests the use of DL has the potential to achieve positive academic benefits for this student population (Gormley & McDermott, 2014). Of concern is that some of that research suggests a gap exists between the use of technology in suburban areas and the use of technology in urban areas. Although the studies presented in this literature review offer useful information, more information is needed. Such research, useful for all teachers, it should be of particular use to teachers in low SES, urban, predominately African American classrooms. The study described herein aimed to add to the knowledge base of how to use digital technologies with such populations.
3 METHODOLOGY

This study explored how elementary teachers of African American children in urban low SES classrooms used digital literacies (DL) during their literacy instruction. To understand their use of DL, I examined how the teachers used digital literacies via different types of digital tools during literacy instruction with students who traditionally have had limited exposure to the use of technology during literacy instruction. I examined the teachers' pedagogical practices to understand their decisions to use digital literacies in their classrooms. Also, I examined the teachers' perceptions of their use of digital literacies using the computer (internet blogs and websites), iPod/iPad applications and games, and interactive boards (Promethean Board) during literacy instruction. Finally, I examined factors that challenged the ways they utilized digital literacies with their students.

I employed a qualitative methodology that allowed me to investigate a contemporary phenomenon and examine the participants in a naturalistic social setting. Also, a qualitative methodology provided an investigative framework through which to examine teachers’ use of a cultural phenomenon, digital tools, within their classrooms and enabled me to examine how educators of African American children in low SES urban settings utilized digital literacies during literacy instruction.

A sociocultural theory complemented by Critical Race Theory (CRT) informed this study. In line with this theory, I examined as evidenced through their words, i.e., “voice” the teachers’ perceptions use their of digital literacies within the highly social, collaborative learning environment of their classrooms and school environment. By examining their words, I also explored the teachers’ perceptions of how their pedagogical practices were influenced by factors unique to teachers who teach in an urban predominantly African American school located in a
low SES community. Finally, the framework of New Literacy Studies (NLS) and the Multiliteracies theoretical perspective informed my view of the emergence of digital literacy and the influence technology plays in current conceptions of literacy. Collectively, these theories provided a comprehensive examination of how these teachers who taught in a low SES urban elementary school used DL with their African American students.

**Background**

I conducted this study in the school in which I have taught for the past six years. This school afforded me the opportunity to use a variety of technological tools while teaching literacy. My curiosity of how other teachers within my school setting used technology with their students began to peak as more and more resources were made available to the teachers but not used consistently by them. That curiosity led me to conduct a three-month pilot study about the use of digital literacies within my school and enabled me to dig deeper into how teachers in this environment used digital literacies with their students, many of who perform below grade level in reading and writing. The participants in the pilot study included one teacher from each of the following grade levels—kindergarten, first, second, and the fourth as well as the school media specialist, who in addition to performing her media specialist responsibilities taught reading to students.

During the pilot study, I observed how these five teachers used digital technology, specifically, iPads, Promethean Boards, and computers, to aid their instruction and enhance their students’ learning. I observed each teacher while she used iPads during her literacy and mathematics instruction. During the observations, I recorded detailed descriptions using my laptop computer. In addition to the observations, I conducted two follow-up focus group interviews with the teacher participants and the teachers used an audio-journal to record their
reflections on their observed lessons. When I conducted my pilot study, my school had just received an iPad cart, and for approximately one year, each classroom had a Promethean Board.

The pilot study revealed several key findings that guided the development of the current study. Data analysis suggested that many of the teachers were hesitant to use the technology because it was new and unfamiliar; they believed they needed training before they could become familiar with the digital technologies when delivering literacy instruction. Other teachers commented that the technology was a “nice addition” to the instruction, but they felt that they could achieve the same results with traditional paper and print-based texts. I also found that the teachers who used the technology to explore digital literacies reported they connected to the literacy skills their students possessed but often never revealed when they used traditional literacy methods. They indicated that even the students who faced challenges with reading and writing traditional texts appeared more engaged in reading activities when they digital tools were integrated into the literacy instruction.

The information gleaned during my pilot study stimulated me to want to know more about how the teachers used digital literacies in their classrooms because the teachers have had access to the technology for several years. The study described herein looked to delve deeper into how teachers of African American students who attend an elementary school in a low SES urban area used Digital literacies during literacy instruction. Specifically, this study sought to answer the following research questions.

• What pedagogical practices do teachers of African American children in urban low SES classrooms use when integrating digital tools during their literacy instruction?
• How do these teachers’ perceptions of digital literacies’ usefulness impact the ways they use digital literacies during their literacy instruction?
• What challenges do the teachers face and how do they respond to these challenges as they integrate digital literacies in their classrooms?

The next section outlines the methods used to conduct this research.

Methodology

Context

This study took place in an urban, low SES, predominantly African American elementary school in a large metropolitan school system, located in the Southeastern region of the United States. The school serves students in grade levels Pre-Kindergarten through 5 with a population that is 99% African American with 100% of its students eligible for free or reduced-priced lunch. I chose this school because of the technological resources readily available for the teachers and students to use.

Each year the school has purchased a variety of technology to enhance student learning. In 2010 with funds provided through Title-I U.S. Government funding, the school purchased more media and technological devices. Each classroom contains an interactive Promethean Board and at least four working computers. In addition, each teacher possesses a personal laptop. Recently, the school purchased an iPad cart with 30 iPads, an iPad Mini Cart with 30 iPad Minis, ActivVotes for use with the Promethean Board, and an Apple Laptop Cart with 30 personal laptops, teachers can check out to use with their students. Other recent purchases include six Promethean Tabletops, placed in one classroom at each grade-level, Kindergarten through Fifth grade. Currently, plans exist to purchase additional technology.

Participants

Study participants included four teachers and members of the school’s administrative team. The teachers were selected from the school’s population of the kindergarten through 5th-
grade teaching staff. Pre-Kindergarten teachers were not included because they do not use the same statewide standards, i.e., Georgia Standards of Excellence, used by the teachers at the other grade levels that require the use of technology. Including members of the kindergarten-fifth grade teaching staff enabled me to see how teachers of predominantly African American children in a low SES urban school setting used digital literacies within a real-life setting of their classrooms. Moreover, the inclusion of the teachers provided first-hand knowledge of their pedagogical practices and the dispositions and perceptions they possessed towards the use of digital tools during literacy instruction. From the teacher population, I selected four certified teachers using purposeful sampling based on my professional knowledge of their pedagogical practice. Purposeful sampling allowed me to select teachers with a range of teaching experience and with different levels of experience utilizing digital literacies in their classrooms. (Denzin and Lincoln, 2005)

Members of the school’s administrative team were also participants in the study. The administrative team consisted of the Principal, Assistant Principal, and two Instructional Coaches. While all members of the administrative team agreed to participate in the study, one Instructional Coach was unable to participate due to time constraints and conflicts in scheduling. Therefore, only one Instructional Coach was interviewed for the study. The inclusion of the administrative staff provided critical background information. Specifically, data collected from members of the administrative staff offered insights into their selection of the technology chosen for the teachers to use with their students. It also provided background for the instructional suggestions they offered teachers on how they should use the technology to improve student achievement. In addition, information gleaned from the administration enabled me to understand
the school’s response to district level mandates that require children to develop competencies in computer skills.

**Data Collection**

Data collection occurred from September to April, excluding December, of the 2015-2016 school year. Table 1 outlines timeline of data collection.

Table 1

*Data Collection Timeline*

<table>
<thead>
<tr>
<th>Month</th>
<th>Activities</th>
</tr>
</thead>
</table>
| September | • Teacher Participant Selected  
           | • 1 Interview per Teacher Participant Conducted  
           | • Interviews Conducted  
           | • Lesson Plans and Curriculum Maps Collected |
| October  | • Initial Focus Group with Teachers Conducted  
           | • Administrative Team Individual Interviews Conducted  
           | • Teacher Observations Began  
           | • Teacher Participant Follow-Up Interviews Conducted  
           | • Teachers Self-Audio Journaling of Reflections after Digital literacies Lesson Began  
           | • Lesson Plans and Curriculum Maps Collected  
           | • Member Checks Occurred  
           | • Peer Debriefing Occurred |
| November | • Teacher Observations Occurred  
           | • Teacher Participant Follow-Up Interviews Conducted  
           | • Teacher Self-Audio Journaling after Digital literacies lesson Occurred  
           | • Lesson Plans and Curriculum Maps Collected  
           | • Member Checks Occurred  
           | • Peer Debriefing Occurred |
| December | • 3 Lesson Observations and Follow-up Interviews for Ms. Tailor Bryson |
Teacher Data

Data from teachers were collected from multiple sources. These included individual and focus group interviews, classroom observations, teacher audio-journals, teacher-created lesson plans, and district curriculum documents.

*Individual interviews.* Each teacher participant participated in four semi-structured, face-to-face, open-ended individual interviews that lasted approximately 45 minutes to 1 hour. The interviews were audiotaped and transcribed immediately following the interview. The initial interview occurred within the first month of the study to gain an understanding of the teachers’ views and beliefs about digital literacies as well as to get an idea of how they used digital literacies with their students. The subsequent interviews occurred, after each classroom observation. During subsequent interviews, I addressed questions that arose from my observations. Then, I addressed how teachers prepared for upcoming lessons using digital literacies. I used their content-based curriculum maps, and teacher-created lesson plans to guide my questions regarding how they align and incorporate digital literacies into their instruction.
Each grade-level team identified one person to write the lesson plans for a specific content area. Therefore, only the technology teacher implemented lessons she designed. The other participants implemented lessons written by another member of their grade-level team.

However, some of the participants revised their lesson plans to use technology because the literacy lessons written by their colleagues either included the listing of a web page or did not incorporate technology at all. Specifically, the interviews enabled me to gain an understanding of a) the observed lesson, b) how the teachers currently used DL, c) the challenges that arose with their DL use, d) how their beliefs about technology, current learning trends, and the needs of their students influenced how they used digital literacies, and e) their perceptions of their ability to use digital literacies in their classroom with their students.

*Focus group interviews.* All teachers involved in the study participated in two semi-structured, open-ended focus group interviews. The focus group interviews were audiotaped and transcribed immediately following the interview. The first focus group occurred in October, after the first individual interviews. The second focus group occurred in March near the end of the study. Both focus group interviews allowed me to gain insight into the teachers’ perceptions of digital literacies use in the school. In addition, the focus group interviews provided another way for me to gain insights into the teachers’ experiences with digital literacies. Specifically, the focus group interviews enabled me to understand better a) their experiences, positive and negative, during their engagement in multiple modes of digital literacies, b) their feelings about their students’ progress as they integrated digital literacies, c) their perceptions of how well they had prepared to use digital literacies in the classroom, and d) the challenges they faced with their students while using digital literacies during literacy instruction.
Classroom observations. I observed each teacher four times during her reading period over a period of 12 weeks. The one exception was Ms. Tailor Bryson whom I only observed three times due to scheduling conflicts. In preparation for the observations, I asked each teacher to select lessons they deemed to be rich in the use of DL. This included the use of iPads, interactive Promethean Board lessons, computer-based programs, or extensive Internet use for web-based learning sites. Each observation enabled me to view the teachers as they implemented DL. I observed the lessons from the beginning to the end and recorded field notes using my computer. The field notes included detailed descriptions of the teachers’ actions as well as specific comments they made to their students during the lessons. No student was identified by name. In addition to my field notes, I recorded questions to ask the teachers during the follow-up interviews to clarify my observations. These questions were also useful in guiding subsequent observations. I also wrote memos within my field notes noting the information observed. The memos assisted me in reflecting upon the research. These memos helped me frame my ideas as I began data analysis and interpretation (Bogdan & Bicklen, 2007). Plus, the memos allowed me to ask deeper questions that were used to guide my questioning during subsequent observations and interviews with the participants.

During my observations, my goal was to be unobtrusive. I sat in a location at a distance from the instruction but close enough to clearly see and hear the teacher. I neither interrupted nor participated in the instruction. Thus these observations were non-participatory.

Audio journal entries. The teachers kept an audio journal to record their thoughts and reflections about their use of digital tools during literacy lessons I did not observe as well as those observed. The teachers were encouraged to record their thoughts during the lessons as well. By examining their entries, I gained insight into their comfort level and their sense of
efficacy in their use of digital technologies in their classrooms across multiple experiences. The teachers were told that they could record their reflections immediately after the lesson, if time permitted, or at the end of the school day. I received recordings of reflections for all observed lessons, except two: one following Dr. Laverne Brown’s second lesson observation and the other following Mrs. Bryson’s second lesson observation.

I provided the teachers questions to guide their recordings. Sample questions for lessons not observed included: a) What were the goals and objectives of the lesson? b) What did you want the students to practice or master during the lesson? c) What instructional strategies were used? d) What were some of the positive and challenging aspects of the lesson related to your use of digital literacies? e) How well did you feel that the specific tools for the lesson served their intended purpose if so, explain how? f) How do you feel your proficiency, familiarity or lack of proficiency in using the digital literacies tools and strategies affected your implementation and student understanding?

For the lessons I observed, I asked the teachers to comments on any challenges experienced while planning the lesson, preparing for the lesson, and implementing the lesson. Also, throughout the study, I asked them to identify positive and negative aspects of the instruction and to reflect on how well they thought their digital lessons were progressing. Also, I asked them to comment on how they might change the literacy lesson if they implemented it again.

Curriculum documents. I collected district curricula documents that identified curricular goals for the teachers to follow when planning their lessons. These documents included curriculum maps and lesson plans. As background, all teachers are required to use a curriculum map that outlines the content to be taught and the pace at which the content will be taught.
Curriculum maps are created by the school system and outline the content standards to be taught during the school year. As each quarter passes, teachers are required to reexamine and if needed, to alter their curriculum maps to re-teach standards not mastered by the students. Teachers continue to cover newly assigned standards, all of which must be covered over the course of the year. My intent was to use information from their curriculum maps, during interviews to identify possible content areas they might use digital literacies to deliver instruction and also to give me insight into their decisions to include digital literacies in their literacy instruction.

In addition to the curriculum documents, I collected the teachers’ weekly literacy lesson plans. Typically, a grade-level team member writes the lesson plans one week before the delivery of instruction. From the lesson plans, I intended to garner insights into how the teachers prepare for literacy activities and to gain further details about their teaching using digital literacies. Also examining their lesson plans enabled me to identify lessons in which the teachers planned to use digital literacies. It turned out that neither the curriculum maps nor the lesson plans served their intended purpose. Neither provided the detailed information initially thought and therefore proved irrelevant.

While the study initially identified the use of curriculum documents as a source of data, once I examined the plans, I found that the plans represented a loose overview of the standards to be taught. Further, none of the teacher participants was responsible for writing her lesson plans for the English/Language Arts instruction. I found that I was able to gain a better understanding of the teachers' lesson from subsequent interviews.

**Evaluating Teachers’ use of DL**

The competencies of teachers' ICT pedagogical practices are an essential part of understanding teacher pedagogy. Viable tools need to be used to gauge teachers' level of
proficiency in using ICTs for DL. The tools selected also should serve as a sound framework that can be used to evaluate teacher knowledge and their ability to transform that knowledge into the integration of DL. Thus, for gaining insight into each of this teacher participant's competency, I used the Council for the Accreditation of Educator Preparation (CAEP) standards (Standard One), the Technology Integration Assessment Rubric (TPACK) rubric and the Substitution, Augmentation, Modification, and Redefinition (SAMR) model were used.

I used CAEP, Standard One, Content and Pedagogical Knowledge, to guide my examination of the teachers’ pedagogical processes beginning with their selection of the curriculum content, the development of lessons and activities, the selection of technology, and their understanding of how that technology should be used to meet the identified instructional goal. In addition, Standard One guided the questions I asked during teacher interviews that followed the lesson observations. An example of questions asked included, but was not limited to:

- What was the goal of the lesson? What did you want the students to know at the end of the lesson?
- What aspects of the curriculum standards helped you in your choice of the technology used during the lesson?
- How did you use the Georgia Performance Standards during the development of this lesson?

During data collection, this standard guided what I looked for when I observed the teachers. For example, during the observations, I observed to see what types of technology the teacher used. I observed how the teacher introduced the technology based on student familiarity. I compared the teacher’s responses to the students’ ease or challenge with the technology. After
I observed the teacher’s use of DL, I briefly analyzed the results and looked for similar themes across responses. Questions such as the following guided this initial analysis:

- How did the technology address the goal of the lesson?
- What did the students already need to know to use the technology?
- How did the teacher help the students who did not know how to use the technology?

I used the Technological and Pedagogical Content Knowledge (TPACK) framework to guide my analysis of the teachers’ integration of digital technology into their literacy instruction. The Technology Integration Assessment Rubric (TPACK) enabled me to a) analyze the degree to which the technology and its application aligned with the curriculum goal, and b) examine the fit or congruence between the technology and the content and instructional strategies (Harris, Grandgenett, & Hoffer, 2010). I also used the TPACK rubric to analyze the teachers’ knowledge, skills, and understandings of using technology by looking at the teachers’ connections between their pedagogical content knowledge (PCK) for teaching DL, Content Knowledge (CK) of literacy, and their Technical Knowledge (TK) of the technical tools that they used during the DL lesson. Further, the designation of the participants’ TPACK scores enabled me to evaluate in more detail the participants’ level of knowledge. Furthermore, with the TPACK rubric, I could compare the participants’ pedagogical practices and knowledge of integrating technology within their observed DL lessons.

While I used TPACK to focus on aspects of technology, pedagogy, and content, I used the SAMR model to identify the level of integration of the technology within the DL lesson. With SAMR I could determine if the technology used substituted, augmented, modified or redefined educational tasks that could formerly be taught using traditional forms of literacy via
books or traditional text. According to SAMR, substitution represents the lowest level of integrating technology, where the technological tool simply replaces the text, thus demonstrating no significant change occurred in the lesson resulted in the integration of the technological tool. Augmentation represents the next level of integration, where the technological tool used during the lesson adds some level of functional improvement. Modification represents the technology led to a redesign of the use of traditional tasks. Redefinition, the highest level of integration, represents when the technology used creates a new task.
Tables 2, 3, and 4 illustrate how data derived from TPACK and SAMR as well other sources aligned with the assumptions of the theories that guided my examination of the teachers’ use of DL during literacy instruction. The tables demonstrate the alignment of questions asked during data analysis and data sources with the assumptions of the theories that informed this research.

Table 2

Using Theory as a Methodological Guide in a Study of Elementary Teachers use of DL with their AA students: Critical Race Theory

<table>
<thead>
<tr>
<th>CRT Theoretical Assumptions</th>
<th>Sample Questions to Inform Analysis</th>
<th>Relevant Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Racism is embedded in people's everyday practices and is part of societal norms</td>
<td>Where is racism embedded within the schools' day-to-day routines associated with DL use?</td>
<td>Teacher responses to interview questions TPACK, SAMR,</td>
</tr>
<tr>
<td>Schools often maintain the status quo of the White Middle Class</td>
<td>What policies, practices for the use of DL exist in the school? Where do these originate? What say, if any, do the teachers in what is taught and how it is taught?</td>
<td>TPACK, SAMR, Curriculum,</td>
</tr>
<tr>
<td>Race is a &quot;social construction.&quot;</td>
<td>How do the teachers feel that their race and/or their students’ race affect DL instruction? What are the teachers' views of their students and their achievement as it relates to their race and/or SES?</td>
<td>Interviews, Focus-Group Interviews</td>
</tr>
<tr>
<td>Instruction often does not acknowledge AA students’ culture</td>
<td>How is the students’ culture revealed in the curriculum, instruction, criteria used to evaluate teacher performance related to DL use? When are the teachers’ voice revealed?</td>
<td>Observations of teachers’ DL lessons</td>
</tr>
<tr>
<td>Is there an assumption related to how AA CRT has not been used specifically</td>
<td>Teacher interviews, Focus-Group</td>
<td></td>
</tr>
</tbody>
</table>

58
teachers promote practices of status quo?) for DL in past research, but are there issues of racism in education that contribute to how or why teachers are using DL with their students? Interviews

| AA students in urban low SES schools viewed as academically deficient | How do teachers and administrators describe the students’ academic abilities when discussing the use of DL? What experiences have the teachers had with students who have been identified as academically deficient? Are there ‘borders’ or ‘boundaries’ that contribute to the educational, literacy, or digital ‘gaps’ that persist between AA students and their White counterparts? | Teacher interviews |

Table 3

*Using Theory as a Methodological Guide in a Study of Elementary Teachers use of DL with their AA students: Digital Literacy Perspectives*

<table>
<thead>
<tr>
<th>Digital Literacy Perspectives</th>
<th>Questions to Inform Analysis</th>
<th>Relevant Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded definition of literacy to include ICTs and technical platforms and applications.</td>
<td>How do the teachers recognize how the students learn literacy? What are the teachers’ views of DL? In what ways do the teachers embed the use of ICTs for DL into their pedagogical practices? What are the teachers’ preferences toward the use of DL; to use ICTs or not to use ICTs?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>Question</td>
<td>Analysis</td>
<td>Method</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>How do the teachers’ pedagogical practices reflect DL instruction?</td>
<td>How do the teachers use DL to extend their pedagogical practices for literacy beyond traditional paper and pencil practices?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>How do the teachers use DL to extend their pedagogical practices for literacy beyond traditional paper and pencil practices?</td>
<td>How are teachers shifting their pedagogical practices to the shift in what constitutes literacy?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>How are teachers shifting their pedagogical practices to the demands of technology in education?</td>
<td>How are teachers shifting their pedagogical practices to the shift in what constitutes literacy?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>DL uses a variety of multimodal tools to allow for communication.</td>
<td>What tools are the teachers using during DL instruction?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>What tools are the teachers using during DL instruction?</td>
<td>How do the teachers select the ICTs and application for DL instruction?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>How do the teachers select the ICTs and application for DL instruction?</td>
<td>What is the teachers' knowledge of ICTs?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>What is the teachers' knowledge of ICTs?</td>
<td>How are teachers trained to use ICTs?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>How are teachers trained to use ICTs?</td>
<td>What level of integration do the teachers’ possess of DL?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>DL allows new informational and technological literacies, (ICTs) that can be used to produce, distribute, and exchange text.</td>
<td>How are the teachers using ICTs during DL to address the traditional literacy needs of the students?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>How are the teachers using ICTs during DL to address the traditional literacy needs of the students?</td>
<td>How do the teachers respond to the social aspect of DL?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>How do the teachers respond to the social aspect of DL?</td>
<td>Are there historical perspectives in their educational environment that impact how or why they use DL with their students?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>Are there historical perspectives in their educational environment that impact how or why they use DL with their students?</td>
<td>Do the teacher incorporate the students’ outside knowledge of DL into their classroom DL activities?</td>
<td>TPACK rubric, SAMR model of integration, individual interviews, focus-group interviews, and classroom observations</td>
</tr>
<tr>
<td>Do the teacher incorporate the students’ outside knowledge of DL into their classroom DL activities?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4

Using Theory as a Methodological Guide in a Study of Elementary Teachers’ use of DL with their AA students: Sociocultural Theory

<table>
<thead>
<tr>
<th>Sociocultural Theory</th>
<th>Questions to Inform Analysis</th>
<th>Relevant Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning is a social phenomenon</td>
<td>How are the teachers using DL as a tool within their classrooms with their students? Are the students working in isolation on DL activities or are they working together? What is the teachers’ knowledge of DL’s impact on society and how it can contribute to their students’ academic growth? What are the teachers’ views of the purpose(s) for DL, in the classroom? In society? globally? How does the social class of the students impact how the teachers’ respond to the students? Are their larger social/historical issues that influence how the teachers go about teaching DL or using DL with their students?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual interviews, focus-group interviews, audio-journals, classroom observations</td>
<td></td>
</tr>
</tbody>
</table>

61
Administrative Team Data

The administrative team consists of the Principal, Assistant Principal, and two Instructional Coaches. For this study, all members of the administrative team, except one Instructional Coach participated in the study. Time constraints prevented her from participating in the research. Members of the administrative team participated in individual interviews and focus group interviews.

**Individual interviews.** Each member of the administrative team participated in two semi-structured, face-to-face, open-ended individual interviews. The interviews were audiotaped and transcribed immediately following the interview. The initial interview occurred during the first month of the of the study, and the second interview took place during the final stage of the study, following data collection from the teacher participants. The interviews allowed me to gain insight into the administrators’ views of the use of digital literacies in the school as well as allowed me to gain insight into what informed their decisions about the type of technology selected for teachers to use. These interviews also enabled me to glean information about what research, theories, and personal beliefs influenced their decisions about the types of technology they believed should be used for digital literacies instruction within the school.

**Focus-group interviews.** Members of the administrative team participated in two semi-structured, open-ended focus group interviews. The focus group interviews were audiotaped and transcribed immediately following the interview. The first focus group interview occurred at the beginning of the study. This interview allowed me to gain insight into the curricular goals they identified that related to the students’ use of digital literacies. This interview also provided information about how the school’s leadership team prepared the teachers to implement digital literacies within their instruction. The second focus group interview occurred at the end of the
study. This interview offered a final opportunity to understand the administrative team’s curricular goals for the school regarding the students’ use of digital literacies. Specifically, data collected from members of the administrative staff offered insights into their selection of the technology chosen for the teachers to use with their students. It also provided background for the instructional suggestions they offered teachers on how they should use the technology to improve student achievement. In addition, information gleaned from the administration enabled me to understand the school’s response to district level mandates that require children to develop competencies in computer skills.

**Data Analysis**

Procedures compatible with a qualitative methodology guided data analysis and occurred throughout the study. The analysis was guided by a constant comparative method as described by Corbin and Strauss (2008). Analysis occurred in 2 phases. Phase 1 included preparing the data for analysis. I transcribed all audiotaped interviews, focus group interviews, and audio-journaling. I imported the transcriptions and observations into an excel spreadsheet. Phase 2 of data analysis began when data collection was completed.

My analysis was informed by the theories that informed this study. From a socio-cultural frame, I analyzed data with the understanding that: a) to understand current behavior one must understand the origins and transitions of that behavior, b) learning is conceived as a social construct, and c) tools mediate humans interactions with the world and with others (Werstch, 1991, p. 24-27). Given that a socio-cultural frame views teaching and learning as social constructs that occur via interactions with others, it supported my examination of the teachers’ use of digital literacies and how that use was situated within the highly social, collaborative learning environment of their classrooms and school environment. While a socio-cultural view
provided the lens to examine how social aspects of learning impacted the teachers’ digital literacy practices, Critical Race Theory (CRT) guided my analysis of the data because CRT attends to the experiences unique to African Americans who have lived for centuries as a culture outside of the predominantly White American context. I used CRT as a lens to explore pedagogical practices that may have been influenced by factors unique to teachers who teach in an urban predominantly African American in a low SES environment.

I used a constant comparative method to guide my data analysis. I analyzed each data source separately and reduced the date by identifying patterns within the data to form categories. The initial patterns related to but where not limited to purposes for DL integration, teacher beliefs, and challenges faced by the teachers in their use of DL. Then, I looked at the patterns and subcategories across data sources to look for patterns that described how teachers utilized digital literacies with African American children in low SES urban school. The phenomena that arose from this part of the analysis were then grouped to form broader categories. I then searched for relationships across categories to identify possible themes between the types of pedagogy used and critical variables that impacted the teachers' decisions and use of digital literacies. From this, I developed hypotheses regarding the phenomena studied (Lincoln & Guba, 1985; Merriam, 1998). I addressed the prominent themes that emerged during the first part of the study with the teachers during their initial interviews as well as during the second focus group interview conducted at the end of the study.

Table 5 and Table 6 represent a brief portion of my analysis of the initial focus group interviews with the teacher participants. Each table lists code I assigned to units, i.e., teacher actions. For example, the code “Technology as Exploration” represented teachers using an ICT during a DL lesson to allow the students to explore a particular English Language Arts/Reading
standard by using an application versus using it as a book. Instances of each unit were identified and indicated by the line number on which it occurred. Once I recognized recurring patterns within the data, I made a list of possible codes to assign to lines within the transcribed data from the observations and interviews. I re-examined the data and then assigned categories that evolved into codes. Then, events were recorded within the table. I developed three tables that specifically focused on each research question. The recordings allowed me to fine-tune my analysis to answer the study's three research questions. I also included the theory that would help me to question the data that was recorded so that I could gain a deeper understanding of the teachers’ practices and their decision-making for the type of activities that were used to teach their students Digital Literacies.

I added notes and memos to inform future data collection and member checks as well as data analysis. I also included questions and memos during the analysis participants to make sure that what I saw was an accurate representation of the event from the participants' point of view. This allowed me to clearly present their voice as it was revealed in the data. I also included a column to identify additional notes or made memos so that I could locate the notes refer to inform future questions during interviews and member checks and to help guide me during teacher observations.
Table 5
Data Analysis Table for Focus Group Interview of Teacher Participants, Example 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Focus Group</th>
<th>Role</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Group 1</td>
<td>Teacher</td>
<td>Noted that they use CAT test for testing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>She stated that she uses her technology mostly to teach the students a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>great deal of the time that they are with her.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
<td>Teacher</td>
<td>In response to my question about using the &quot;Coding for Professional</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Development with her students, she stated that, &quot;I have made it a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>priority because I think that gamification (group work) is important.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>So I've made it a priority.</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
<td>Teacher</td>
<td>Note: her personal goal is to transfer her learning into something that</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is immediately tangible for her students. There is infiltration of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>technologies in order to facilitate learning.</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
<td>Teacher</td>
<td>Note: her personal goal is to transfer her learning into something that</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>is immediately tangible for her students. Ask if this is due to her</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>own comfort level with the digital tools and apps.</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
<td>Teacher</td>
<td>The use of the coding from the platform Coding for allows the children</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>to work through difficult problems in order to reach the solution of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>how to control/cause the object in the game for movement.</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
<td>Teacher</td>
<td>Taught perseverance and the ability to control their anger when they</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>don't get something correct.</td>
</tr>
<tr>
<td></td>
<td>Group 1</td>
<td>Teacher</td>
<td></td>
</tr>
</tbody>
</table>
Analyzing TPACK and SAMR data. During each observed DL lesson, I used the Technology Integration Assessment (TPACK) Rubric to examine four categories, worth four points each, of technology knowledge as displayed by the teachers during their observed DL lessons. Sixteen is the highest number of points the teachers could receive. Scores between 0-11 points, or 70% of the 16 points, indicates a low level of TPACK. Scores between 12-13, or 70-85% of the total 16 points, indicates a moderate level of TPACK. Scores between 14-16, or 86-100% of the total 16 points, indicates a high level of TPACK. I combined the TPACK scores assigned to the observed DL lesson with SAMR Model level to identify the level of technology integration exhibited during their observed digital literacies lessons. Combining results of the TPACK rubric and the SAMR framework provided a way to describe the teachers’ competencies when integrating digital literacies.
While the TPACK rubric and the SAMR framework served as tools to describe the teachers’ use of technology during the lesson observations CAEP’s Standard One guided my examination of the teachers’ pedagogical practices related to their use of DL. Specifically, this standard offers a way to examine teachers’ “depth of understanding of critical concepts, theories, skills, processes, and principles” understanding of key concepts of DL and their ability to use DL in ways that align with the curriculum.

Data Management

The following procedures ensured secure collection and storage of the data. I stored all study materials in a locked cabinet in my home. For additional security, consent forms were stored separately from the data. Once the study was completed, I continued to maintain the privacy of the individuals and the security of the data. I used pseudonyms in this report of my study, and I will use them in any future publications or presentations. Once the dissertation process has concluded, all remaining original study documents will remain secure, and all remaining documentation will maintain all participants' anonymity.

Researcher Role

As I embarked on this study, I was aware that it was impossible to distinguish fully my role as a researcher from my position as a teacher in the school. Also, I was aware that as I gathered the information, I would ascribe meaning to that information based on my familiarity with the school context. However, as a researcher, my goal was to be aware of my biases, and their potential to skew my interpretations of the data gathered during the research process. Therefore, I was conscious of my different roles and the biases that could influence my interpretations. To that end, I knew that as a teacher at the school for six years, I was aware of the many instructional challenges that exist for educators of students in an urban low SES
environment. Furthermore, I was aware that as a teacher in the school who regularly incorporates technology in my teaching and comfortably uses digital tools during my literacy instruction, my participants might view me as knowledgeable about how to use technology. To minimize the effect these perceptions might have on my participants' comfort in discussing their use and challenges when using technology, I reminded them at the beginning of each interview that my interest was in how other teachers use technology, i.e., digital literacies in any form. In addition, I ensured the teachers that my observations were not to evaluate what they did base on what I might do. Rather they would help me learn more about how other educators use available technology during literacy instruction and the myriad ways educators use DL during instruction and the challenges they face in its use.

Finally, as an African American woman, I remained cognizant of biases I might possess as an African American woman teaching students who are also African American. Moreover, I realized that during the study, the teacher participants might view me an insider, a teacher colleague and an outsider, and a researcher. Plus, I was aware that I am an African American woman who was embarking upon a study where all of the participants shared my ethnicity, yet our cultural experiences may or may not have been the same. Therefore, I was diligent to not assert my personal beliefs and views into my participants’ narrative. I constantly asked questions to clarify their position and beliefs and performed member checks to corroborate my interpretation of phenomena that occurred during the study. My role as a researcher, however, was to conduct research to help me understand how my participants, teachers of African American students in low SES urban schools, use digital literacies. To ensure I captured the teachers’ voices, I continually asked the participants to reflect on their practices. As I analyzed data and themes began to emerge, I consistently conducted member checks with the participants.
to verify if my interpretations aligned with what they initially stated during interviews and in their audio-journaling. Questions that allowed the participants to speak about their experiences included, but were not limited to the following:

- What do you need as a teacher to be able to use technology effectively with your students?
- In what ways does the school support your development in technology usage?
- In what ways have you been prepared to use DL with your students?
- What additional support would you need to use DL in your classroom?
- Are there certain learning goals you have for your students where the use of DL might be beneficial? Disruptive?

By acknowledging potential biases, my participants as well as my own, I hoped to conduct a meaningful, theoretically grounded, valid study with the potential to inform those interested in how teachers use digital literacies while teaching African American children who attend school in an urban low SES area. I incorporated the strategies described in this section to ensure I achieved this objective.

**Ensuring Trustworthiness**

Qualitative studies must produce valid and reliable results (Merriam, 1998). Therefore, to establish trustworthiness, I used strategies identified by Lincoln and Guba (1985) and Merriam (1998). Specifically, I employed the use of triangulation, member checks, peer debriefing, and
an audit trail. In addition, I acknowledged and was constantly aware of researcher bias as I conducted this research. I used the following strategies.

**Triangulation.** Denzin and Lincoln (2005) define triangulation as a process of seeking multiple perceptions to clarify meaning and verify the repeatability of the observations or interpretations. To accomplish this, I collected data from multiple sources to include observations, individual teacher interviews, focus group interviews, teacher lesson plans, curriculum maps, teacher audio journals, and field note memos. Triangulation of data provided multiple sources of evidence to corroborate phenomena that emerged during the investigation. According to Yin (2003) converging lines of inquiry “…allows an investigator to address a broader range of historical, attitudinal, and behavioral issues” (p. 98). Conclusions that emerge are more convincing and accurate when achieved through the use of multiple sources of information. Multiple sources of data lead to a more comprehensive understanding of the phenomena that emerged during the study (Bogdan & Bicklen, 2007).

**Member checks.** I conducted member checks by reviewing the data and tentative interpretations with the study participants and by asking relevant questions to clarify any conclusions drawn. These member checks enabled me to ensure I accurately represented the participants’ voices. Further, they gave me the opportunity to identify any misrepresentations. Member checks were performed throughout the study. Specifically, when I reviewed the transcripts from the interviews and the audio journals, I wrote memos to record possible questions and themes from the data. Then, I consulted with the participants to clarify my findings and to ensure that my analysis represented their true voices and reflected what they said. I also clarified my findings during the final teacher participant focus group interview. Plus, during the last focus group interview, I gave the participants a final opportunity to discuss, as a
group, additional influences or variables that may have impacted their teaching. This served as an opportunity for them to discuss similarities and differences they experienced and to further expound upon how the context of their environment, experiences, challenges, and beliefs may have impacted their practices.

**Peer debriefing.** I enlisted the assistance of a fellow doctoral student as a peer-debriefer to examine and comment on my findings as they emerged during the study. The use of a peer-debriefer gave me another lens to consider what was occurring during the teachers’ use of digital literacies. The peer-debriefer and I met after I began coding and again after I created the first categories. In addition, the peer-debriefer was used to validate my initial categories. We looked at their definitions as well as reviewed categories and sub-categories I created using the same data set. I compared my initial categories with the peer-debriefer to see if my categories were sound and to get comments on the findings as they emerged (Merriam, 1998).

**Audit trail.** An audit trail provided a place to record all research processes, decisions made during the study, my rationale for those decisions, as well as explanations for revisions made to previously defined procedures. Keeping an audit trail enabled me to chronicle the research process and provide confirmability of the data collected to minimize bias and maximize accuracy (Patton, 2002).

**Ethical Considerations**

Research ethics requires establishing and maintaining a reciprocal and respectful relationship with study participants (Denzin & Lincoln, 2005). To ensure that this study was conducted ethically, I incorporated specific processes before, during, and after the study. Before implementing the study, I obtained permission to conduct the study from the school district in which the school exists, the school’s principal, and my University’s IRB. Once permission was
obtained, each participant went through an informed consent process to ensure she understood: a) how much time would be involved, b) the duration of participation, c) the activities to be performed, d) that participation was voluntary, and e) that she could withdraw from the study at any time. During data collection, I attended closely to the purpose of the study, the possible risks associated with the study, the need to ensure confidentiality, and the right of my participants to withdraw from the study at any time (DeWalt & DeWalt, 2002). I used the same respect and regard for the confidentiality of all data collected during this study. Therefore, to ensure the confidentiality of all of my subjects, I removed all identifying characteristics for each participant on all data and assigned a pseudonym for each participant. Once I uploaded any audio data to a computer, I erased the tapes. At the conclusion of the study, I maintained the privacy of the participants by using their pseudonyms in this report and any future written reports or presentations.

As a teacher in the school where the study occurred, I implemented extra precautions to maintain the privacy of my participants and any student information I became privy to as a consequence of my interviews with the teachers and the administrators or my classroom observations. Data related to specific teacher participants was not shared with the school’s administration during or after the study. Because I am a teacher within the study school, I will continue to make all participants aware that I will not discuss any identifying personal data from the study with other colleagues within the school or members of the administrative team. As a further protection, I asked the participants to refrain from discussing the study with colleagues or other individuals.
Conclusion

The field needs more research into how teachers’ integrate multiple literacies via digital media into their pedagogical practices for young African American children who attend low SES urban schools. Such research can help to address the literacy gap that persists between students who attend schools in low-income areas and those who attend schools in more economically advantaged areas. Children who attend schools in low SES areas need to be prepared for the ever-changing landscape of our increasingly social and global society. Now that research strongly suggests that digital literacies offers a useful and necessary approach to teaching literacy, teachers must embrace the importance of their role in preparing their students to be digitally literate beings. Further, this study aimed to identify issues that challenge teachers’ use of digitally-infused pedagogical practices during their literacy instruction with their urban, low SES African American students. Hopefully, the findings of this study speak to educators who work in similar areas and who strive to incorporate digital literacies in their literacy instruction and who experience similar pressures to use digital literacies. Moreover, as educators become more comfortable with technology, hopefully, the positive effects of digital literacies will be experienced by urban African American children on a larger scale.
4 FINDINGS

The purpose of this study was to understand how elementary teachers in a school located within a large urban school district used digital literacies (DL) with their predominantly African American, low SES students. Findings from the study give a comprehensive view of the context of the teachers’ school environment, illustrate the pedagogical practices that occurred within this context, and identify the challenges that arose when they utilize DL during their literacy instruction. Four teacher participants took part in individual interviews, focus group interviews, classroom observations, and audio-journaling during school hours over a six-month period during the academic school year. Additional data were gathered on the teachers’ observed literacy lessons. The TPACK (2006) rubric provided a means by which to analyze the teachers’ integration of digital technology within the observed literacy lessons. The SAMR (2010) Model provided a way to analyze the teachers’ level of use of digital technology during the observed lesson. Analyses of the teachers’ practices during my observations are included to present levels of DL implementation. Analyzing all of these data revealed the findings reported in this chapter.

Three administrative participants took part in two individual interviews and one focus group interview conducted at the conclusion of data collection. Findings from these interviews provided a broad picture of Thera Elementary School (pseudonym) in the midst of technological transformation. These data offered insights into a) the administrators’ views of the students who attend the school and their academic needs, b) the selection and use of technology, c) the preparation and professional development teachers received to prepare them to implement DL, and d) the curricular goals related to the implementation of DL.

Throughout this chapter, I use excerpts from interview transcripts to support my interpretations. I stayed as close as possible to the participant’s original statements. Thus, the
excerpts include slang or broken English spoken by the participants. For clarity, in some of the excerpts information not related to the topic of interest was deleted. In most cases, I did not transcribe repetitions and pauses. All excerpts refer to participants by their pseudonyms with the exception of Ruby, the researcher and include the source of the excerpt, the lines on which the excerpt exists in the transcripts, and the date of the interview or observation. Although the study’s focus is on the teacher participants, in some instances responses and interactions from the students are included to present a comprehensive representation of the context. All students are designated as student A, student B, etc.

The chapter begins with a presentation of the administrator data, followed by a description of each teacher participant, a profile of her students and the nature of her position within the school. Next the chapter presents three findings that reflect the teachers’ DL implementation. The findings also demonstrate the teachers’ pedagogical knowledge of content and usage of Information and Communications Technology (ICTs), their beliefs toward DL, and how they responded to challenges within the school environment impact the pedagogical practices when implementing Digital Literacies. Analysis through a CRT lens also revealed the importance of using the teachers’ ‘voice’ as an important variable to represent their lived experiences as African American female educators in the context of the school in which they were teaching.

Administrative Perceptions of the School and the Use of DL

To understand the context of Thera Elementary, I utilized data from interviews with the administrative team. Information gleaned during these interviews provided a picture of the teachers’ instructional environment and allowed me to form a deeper understanding of the administrative staff’s vision for the school. From these data, I also gained a sense of the
administrators’ goals for the staff’s use of DL. More importantly the administrative data offered another vantage point to understand the school’s educational environment. This information is organized as follows a) a profile of the students who attend the school and their academic needs, b) the selection and use of technology, c) the preparation and professional development teachers received to prepare them to implement DL, and d) the curricular goals related to the implementation of DL.

**Students of Thera and Their Academic Needs: Administrative Participant Overview**

Thera Elementary School, located in a large metropolitan school district in the southern part of the US, is one of the 26 schools within the school district that has been placed on the Governor’s “Focus Schools” list. Schools on this list represent the lowest 10 percent of Title I schools in the state based on the students’ performance on standardized tests in reading and mathematics. Furthermore, this designation indicates that a substantial achievement gap exists in the academic performance of the school’s bottom quartile of students as compared to the state’s average of students in the bottom quartile. Students who attend Thera Elementary School make minimal progress in closing that gap as compared to students who attend schools within the District with fewer minorities within higher SES areas. To determine the state’s Achievement Gap it measures “[t]he gap between schools’ 25% of the lowest achieving students and the state average and the extent to which the lowest-achieving students are making academic progress in content areas of reading and math.” Based on scores from the 2015, fewer than 35% of the students at Thera are considered proficient in Reading and Math. (Retrieved from [https://www.gadoe.org/External-Affairs-and-Policy/communications/Pages/PressReleaseDetails.aspx?PressView=default&pid=344](https://www.gadoe.org/External-Affairs-and-Policy/communications/Pages/PressReleaseDetails.aspx?PressView=default&pid=344)). The school is primarily African American and 100% of the students qualify for free lunch according
to the United States Department of Agriculture (USDA) Community Eligibility Provision guidelines. The enrollment of the school is approximately 450 students and fluctuates often due to its highly transient population. Roughly 94.3% of Thera’s student population identifies as African-American, with the remaining population being Latino. These academic statistics designate Thera as a school with students with academic weaknesses. These weaknesses place the students in dire need of help and have resulted in the implementation of multiple instructional changes to address their critical reading needs.

The principal of Thera Elementary was Dr. Lisa Smith (Pseudonyms used to represent all study participants.) describes Thera’s students. This was her 3rd year as Thera Elementary School’s principal. Dr. Smith acknowledged that her students were low achieving and attributed some of their deficits to outside forces that did not have to do with problems from the school:

The students in my school are 484 loving children. They come from a variety of backgrounds. We have some with real deficits in terms of learning because their parents depend on school to teach them not realizing that they are their children's first teacher.

She continued,

Many of my parents are actually grandparents rearing grandchildren who are different from the children they reared decade, half a decade ago or longer. They need that support. We have a support group of grandparents who talk to one another to see how they can support each other. These young children who are learning differently ... Also we have a low socio-economic status here. I believe the free and reduced lunch percentage is 98%. However 100% of our students receive free and reduced lunch of the community eligibility options through Atlanta schools so that they can get a hot meal for breakfast.
and lunch at no cost to the parents. Academically we run the gamut. We have children who are gifted, only 2 identified but we have another 28 that are considered gifted and talented, but we also have some children who may be 3 to 4 grade levels behind. That doesn't mean they're not scholars. That doesn't mean that they can't learn. That just means that they're learning a little slower and looking for supports for them, activities for them to get them interested in school because children know what they can and cannot do.

((Initial interview, Oct. 8, lines 70-92))

Data from the interviews of all three administrative staff participants, Dr. Lisa Smith, Principal: Mrs. Monique Knight, Assistant Principal: and Elsa Thomas, Instructional Coach, revealed that they were also keenly aware of the academic deficits of the students of Thera Elementary. They each had a desire to impact the students and increase the students’ academic skills. While both Monique Knight and Elsa Thomas gave statements during their interviews about their desire to help the students grow academically, Dr. Smith presented more of her personal experiences that drove her as the school leader to address the unique needs of her academically challenged students. Dr. Smith had a desire to create a school that would be able to meet those challenges. Her experiences as a product of the same district in which she is now a Principal gave her a unique vantage point. She described how she was bused from the southern part of the district, where she lived in a predominantly African American, low to mid socio-economic area to a school in the northern more affluent part of the District. As relayed in the following comments from her initial interview, her childhood experience in the school system still impacts her today.

A little bit about my background, born and bred in Atlanta, attended Celia Jones Elementary school after being bussed from my home school which would be King
Elementary (all school names pseudonym) so I was part of the minority to majority program prior to it being called that. Actually my attendance at Celia Jones Elementary was part of a mandatory desegregation project brought as a result of Brown Vs. Board of Education so even though that court case was in the mid 50's, I think it was 1954 or so, they had to combat with Brown vs. Board of Education too which was all deliberate speed. Still in 1975 when I first entered public school, we were still working on some of those desegregation and those racial issues even though we were in Atlanta which is also known as Chocolate City. I bring with me those experiences that a little brown girl can learn just as well as a little pink girl or a little tan girl and I don't feel that our children who live in our neighborhood should have to ride a bus for an hour and a half every day each way to get a quality education when they have a beautiful building and quality teachers in their neighborhood.” (Initial Interview, Oct.8, lines 59-68)

Dr. Smith’s past experience of seeing and experiencing the disparity that often occurs in the district between the northern, predominantly upper-class White schools and southern low to middle class schools fueled her desire to create a school that provided quality education for her school. She wanted to ensure that the students in her school were afforded all of the tools necessary to prepare the children to be successful and to be competitive with their White counterparts in more affluent areas. The following exchange during her initial interview represents these sentiments:

In our mission statement which we read every morning we say we're going to create 21st century learners. How are we going to do that if they don't have the tools at their disposal to be able to compete globally and be competitive? With the
help of teachers and once again, I defer to you a lot with things like that. (Initial Interview, Oct. 8, 2016, Lines 195-198)

As I further analyzed the data to gain a sense of the leadership’s purposes for including technology at Thera. Their responses, primarily those from the principal, indicated that there was a sense of urgency for the students because of their academic challenges. Each member of the administrative staff who participated in the study stressed that the majority of the students at Thera experienced extreme challenges in reading. Those challenges ranged from weak phonological and decoding skills to more complex components of reading, such as comprehension. While the challenges were high for the students, Dr. Smith expressed her goal to prepare the students to be as academically successful as other students in the school district. This could be accomplished she believed by providing the students an excellent education. Her vision for her school below echoes her sentiment:

I bring with me those experiences that a little brown girl can learn just as well as a little pink girl or a little tan girl and I don't feel that our children who live in our neighborhood should have to ride a bus for an hour and a half every day each way to get a quality education when they have a beautiful building and quality teachers in their neighborhood.

The Selection, Purchase and use of Technology for Student Instruction

The Administrative staff noted that although many of the students performed below level in reading, they felt the technology in the school as well as new technology could benefit the students. They identified online resources, such as Mastery Connect, and Study Island, both computer sites that allowed the students to practice reading and math skills, as resources they found effective in engaging students and increasing their learning. The administrative staff
visited other schools to identify the types of technological tools and applications to purchase. Dr. Smith expressed that she believed technology offered a key method to help the students acquire a quality education:

Going to other schools and seeing what other schools have, coming back and taking inventory. Also really believing in the mission and the vision that we set for our school. In our mission statement which we read every morning we say we're going to create 21st century learners. How are we going to do that if they don't have the tools at their disposal to be able to compete globally and be competitive? With the help of teachers and once again, I defer to you a lot with things like that. What have you seen, especially teachers that are in grad school. What kind of technology are you all talking about? What kinds of things are you all using and to also bring that into the school. With the assistance of my team, I know we use technology ... I have to say in the last two years and three months that I've been here, we've spent probably $150,000 or more on technology.

(Initial Interview, lines 192-203)

Overall, statements made by the administrative staff conveyed that the Principal was the one who ultimately determined what technology to purchase. Although the Technology Committee, comprised of ten teachers, which met periodically to discuss the types of technology to purchase, provided input. In addition, Dr. Smith stated she also relied upon the teachers’ input, especially teachers whom she perceived as knowledgeable about new technology. During her interview, she discussed how she made decisions regarding the purchase technology:

First, we're probably one of the largest elementary schools in Atlanta public schools so having one lap top cart was not going to be sufficient. We had to put
the money where our mouth was. If I tell parents that I'm giving them the best
education and don't pull your children out to go to another school when we're
right here in your neighborhood, I need to make it attractive. I also had to do
research myself and look what is out there. That's how I found out about the
Promethium tables. What is out there that will help students, especially those who
may need a little push academically.

Like I said, my team has been very ... I rely heavily on them because I need to
know and be assured. This money is not in the school budget. This is federal
dollars. I am, I have a fiduciary responsibility to the tax payers to spend their
money wisely so I had my team look. (Initial Interview, Oct. 8, 2015, lines 221-231)

Dr. Smith shared that her personal experiences drove her desire to create a school that
provided innovative instruction for her African American students. Mrs. Monique Knight, the
Assistant Principal, expressed she viewed the use of technology as necessary because of current
shifts in education. She also expressed a desire to prepare students for the future by using
technology. Concerns raised by all administrators included the teachers’ infrequent use of the
available technology, lack of sufficient staff to train teachers in how to use the technology
available, and the need to align the use of technology with the curriculum. Based on their
understanding of the school’s needs, the administrative staff expressed a desire to help the
teachers more effectively use technology by providing ongoing professional learning.

**Ensuring Teachers Were Prepared to Implement DL During Literacy Lessons**

The administrative staff agreed the school was in the early stages of using technology.
As the leader of the school, Dr. Lisa Smith communicated her goal and expectations for the
teaching staff to use DL in their instruction. Both Dr. Smith and Mrs. Knight expressed a desire to see teachers use the available technology in more ways than as projectors and word processors. When asked about the state of the teachers’ use of technology as compared to their use of traditional literacy practices, Ms. Thomas responded in the following manner.

   Um, I think, I think this school is at a, at a beginning level with technology, um in integrating the computer skills um in applications to literacy. I think it’s more paper pencil. (Initial Interview, Oct. 8, 2015, lines111-112)

You know a lot of what I’ve seen is um projection, just projection of stories (Ruby: ok) Inaudible. I haven’t seen um much more. (Elsa, Initial Interview, lines 142-143)

I think part of that (issue) is because technology to them, a lot of teachers, is turn on the Promethium board and it works. I'm trying to help teachers to understand that the Promethium board or the Smart Board is not a projector, a glorified projector. It is a tool that children can get up and it can be very interactive to help improve teaching and learning.

(Initial Interview, lines 173-177)

The administrative staff acknowledged that the teachers needed professional development for how to use technology during their literacy instruction. The administrators’ observation of teachers’ practices revealed that the teachers at Thera needed more assistance in this area. Both Dr. Smith and Mrs. Knight saw an immediate need, but they continued to discuss the best course of action. Mrs. Monique Knight described the type of Professional Development the teachers needed.
“One thing that we've done as a school is we have looked at some professional development that would be beneficial to all teachers that are on staff because of the deficits that we've seen across the board. We've offered that professional development to all teachers so that we could help catch those students that have gone past the third grade. Where the expectation is that they're fluent readers and can read at least on a third grade level. Make sure that they're literate at that level.

However, we have some students at fifth grade that can't recognize letters or know sounds. That professional development has been given to all staff members in hopes that they would use those skills and strategies even with those fifth graders that are not literate.” (Initial Interview, October 8, 2015, lines 151-160)

While this response targeted the need for professional development, the professional development mentioned did not incorporate helping teachers use technology in ways that enhanced literacy instruction. After asking Dr. Smith what systems were in place in the school to assist teachers in their use of DL for literacy instruction, she acknowledged she relied on the teaching staff’s expertise:

To be honest with you, no in terms of something formal. I may go ask another teacher who I feel is good at it quote unquote, to go and assist this teacher but I will talk to that teacher first. Hey I see you're using this tool in a method that you can really enhance it, why don't you talk to Mrs. Champion for example or go see Mrs. Champion and see how she uses the FlipCharts or Promethium Planet or whatever other interactive kinds of software that's out there, but to have a systematic plan in place I don't because it's so case by case and people get really sensitive when you tell them that you feel that they are deficit in a skill, not that I won't have
those courageous conversations, but right now we're really focusing on that literacy piece and if I can get everybody on board with that then we can, with your help of course, help us to integrate that technology.” (Initial Interview, October 8, 2015, lines 181-190)

The administrative staff responded that the teachers needed to learn more about how to use the technology already available in the school. They said they frequently observed novice displays of technology use by many of Thera’s teachers during their required “walk-throughs” and mandatory “teacher observations.” This concerned the administrative staff and impacted the schools’ mission to “create these children who are able to be 21st century learners using technological innovation.” (Initial Observation, October 8, 2015, lines 311-312).

**Curricular Goals Related to the Implementation of DL**

Comments from the administrative team indicated that the incorporation of technology into the teachers’ practices was a school focus. As a whole, they indicated the school is in transition in its use of technology. Recently, they spent over $150,000 to add to the school’s technology. Dr. Smith, along with the other administrative staff decided they needed to make these purchases to provide the most up-to-date technology in order to give the children the opportunity to learn how to use technology for reading, writing and math. They said they also decided that they needed to make these purchases to support the school’s move to become a STEM (Science, Technology, Engineering, and Mathematics) school. This move to a STEM school requires teachers to integrate effectively traditional literacy practices with newer techniques to teach content across the curriculum.

Because all of the administrative staff acknowledged many of their teachers needed instruction in how to use technology, I asked them to provide their views of how the teachers
could merge traditional ways of teaching literacy with technology. Their response alluded to the need to use technology for DL as an ongoing issue the administrative staff continues to address. She comments during her initial interview resonated this stance:

Can it be done? Absolutely it can. How do we merge those two? That’s something we’re going to have to work out with a team. We have a literacy team in place. We have a technology team in place. That ‘s something that we’re going to have to work on together,. I don’t have the answer to that and if I did I’d surprise myself but I know it can be done.” (Dr. Lisa Smith, Initial Interview, Oct. 8, 2015, lines 295-298)

Data from the administrators indicted that Thera Elementary is in the midst of change in using technology. They indicated they continue to seek ways to encourage the teachers’ use of technology in response to curricular demands and current shifts in education to include technology as a means to develop their students’ communication and academic proficiency. While the administrative data provided an overview of the school’s shift toward including technology, the teacher participant data offers an in-depth examination of how the teachers used DL within their literacy teaching. Providing the results of that examination begins with background information about each of the teacher participants.

**The Teacher Participants**

Four certified teachers were selected using purposeful sampling from the school’s teacher population and my professional knowledge of their pedagogical practices. This allowed me to examine teacher participants who represented a range of teaching experience and who possessed different levels of experience using digital literacies in their classrooms. The teachers included Ms. Tailor Bryson, Dr. Laverne Browne, Ms. Camille Olson, and Ms. Carter.
Mrs. Tailor Bryson is a 44 year-old third-grade teacher. At the time of the study, she had taught for 17 years and had been a third grade teacher for 6 years. In addition to third grade, she has taught kindergarten, first, and second grade. However, she indicated, she enjoys teaching third-graders the most. Even though a veteran teacher, she had only been at Thera Elementary School for the past two years. She taught for 15 years in a neighboring school district teaching students with similar demographic characteristics. While at Thera Elementary, she had taught regular education students, but this year marked her first experience teaching an Early Intervention Program (EIP) designated class. In Georgia, EIP is an intervention program designated to provide additional instructional resources to students to assist them in obtaining the academic skills needed to reach grade-level performance (Georgia Department of Education, www.glc.k12.ga.us). This designation enabled her to have a smaller class size, one of the provisions allotted to public schools to meet the needs of each of her low-performing students.

Mrs. Bryson’s class consists of 13 students, with the majority classified as performing below grade-level in both reading and math. Based on results from the Computer Adaptive Assessment data and the DRA (Developmental Reading Assessment) data, Mrs. Bryson described her students as hard working but very low in their academic skills and abilities. Though she acknowledged in her initial interview that it would be a challenge to address her students’ academic deficiencies, she felt positive about her students’ motivation to learn. The following statement made during her initial interview represents her positive outlook:

The type of students I have this year, they are low-performing students. I have the EIP class so I have a smaller class setting. They're very hard-working. They want to be on grade level. They told me the other day, they said, "Miss Bryson, we want to do our best" so they want to learn so that's a good thing.
During the initial interview at the beginning of the study, Mrs. Bryson described her relationship with technology. When asked to indicate her level of understanding of how to use technology on a scale of 1 to 10, with 1 representing little to no understanding and 10 representing a lot of understanding, she described herself as being “in the middle” as a user of technology with her students. Mrs. Bryson indicated she felt very comfortable using technology and was “really good” using it in her classroom with her students. She rated herself “in the middle” rather than higher because Thera had a lot of technology she had not, “learned how to manipulate and use within the classroom.” (From initial interview, lines 120-121). When asked to describe the Professional Development she had received, she stated she received training in how to use the Promethean Board. In her two years at Thera, the Media Specialist demonstrated how to use a Docucam and provided a brief training on how to use MacBooks.

Dr. Laverne Browne is a second-grade teacher with over 23 years of teaching experience. She had taught in several schools in this same school district. This is her second year at Thera Elementary School where for both years she had taught in an EIP, self-contained classroom. At the age of 56, Dr. Browns was a seasoned veteran teacher who had taught kindergarten for seven years, first grade for six years, and spent five years as a reading specialist. Currently as an EIP teacher, Dr. Browne worked with small groups of students to address their reading and math deficits. She described her students as below grade level in reading and indicated that data from the school’s Computer Adaptive Assessment revealed that her students performed at a kindergarten grade level in reading and mathematics. She added that her students are “slower than the other children in the second grade” and exhibit “signs of potential failure in a grade or with certain standards.” She also felt that the students lacked skills in certain basic concepts they
needed to be successful in school. She stated that all of her students were placed in her class because they had weaknesses in language arts and in mathematics. She believed they needed to “be taught from hands-on, concrete to abstract and ideas, and they have to be taught it in many cases very much like they would as if they were in the kindergarten.” In her initial interview she noted,

…they need a slower pace. They need lots of repetition. Some of them, um, based on SST meeting where we sit together with parents, teachers, and specialists to determine what their weaknesses are and how to overcome it, they need lots of repetition on baseline concepts and computers can do that for me with them without me having to stop the flow of the general class education. (Initial Interview, October 16, 2015, lines 165-169)

She expresses concern that her students would not master reading and believed she must use hands-on approach to meet their severe needs.

When asked during the initial interview to describe her relationship with technology, Dr. Browne began to reflect on how her childhood experiences and familial relationships, described in the next section, impacted how she now teaches and how she uses technology with her students. Perhaps these early experiences led to Dr. Browne viewing herself as less than “tech-savvy” and lacking knowledge in her ability to use technology with her students as evident from this statement during her initial interview “I don’t consider myself technologically advanced at all.” (Initial interview, October 16, 2015, line 62)

Ms. Camille Olson is a 32 year-old teacher with 10 years of teaching experience. She began her teaching career in Florida where she taught for five years. During that time, she taught
second grade, multiage kindergarten-first grade class, and fifth grade. She had taught at Thera Elementary for 5 years, where she began as a fourth-grade teacher and now was in her second year teaching first grade. Although she was not as experienced as the other two participants, her 10 years of experience was with predominantly African American children with similar backgrounds as Thera’s students. This experience, she said, played a major part in her pedagogical practices and in her beliefs about educating students from this demographic.

Ms. Olson stated that her students’ academic ability ranged from severely low to one student designated as gifted. Computer Adaptive Assessments (CAAS) pre-tests administered to all students at the beginning of the year, revealed that the majority of her students’ performance levels in reading and in math only approached grade level, indicating they do not meet the appropriate standards and expectations of a 1st grade student. Moreover, she explained data from the CAAS indicated her students lacked the foundational reading skills in phonemic awareness, phonics, fluency, and comprehension. Even though many of her students performed below grade level in reading, she believed she could address the skills they needed to be successful in reading by utilizing a variety of ways to expose them to reading.

When asked during the initial interview to indicate her level of understanding of how to use technology on a scale of 1 to 10, she rated herself a 7. She explained her rating as follows:

Because nobody's all the way there because there's still new stuff coming out. I feel like I'm still learning new things and new strategies and new apps and new software programs, so I wouldn't say 10. 8 is kind of close to 10, it's like, "Okay, I feel like I could still do more." 7 is like "getting there." I'm making the appropriate steps to get where I need to be to make
our students 21st century learners. (Initial interview, October 8, 2015, lines 114-118)

The fourth participant is Ms. Carter a 41-year old teacher with 18 years of teaching experience. During these 18 years, she had taught in grades 2 through 6, in two Southern states and in schools with predominantly African American children with backgrounds similar to the students at Thera. She stated that her 18 years of experience teaching children who resided in a low SES urban community influenced not only how she teaches but her beliefs about educating students from this demographic. During her six years at Thera, she had taught fourth and fifth grades and now served as the school’s technology teacher. This was a new position at Thera. Technology is part of the school’s enrichment schedule. In this role, she taught technology to all of the school’s students, kindergarten through the fifth grades, at least once a week. As the technology teacher, her background varied from the other study participants. Despite not trained as a technology specialist, Ms. Carter stated she has always been interested in using technology with her students. Given that most of her experience was teaching upper-grade students, she stated she had made major adjustments in her teaching. For Mrs. Carter, the biggest adjustment she has made as a technology teacher is responding to the learning styles of her younger students, whom she indicated needed more attention and direction.

Um, it’s, there’s a lot adjustment. And I really have to, uh, I primarily [have] been an upper-grade teacher, so to just adjust what I’m doing to the younger students, for me that’s the biggest part. So I’m trying to make sure that I’m attending to their learning styles… (Initial Individual interview, Oct. 8, lines 52-55)

When asked during the initial interview to indicate her level of understanding of how to use technology with her students on a scale of 1-10, Ms. Carter rated herself a 7. She explained
she rated herself at that level because she feels 50% of her implementation was “trial and error” while the other 50% was based on her, “figuring out “ on her own how to use the different types of technology from websites like Pinterest and Google. Even though the District provided webinars on how to use technology which it considered professional development, she indicated she preferred to learn on her own and then bring that knowledge back to use with her students. She added that this approach reflected her quest to find something new to bring back to her classroom to use with her students.

Unlike the other participants, Ms. Carter was not responsible for teaching the core subjects of reading, math, and social studies. As the technology teacher responsible for using technology with all of her students, she offered a unique perspective to the study. Given this perspective, I asked her to describe her students’ technological skills. She responded that during the first two months of instruction, she noticed the students needed more foundational skills in how to use technology. Ms. Carter described her students’ technology skills during the following exchange during her initial interview.

Ms. Carter: My students are very tech savvy as far as using technology for gaming purposes, but the transfer over for learning is kind of hard for them. They are inquisitive, they like to ask questions and they like to show you what they know. And you know, um, they’re busy (laughs)

Ruby: (laughs) Are they, um, (pause) Are they used to using technology for reading on a normal basis?

Ms. Carter: No I don’t think that they’re very comfortable with doing, uh, using technology for reading.
Ruby: Ok so what do you think they need to know and to be able to do to be successful in their literacy abilities?

Ms. Carter: I think for their literacy abilities they need to be able to just take meaning from what they’re reading. I think they need to be able to understand what they’re reading, after, because I, I see them reading and rereading and they’re still not taking meaning away from what they’re doing. (Initial Individual interview, October 7, 2015, lines 78-95)

As evidenced by these descriptions, the four participants brought a variety of teaching and technology experience to this study. These differences were evident in the degree to which each implemented DL during their literacy instruction. I identified three levels of DL implementation among the participants. Descriptions of each follows.

Three Levels of DL Implementation Observed During DL Lessons Based on TPACK Rubric and SAMR Model

As described in Chapter 3, I used the TPACK rubric and the SAMR Model to examine and compare how the teachers used DL during their literacy lessons. To review, the TPACK Rubric enabled me a) to analyze the degree to which the technology and its application aligned with the curriculum goal and b) to examine the fit or congruence across the technology and the content and instructional strategies content (Harris, Grandgenett, & Hoffer, 2010). I used the SAMR Model to examine how computer technology integration transformed or enhanced traditional pedagogies through the use of new efficient technologies to substitute, augment, modify, or redefine educational tasks. Examining the teachers’ implementation of DL during literacy instruction represented one aspect of the teachers’ pedagogical practices and as such addresses the study’s first research question, “What pedagogical practices do teachers of African
American children in urban low SES classrooms use when integrating digital tools during their literacy instruction?”. During their observed lessons, the four teachers exhibited the following levels of DL implementation: Limited DL Implementation (less than 70% or 0-11 points out of 16) Moderate DL Implementation (70-85% 12-13 points) and Full DL Implementation (86%-100%, 14-16 points). Combining scores from the TPACK rubric with the level of technology integration identified from the SAMR model enabled me to better understand the participants’ level of integration of technology and their level of knowledge exhibited during the DL lesson. Next, I present descriptions drawn from field notes of my observations of DL lessons and interviews to illustrate the three levels of DL implementation exhibited by the teachers. I also include their perceptions of the challenges that impacted each lesson.

**Limited DL Implementation**

Limited DL Implementation represents the lower end of the DL spectrum of integration. The lessons in this category were designated by the participant to have a DL focus, but during the lesson limited use of technology devices and applications were observed. Based on the criteria outlined in the TPACK rubric, implementation of lessons in this category a) demonstrated limited alignment across the technologies and the curriculum goals, and instructional strategies, b) used technologies minimally and when used nominally supported the instructional strategies used by the participants, c) demonstrated the technology had limited or no compatibility with the curriculum goal, and d) illustrated that a lack of fit or congruency existed between content, instructional strategies and technology. Essentially at this level, teachers relied on traditional methods of literacy (paper and pencil or books) to teach the lesson focus and to reach the objective identified in their lesson plans. When applying the SAMR scale to the same lessons, those that closely aligned with limited DL Implementation as determined by TPACK
Rubric, displayed implementation of technology at the minimal SAMR level, substitution.
Technology used during lessons at the substitution level only served as a substitute for traditional methods, for example, paper and pencils. Mrs. Tailor Bryson demonstrates lessons at this level.

In all of Mrs. Tailor Bryson’s observed DL lessons, she focused on phonics with her third grade EIP class all illustrated Limited DL Implementation. During her first observed lesson, which did not occur until December due to several schedule constraints and conflicts, Mrs. Bryson presented a 45-minute phonics focused DL lesson. Based on Mrs. Bryson’s lesson plans, the objective of this lesson was for the students to distinguish words with long vowel sounds from words with short vowel sounds. She identified the following Common Core standards as the lesson’s guiding objectives:

ELAGSE1RF2: a. Distinguish long from short vowel sounds in spoken single-syllable words
ELAGSE1RF3: c. Know final –e and common vowel team conventions for representing long vowel sounds.

Mrs. Bryson used the following materials to represent the technological tools for the lesson: the website, http://www.readwritethink.org/files/resources/interactives/picturematch/, iPads for each student to access the website, and the Promethean Board to introduce the lesson. In addition, each child used their My Phonics Rule Book, to record additional information regarding the phonics rules they learned during the lesson. Also used were notecards, pencils, and vowel sound pictures. During the follow-up interview, Mrs. Bryson remarked that she designed the lesson to help the students learn to recognize and decode printed words. Mrs. Bryson taught this lesson at the beginning of her Literacy Block that occurred daily at 8:00 a.m., the only time Mrs. Bryson taught literacy during the day.
The lesson begins with the students working together as a whole group. Mrs. Bryson used traditional chart paper and note cards to review phonics rules. A chart, placed in the front of the classroom, displayed words with different vowels and word patterns printed underneath each word. Mrs. Bryson began the lesson by telling the students they would review short and long vowels by calling out the words on the cards. She asked the students to write words on notecards that corresponded to the picture displayed on the Promethean Board. Then, the students worked together to identify each word. In addition to writing the word, the students indicated if the word had a long vowel sound with a macron and a word with a short vowel sound with a breve. During this part of the lesson Mrs. Bryson planned to use the Promethean Board as a projector to display the words. The first picture displays a dog. Mrs. Bryson calls on Student A (girl), to spell the word as Mrs. Bryson writes it on the board. This interaction proceeds as follows:

Mrs. Bryson: remember their c and k rule so that they’ll know when to use it

Mrs. Bryson: Who can tell me the rule?

Student A (girl): I like cake

Mrs. Bryson: ok, but who can give me the rule for when we use the letter c when we’re spelling or when we use K

Student A: (Little child correctly states the rule.) ‘A’, ‘O’, or ‘U’ is (used) with ‘C’ and ‘I’ and ‘E’ is a ‘K’ word.

Mrs. Bryson: So say it a little better for me

The student continues by reciting the rule exactly as stated in the phonics rulebook. The next word presented is bike. Mrs. Bryson calls on Student B (boy):

Mrs. Bryson: spell ‘bike’
Student B: \textit{b-i-k-e}

Mrs. Bryson: well why isn’t it this rule?

On the chart, Mrs. Bryson points to another way to spell long \textit{i}. and erases the e from the end of the word. The student responds.

Student B: because it uses magic ‘e’

The review continues for a few more minutes. Then Mrs. Bryson informs the students they will play games that use the same long and short vowel sounds just reviewed. She tells the students they each will get an iPad to play the phonics game. She instructs the students to log on to the web-browser Safari, and hands each student a slip of paper with the web-browser’s address. The students begin to log onto the website on the iPads, while Mrs. Bryson circulates to assist them with logging onto the website. At this point, she notices the students are unable to log on to the website. She appears irritated as the students ask for help. In spite of her perceived irritation, she turns to me and calmly says:

“This is the reason that I don’t like using the iPads because of the “flash.” These sites I think use flash and you can’t use that on the iPads. And I think all of these have flash. If it doesn’t work then we are going to use the Promethean Board.”

Her comment prompted me to record the following memo to remind myself to ask the questions listed below in our follow-up interview, because I believed her responses would enable me to gain a better understanding of what influenced her decision to use iPads.

Researcher Memo (Dec. 10, 2016, During Lesson 1 Observation):

• Ask her if this is a lesson that she has ever done with the students before?
• Is it new for the students?
• How often do they get to use the iPads?
• What made you use iPads today?
• Would you have used a different type of device? (Note: I asked this question because I knew that many of the teachers checked the technology out on the day of this observation, I suspected there may be limited availability that day because teachers were completing their DRA and many used technology to give the students something to do as the teacher individually assessed the students.)

As the lesson continues and the students are unable to log onto the website; she informs the students that she needs to change her plans. At that point, she calls the students to the carpet and she displays the website www.readwritethink.org/files/resources/interactives/picturematch on the Promethean Board. She uses her computer as the driving device and the Promethean Board to display the phonics game she originally selected for the students to play individually on their iPads. She tells the students instead of playing the game individually on their iPads, they will play a short vowel game as a group on the Promethean Board. The students display slight frustration; possibly concerned that all students would get a turn as suggested by the comment made by Child B, “Are all of us going to take a turn?”

The game plays the sound of the letters located in the boxes below the picture. The game begins by displaying a picture and then says the word represented by the object in the picture as it appears on the screen. Mrs. Bryson selects her students one-by-one to go up to the Promethean Board and physically select the short vowel sound that matches the word by tapping on the box with the corresponding letter. Once all students took a turn identifying the sound, Mrs. Bryson says, “Ok, now I’m going to take away the sound.” She turns the volume down, thereby requiring the students to read the word and then select the correct corresponding short vowel sound without the verbal assistance from the game. When this part of the game ends, Mrs.
Bryson announces she will follow the same process to identify the long vowel sound in the word that names the item in the picture presented on the screen. The volume remains off, requiring the students to identify the word and the long vowel sound without hearing the word pronounced first. Mrs. Bryson said to the students, “It’s easier when you hear it, but I want you to be able to look at it and sound it out.” The students appeared antsy, perhaps because they were waiting for a turn to play the game.

I used the teacher’s entry in her audio journal and my follow up interview to gather additional information about the observed lesson. Mrs. Bryson revealed in her interview that initially she wanted to check out one of the two MacBook carts, which houses at least 30 MacBooks. This would have allowed each student to have his/her own computer, however when that morning she tried to check out a cart neither was available. This illustrates one of the challenges the teachers faced when trying to implement DL lessons. This challenge along with others will be discussed in more detail in this findings section.

Using the TPACK rubric based on the activities in the observed DL lesson I rated Mrs. Bryson’s lesson an 8 out of 16 points. This score designated her knowledge of the digital tools used during the lesson as Low. In this lesson, she established clear curriculum goals as represented in the two CCSS standards and the two methods of technology used aligned, iPads and Promethean Board. Based on the criteria for Curriculum Goals and Technology I assigned her 3 out of 4 points. The instructional strategies used to teach phonics in conjunction with the selection of iPads to deliver the applications from the website did not support Mrs. Bryson’s goal to allow the students to explore the website. Moreover, she was unaware that the device selected, iPads, required the Flash application and iPads lac to access the desired website. In addition, her use of the Promethean Board as a backup for the iPads, did not allow the students to
see how the website functioned and limited the students’ participation in the game to only 1 to 2 students at a time. Therefore, based on the criteria in Instructional Strategies and Technologies area, I rated her 2 out of 4. In addition, based on the criteria in the area of Technology Selection, I rated her 2 out of 4 because she lacked the knowledge of the iPads functionality and she did not explore its use prior to the lesson’s implementation. This led to a last minute change in the lesson to use the Promethean Board instead of the iPad. Finally, due to the inconsistency between the content, pedagogy, and technology, I assigned Mrs. Bryson 1 out of 4 points for the overall Fit of the technology with the lesson. In her lesson, she primarily relied on traditional methods to deliver the phonics lesson, using paper and pencil, and she used the technology for additional practice or as remediation for this group of low-achieving students. Essentially, her use of technology did little more than replicate what could be accomplished with more traditional methods. However, I did give her credit for Partial integration of technology. Even though she used traditional literacy to review the phonics standard, she did use technology for student practice. Based on criteria described in the SAMR model, I designated this lesson’s level of integration as Augmentation, because hearing the word pronounced confirmed for the children if the word they selected was correct. Hearing the sound also modeled how to make the long or short sound based on the phonics rule/pattern taught.

To gain a deeper understanding of Mrs. Bryson’s thinking during lesson and to clarify why she chose to use the type of technology to conduct this DL lesson, and to get a clearer view of the successes and challenges of the lesson, I examined her audio-journal entry that followed the lesson.
In her audio journal, Mrs. Bryson offered reflections on her pedagogical practices and indicated her views of the successes and challenges of her observed DL lesson. Her comments revealed that she thought the lesson went well, although she indicated she did notice some of her students struggled to grasp the rules of how to determine which words used short vowels and
which used a silent e to make the long vowel sound. Her journal reflections indicated she thought that her choice of the website was appropriate, but she would use something other than the iPad when the program required Flash. During our follow-up interview, she revealed, this was the first time she had used technology to teach literacy with her students. The following interview excerpt references her reflective memo that clarified my understanding of the observed lesson.

Specifically, it provided answers to the questions I generated during the observation regarding her choice of iPads for the lesson.

Ruby: Mini lesson. Okay. Cool beans. I noticed that this lesson used iPads. Have you used this same type of lesson with them before or was this the first time that you've done something like this?

Mrs. Bryson: We've done the vowel sounds before, but not with the iPads. That's why we ran into that little snafu.

Ruby: I've got you. You, normally, do your phonics lessons with your chart that you had up with all of the short and long vowels and some words underneath it. They were familiar with that.

Mrs. Bryson: Yes.

Ruby: The new addition was the iPads?

Mrs. Bryson: Yes.

Ruby: What made you choose iPads, today?

Mrs. Bryson: Just to give them something interactive to do. We try to give them something different, because what we've been doing is doing paper, pencil, notepads, pretty much writing.

Ruby: All writing?
Mrs. Bryson: All writing.

Ruby: We are three or four months in, so have you been mainly, even in your other lessons that you’ve done for literacy, primarily focus on paper and pencil.

Mrs. Bryson: Pretty much. Let me back up some. Dealing with the vowel sounds, we've been working on this lesson for about three weeks on and off, dealing with professional learning and everything that's going on.

Ruby: Okay. I see what you're saying.

Mrs. Bryson: They have done games in smaller groups, where they had to match long and short vowel sounds. It's still somewhat paper and pencil, but more of a game where it's hands on.

Ruby: Okay.

Mrs. Bryson: Not just writing.

Ruby: Right, but none of it was incorporating that digital piece or any other technology?

Mrs. Bryson: No.

Ruby: Okay. Why would you say that is?

Mrs. Bryson: They need more paper and pencil. They need more of something they can see and put their hands on. I think that may have helped them dealing with that piece today with the interactive. Just so they can say, "I remember this. I remember we talked about matching the pictures." They, in their games, had to match the pictures with the vowel sounds.
Ruby: Let me make sure I'm getting what you're saying. They needed that foundational knowledge of phonics, because it is the EIP or lower class so you wanted to focus on paper and pencil.

Mrs. Bryson: Yes. More concrete.

Ruby: Is that easier for you to teach with?

Mrs. Bryson: No.

Ruby: Okay. That's just a choice, but for you, it seems like they're getting it better that way?

Mrs. Bryson: Yes, because as you can tell when it's time for technology ... You probably couldn't tell, because we couldn't get on. It takes up a lot of time.

Ruby: Okay.

Mrs. Bryson: The kids trying to type and picked it in.

Ruby: Mm-hmm (affirmative). It was too much.

Mrs. Bryson: It was too much.

Ruby: No. I get that. Was the usage of the iPads new for the students, though?

Mrs. Bryson: They've used the iPads before, but not with this lesson.

Ruby: Okay. How else have they used them before?

Mrs. Bryson: Math.

Ruby: With math, primarily.

Mrs. Bryson: They use them on math. Yeah.

Ruby: Is it easier for you to use it for applications, or why is it that you choose it more for math work?
Mrs. Bryson: Math is because that's what I teach, primarily. We switched classes, so I'm, basically, a math teacher.

Ruby: Got you. How often do you have your children for that literacy piece though?

Mrs. Bryson: Just for that hour. Well, hour and a half in the morning.

Ruby: Okay. Then, the rest of the time you're teaching all of the other classes in math?

Mrs. Bryson: Yes.

Ruby: That is interesting. Okay. I didn't know that. What made you choose iPads? I don't think I asked that, but you said you wanted it to be an interactive piece. What made you choose iPad over computers or some other type of technology?

Mrs. Bryson: I was trying to get something else, because I know sometimes with those iPads if you don't have that Flash it doesn't work.

Ruby: Got you.

(Observation 1 Lesson 1 12/10/15):
As evidenced by her response to my question, “Have you used this same type of lesson with them or was this the first time that you’ve done something like this?” she revealed this was the first time she had used iPads or technology with her students during literacy instruction. Her instructional practices reflect Mrs. Bryson’s use of a traditional approach to teaching literacy. In this exchange, she offered further support for her preference to use traditional methods when teaching literacy instead of using DL when she states, “They need more of something they can see and put their hands on.”

**Moderate DL Implementation**

In the middle of the DL spectrum of implementation is Moderate DL Implementation. Lessons in this category utilize ICTs during DL instruction and demonstrate some level of alignment with curriculum goals and technologies. Based on the criteria outlined on the TPACK rubric, i.e., instructional strategies and technologies moderately supported the lesson, some compatibility of technology and applications with the curriculum goal existed and an observable fit or congruency across the content, instructional strategies, and technology existed in the lesson. Purposes for the integration of technology at this level varied depending on the lesson. Based on sub-categories that emerged during analysis of data from the DL lesson observations and participant interviews, the teachers’ stated purpose for using the technology included but was not limited to using technology as remediation, using technology as the teacher, using technology as exploration, using technology as a means of assessment, and using technology as “a reward.” When applying the SAMR scale to the same lessons, lessons that aligned with moderate DL Implementation displayed implementation of technology at least modified or redefined the literacy tasks.
Ms. Carter’s third DL lesson with a class of fourth-graders illustrates Moderate DL Implementation. It was the second part of an unplugged programming lesson taught conducted to extend the students’ knowledge of how programming works and how symbols can be used to create and communicate the steps to solve a problem. (Note: unplugged lessons are teacher-led lessons or activities with a technology focus without using a computer (Code.org). Code.org is a non-profit organization that exposes teachers and students to computer science.) Lessons at the moderate level exposed students to concrete examples of communicating using algorithms, applied when programming using a computer. Ms. Carter’s goal was for her students to take the concept of coding and apply key vocabulary words, symbols, and cardinal directions.

Ms. Carter’s lesson came from one she learned from a professional learning experience developed by Code.org she had participated in at the school the previous month. In an attempt to learn more about incorporating technology and DL into her classroom, Ms. Carter proactively sought out and brought a representative from Code.org to Thera Elementary to train teachers interested in learning about incorporating coding into their classrooms. The following lesson objectives from Code.org guided the DL lesson:

Students will:

- Understand the difficulty of translating real problems into programs
- Learn that ideas may feel clear and yet still be misinterpreted by a computer
- Practice communicating ideas through codes and symbols

Prior to beginning the lesson, Ms. Carter instructs the fourth grade class to log onto their computers and sign on to Quizzizz.com, a site that creates assessments of technology information. Ms. Carter comments that she often uses these assessments at the beginning of her
lessons to transition the students from their regular classrooms to the computer lab and to shift
their focus onto using technology.

Once the students enter the classroom, they log onto their desktop computers. Ms. Carter
directs the students to log onto their quiz by using the pin code displayed on the Promethean
Board located in front of the classroom. The quiz consists of five questions Ms. Carter uses to
review content identified by the school’s district as technology content each student should
know. Sample questions include asking the students to identify the definition of Internet and the
correct description of a browser. Ms. Carter stated in a follow-up interview that she wanted to
ensure the students were prepared for the district-wide test that assesses technology content the
students need to master. Excerpts from the lesson follow.

The Quizizz website Ms. Carter uses displays the number of students who answered the
questions correctly and those who answered the questions incorrectly. She stated later that she
uses this tool to quickly assess what the children had learned and to develop future lessons to
reteach the technology skills and concepts the students still need to master.

As the students continue to answer Ms. Carter interjects the following:

Ms. Carter: “Now Ms. Baker I can see that we do not know answers 3 and 4.
We’re not sure what the Internet is and we don’t know what a web browser is either. So
we need to review again.

Ms. Carter then ends the review. She signals to the students to come to the front of the
classroom and sit on the carpet and she begins to question the students about vocabulary words
relevant to the lesson titled, Graph Paper Programming. She reviews the vocabulary words,
*program* and *algorithm*, taught two weeks before in an “unplugged” lesson when she introduced
the students to coding. The observed lesson begins with the following exchange between Ms. Carter and the students:

Ms. Carter: Today we’re going to do a little more programming. I need everyone on their bottoms.

Ms. Carter: Let’s talk about what a program is? Who can kind of refresh my memory about what a program is? Remember to restate my question and answer in complete sentences.

Child A: a program is an algorithm

Ms. Carter: an algorithm that does what? How, what do we do with an algorithm?

Child B: a program uses algorithms and an algorithm is steps

Ms. Carter: It’s what kind? Is it just steps or is it a list of steps?

Child B: It’s a list of steps

Ms. Carter: Good, ok give me 5. (Ms. Carter high fives the student) You did a good job, thank you. …So an algorithm is a list of steps you follow to do what?

You follow, how do we use algorithms? For what?

Multiple Students: To solve problems

Ms. Carter: Yes, so we use an algorithm to solve problems. Then we have programs and a program is one large algorithm right? And who uses programs?

Student D: Machines

Ms. Carter asks several students to come to the front of the room to demonstrate the hand signals that represent the cardinal direction of north, south, east, and west
as a review of content taught in the first “unplugged” lesson two ago.

After the demonstration, she continues.

Ms. Carter: So today we’re going to take it a step further. I’m going to show a short video. Then we’re gonna do some examples and then you’re gonna work in groups. I like today’s activity, it’s kind of my favorite part of it… and then we are going to practice. (She scrolls up and down on the web page to look for the video that she needs to show the students.

She is unable to find it so she tells the students that they will move on without the video. It was originally cued up but did not play.

Ms. Carter: Where is my video? Can you see my video? Ok I can’t find it right now so we’re gonna have to move on. Today we are going to do what is called graph paper programming. What is graph paper?

Child E: it is paper that has little squares.

Ms. Carter: yes, so we are going to use graph paper today to help us program.

She places a piece of chart paper on the wall and explains to the students that today they will use symbols to represent the directions used to program. She informs the students that just as they used cardinal directions in a previous lesson to program someone’s direction towards a specific destination, today they will use directions to program. However, instead of using their arms, as they did when learning cardinal directions to represent the direction, they will use the Program Symbols displayed on the chart.

The lesson continues. She gives the students a design and asks them to create an algorithm that provides directions to follow to create the design. They use the displayed Program Symbols, composed of a series of arrows that represent the directions: left (west), right (east), up
(north), and down (south), diagonal, and stop which provides a step-by-step algorithm that ultimately enables the creation of a Program that creates a design. Each group writes their algorithm for their Program on a large piece of chart paper. If the algorithm is followed correctly, it creates the design. Each group uses the large 4 X 4 grid on the floor and follows the directions indicated by its algorithm and indicates with a sticky note where they must stop. If the design displayed on the chart matches the group’s original design, the group correctly used the Program Symbols as created in the algorithm.

Figures 6 and 7 are artifacts of lesson plans from Code.org that represent the lesson used by Andrea Carter to introduce the concept of algorithm for coding to the students. To demonstrate this process, Ms. Carter selects a student to follow the algorithm displayed on the board. Using the 16 4 X 4 tiles on the floor, Ms. Carter walks the student through the algorithm...
represented by the Program Symbols displayed on the chart. As the student moves, he places sticky notes to mark the location where he is to stop. Ms. Carter helps the student move to the correct spot. If successfully programmed, when the student finishes following the algorithm, the pattern displayed on the chart will match the pattern created by the student. She reminds the students that the ultimate goal is for the pattern represented on the floor to match the original pattern. She reiterates the importance of following the directions represented by the respective algorithms.

After giving the instructions for the lesson, the groups begin the activity. As the groups work, Ms. Carter circulates around the room and observes each group as the students discuss the steps and writes down the symbols. One group writes their algorithm from the right to the left across their chart paper instead of left to right. Although incorrect, Ms. Carter does not correct them. (I then create a memo to ask her why she allowed the group to continue writing from right-to-left versus left-to-right.) Other groups struggle, but Ms. Carter does not intervene. The lesson continues as Ms. Carter questions the students about the choices they make to perform the designated moves. She observes each group’s work until the homeroom teacher arrives to pick up the class; this cuts the lesson short. When their teacher arrives, Ms. Carter asks the students to stop where they are and join her on the carpet to talk about their experience:

Ms. Carter: How did you feel about programming today?

Student A: it was hard, (why) because what we used today made it hard.

Ms. Carter: so what did you use the last time? (Referring to the “Unplugged lesson that was taught the two weeks prior)

Student A: Our bodies

Ms. Carter: so what did you do today to make code
Student A: we had to write it

Ms. Carter: so why was that hard?

Student A: it hard because we had to give the direction

Student B: I disagree because writing it was easier because I can tell them what to do and they can use it like a compass and they can just follow what I’m telling them to do

Ms. Carter: Ok Student B, did you think that today’s lesson was harder or easier than last week’s lesson…..was it easier to write or to act out the programming like you did last week

Student B: it was harder because you had to write out the program and you had to figure out which program you wanted to do.

Ms. Carter: this is harder because you have to match out what directions are needed to what was on the paper so you had to follow directions in order to give directions. I’m glad that this was kind of challenging for you because you have to think more about how to give directions and to follow them as well. So when you have to program on the computer you have to do the same thing, but just on a computer.

Based on activities that occurred during the observation, I assigned Ms. Carter a rating of 12 out of 16 on the TPACK Rubric, which designates her knowledge for the DL lesson as Moderate. She scored a three out of four in all four categories on the TPACK rubric. It is important to note that although Ms. Carter did not use multiple types of technology, she designated this lesson as a DL lesson because its objective was to develop the prerequisite skills students must master to learn to communicate using a computer through coding. This lesson did
incorporate briefly two forms of technology: one, Quizzizz.com when the students logged onto
their computers to complete an assessment of their mastery of technology concepts previously
taught, and two, when the teacher used the Promethean Board to show the students a video from
Code.org that reviewed the words \textit{algorithm} and \textit{program}. Ms. Carter was given a score of 3 in
the Technology Selection section based on her selection of technology that appropriately
engaged the students as they entered the classroom. Her selection of Quizzizz.com aligned with
the curriculum goal of using technology to test students on standards they must master. I rated
her instructional strategy a 3, because the use of Quizzizz.com supported her instructional focus to
prepare the students to take future standardized tests on the computer. This is relevant because
one of the district-level goals requires students to take their final standardized assessments using
a computer. Ms. Carter’s integration of the assessment conducted at the beginning of the lesson
represented an appropriate instructional strategy for that goal, as was her use of Quizzizz.com to
acclimate the students into her technology environment immediately upon their entrance into the
classroom.
Ms. Carter’s use of an unplugged lesson to develop her students’ skills without the use of a computer was appropriate for the goals of this lesson because it represented a connection with technology. Moreover, because the students were to learn the foundations of how to use written program symbols to create algorithms for computer program, the overall choice of an unplugged activity coupled with the curriculum goals and technology selection, fit within her delivery of
this lesson. Therefore, I rated this lesson a three out of four for its fit between content, pedagogy, and technology.

To gain a deeper understanding of Ms. Carter’s thinking during the lesson and to clarify why she chose to use this DL lesson with her students, I used the memos written during my observation to guide the questions I would ask during the follow-up interview. In addition, the memos I recorded helped me align my observation of her practices with her assigned level of DL implementation and her perceptions of the DL lesson. I also used the comments she made during her audio-journaling entry recorded after the lesson. From these multiple data sources, I developed a clearer view of what she believed were the successes and challenges of the lesson.

During the audio-journaling, Ms. Carter’s reflected on her pedagogical practices and her views of the successes and challenges of the observed DL lesson. She revealed that she felt the lesson went “moderately well,” but not as well as her first unplugged lesson with these same students implemented two weeks prior to this lesson. She believed the week off the students had from school in between the two lessons contributed to the students “cognitive dissonance” while working on the activity. She expressed her concerns in this excerpt from one of her interviews:

When you're learning something new, I think just connecting learning wasn't really ... Well, I would probably do this lesson again with them, but I do like that they remembered the cardinal directions. They connect their vocabulary using compass roses, and they used the words ‘cardinal directions’ when they were speaking. I'd like that they were correcting themselves in the midst of giving the programming to the other students. They kind of would stop and say, ‘Oh, no, no, no. I did that wrong. Let's go back and start over. Let's go back to start.’ They understood that in order to solve their problems, sometimes you have to go back
and things are still in that sequential order that was the big piece of the programming. The algorithm and knowing that that list of steps are things that are important when you're solving problems. (Lines 8-17, audio-journaling reflection 3, lesson 3, Dec. 1, 2015)

In the follow-up interview, Ms. Carter clearly discussed the purpose for the unplugged lesson. She demonstrated knowledge of the lesson’s significance to teach the students about coding. Though coding was a new concept to her, she displayed understanding of how this lesson could scaffold the students’ understanding of communicating with computers through programming. The following discussion during Ms. Carter’s follow-up interview represents her understanding of the lesson:

Ruby: Okay, great. Can you tell me what the name of your lesson was. I know that when you started today you gave it a title.

Ms. Carter: Graph paper programming.

Ruby: Okay, and what is the premise of this lesson? What is it for?

Ms. Carter: The premise is to have the kids create a pattern on graph paper, but while programming someone.

Ruby: Okay, and is this related to the lesson that I had observed before?

Ms. Carter: Yes, this is part 2 of the lesson.

Ruby: Okay, and that was to prepare the students for coding, I'm I correct?

Ms. Carter: Yes.

Ruby: Okay. I noticed that in today's lesson you didn't use actual technology in the form of iPads, or a computer, but you did have
your Promethean board for them when the children came in. Can you explain to me how this lesson prepares them for coding using technology?

Ms. Carter: This lesson prepares them to understand if you don't code correctly when you're creating codes it's not going to work.

Ruby: Okay, and I know the last lesson was ... what was it called? Not out of box.

Ms. Carter: Unplugged.

Ruby: Unplugged, that's it. Sorry, close enough. It was called Unplugged. Is this lesson today also considered an Unplugged lesson?

Ms. Carter: It is considered an Unplugged lesson.

Ruby: Okay, and then ... Can you give me a little more about the symbols and the paper that you use. I saw that there was a piece of paper that had some pictures on it. What were those for?

Ms. Carter: In order to kind of prime their thinking they were given some graph paper program patterns already, so they can say, "Okay, as the programmer, this is what I'm trying to get the program E to do, so let me program them this way." Then they had symbols, there are 5 symbols, move 1 square to the right, move 1 square to the left, move 1 square down, move 1 square up, and then there's like a squiggly line arrow this has to fill in. The fill in is how you get your patterns.
Ruby: I understand. Okay, so were they recreating the 1 in the pattern? I saw they were more than 1 pattern on this piece of paper. Was there ... Or the intention to have them select a pattern?

Ms. Carter: The intention was to have them select 1 or 2 patterns.

Ruby: Okay.

Ms. Carter: To recreate ... Just so kind of everyone in the group got a chance to be a part, and there was a more of a collaborative effort. (Follow-up interview for Lesson 3, December 1, 2015, lines 19-55)

Both the audio journal and the follow-up interview supplied information about what occurred during the lesson. They revealed that Ms. Carter’s pedagogical knowledge and technological knowledge were strong enough to teach the students the foundational skills taught in the lesson. However, she needed more experience in how to transfer the content knowledge to the students in ways that deepened their understanding. The analysis of the data revealed that while she possessed a good understanding of what she taught, she needed additional practice with her instructional delivery of the lesson content. Her moderate understanding, as she corroborated during the audio-journaling and during the follow-up interview, influenced the way she delivered this lesson to her students. She demonstrated this when she did not completely know how to effectively address the students’ misconceptions of the appropriate ways to write code. Therefore, the collective analysis of the data supports the designation of Ms. Carter’s lesson as a Moderate Level of DL implementation.
Full DL Implementation

Full DL Implementation represents the highest end of the DL spectrum of implementation. Lessons in this category fully utilize ICTs throughout DL instruction. Further, the ICTs strongly align with the curriculum goals. Based on the criteria outlined in the TPACK rubric, implementation of the lessons in this category demonstrates great affordances of the technologies. Specifically, the DL lessons in this category a) represented a strong alignment of curriculum goals with the technologies used, b) demonstrated that the technologies used optimally supported the instructional strategies, c) provided an exemplary selection of technology and applications that assisted the teacher in meeting the curriculum goal, and d) illustrated a strong fit or congruency across the content, instructional strategies, and technology. As in the mid-level of implementation, the purposes for using technology at this level varied based on the lesson objective. These included, but not limited to, technology as remediation, technology as the teacher, technology as exploration, technology as a means of assessment, and technology as a reward,

As previously stated, I used the criteria from the TPACK rubric and the SAMR model to determine the degree of implementation of technology. DL lessons in this category also demonstrated implementation of technology in ways that significantly modified, redefined, or recreated traditional literacy tasks. Technology used during the lesson was integrated at the Modify and Redefine levels, which meant that the lesson provided significant value beyond a lesson using traditional methods, for example, paper and pencils.

Ms. Camille Olson’s fourth DL lesson with her first-graders represents a High (Full) Level of DL Implementation. Although the content of this lesson was science, she utilized DL within the lesson to integrate the teaching of literacy with the teaching of the subject area
content. Based on Ms. Olson’s lesson plans, the lesson addressed both science and reading standards. The following State Performance Standards for Science and Common Core Standards for English/Language Arts (ELA) served as the lesson’s guiding objectives:

Science Content:

S1P1. Students will investigate light and sound

c. Investigate how vibrations produce sounds
d. Differentiate between various sounds in terms of (pitch) high or low and (volume) loud and soft.
e. Identify emergency sounds that help keep us safe

English Language Arts Content:

ELAGSE1SL1: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small groups.

ELAGSE4L.1f: Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons (writing).

Portions of the lesson, presented next, demonstrate the use of technology at the Full DL implementation level.

At the beginning of the lesson, the class is seated on the carpet. Ms. Olson introduces the lesson. The word *sound* appears on a flipchart an application teachers can use to display information on the Promethean board located at the front of the classroom. In addition, the application can be used as a projector to display pictures and information and it can be used as an interactive tool that allows children to move or manipulate objects and words on the screen. Its source of information comes from the computer plugged into the Promethean Board. Ms. Olson reviews the definitions of the words, *volume*, *pitch*, and *sound* with the students. She begins the
lesson by reading an informational book on sound titled *Oscar and the Bat: A book about Sound*. The book discusses different sounds, for example, it describes the different types of pitches (high or low) made by musical instruments.

After reading the story, Ms. Olson asks the students to define several words in the story. She then awards a few students points using Class Dojo, an interactive behavior management web application that gives points for academic achievement or takes away points for misbehaving. An icon of a little monster represents each student. Class Dojo is a school-wide initiative implemented to address behavior issues that occur throughout the school. The school’s administrative team requires all teachers to use this digital application so that across the school a consistent method is used to reward or reprimand student behavior. After Ms. Olson awards the points, she goes through each page of the flipchart with the students. Each page contains a question based on the lesson’s focus.

The first question presented is, “What is vibration?” She calls on a student. Once the student responds, she reveals the answer by moving a rectangle that covers the definition. She follows with another question, “What is pitch?” The next page on the flip chart requires the students to sort the sounds as either high pitch or low pitch. Icons at the bottom of the page represent the sounds displayed on the page. Words appear underneath each sound icon so the students know the name of the item. When the students move to the board to tap the icon to play the sound, they must decide if the sound represents a high pitch or a low pitch. Then the students drag the sound icon with the word to the correct box (high or low pitch). The students take turns. If the student answers correctly, the sound icon stays in the box. If the student answers incorrectly, the icon returns to its original position. Ms. Olson embedded the website
www.sciencekids.co.nz/gamesactivities/changingsounds.html into the flipchart to allow the students to manipulate the different instruments for this activity.

Ms. Olson interjects the following as one of the students works on the Promethean Board:

Ms. Olson: Ok Student A, I want you to choose a word that you can read (note that this is part of reading and science is being used to teach skills across the curriculum.)

The lesson continues. The flipchart pages display the names of the instruments and pictures of the instruments and the students continue to manipulate the sound icon to make the sounds of real instruments. On another page, the students read the words that refer to different types of instruments, (e.g., piano, violin, guitar, drums); they then sort the instruments into one of the boxes labeled *Percussion*, *String*, and *Wind*.

During the lesson, Ms. Olson expressed to me that she intentionally chose to use this flipchart because it enables students at various reading abilities to read and participate. As described previously, the reading ability of her students ranges from below to above grade level. To accommodate this range, each of the activities requires the students to sort items into the appropriate category so she selected activities with both pictures and words. I created a memo to ask questions that would to reveal more information about what influences her choice of applications to use with her students.

Other flipcharts used during the lesson included a page that allowed the students to explore making sounds on the Promethean Board by manipulating instruments. Another displayed a human head and throat with vocal cords for the students to manipulate to demonstrate how vibration occurs. Other pages enabled students to manipulate a guitar by plucking the strings gently and strongly to emit either loud or soft volumes, respectively. An
additional flipchart page displayed a drum that allowed the students to tap gently on the screen to make a soft sound or harder to make a loud sound. A tab displayed next to the drum enabled the students to move back and forth to either loosen or tighten the skin on the drum. Ms. Olson asks questions throughout the lesson to check for student understanding. The following exemplifies her exchange with the students during the lesson:

Ms. Olson: She asks what is sound,“ energy that we_______”

Students: Hear

Ms. Olson: Energy that we see?

Students: No,

Student A: It’s energy that we hear

Ms. Olson: Energy that we hear. High and Low. Let’s talk about high and low. Let me cover my book up. What are we talking about?

Students: Pitch

Ms. Olson: All right, very good. High and low means pitch. Loud and soft means…

Students: Volume

Ms. Olson: Ms. Bs gonna be very proud of you guys (Note that Ms. B is the Music teacher at Thera Elementary School) High pitch…

Student B: (A little girl that sings out) ling, ling, ling, ling (She uses a high note to demonstrate what a high pitch should sound like)

Ms. Olson: Low Pitch…

Students: All of the students make a low rumbling sound Mum, mum, mum, mum

Ms. Olson: And we’re gonna use our Promethean Board to find out some instruments that might be high pitched or low pitched and we’re also gonna use it to
listen to sounds so you get a better understanding of what pitch is. That’s our focus for today. Yes, we know volume is how what?

Student B: Loud and soft something is.

Ms. Olson: But pitch tells us how...

Students: High or low

Ms. Olson: So we’re gonna think about how instruments that might be high or low. Some sounds high others are low. Pitch tells how high or how low a sound is. A tuning fork keeps the same pitch. We used to have tuning forks. Where are they now I don’t know? Singers always need to sing in the right pitch like Ms. B tell you to bring it from where?

Student B: The top

Ms. Olson: Bring it from the top. If you’re bringing it from the top what kind of pitch do you think you’re making?

Students: High

Ms. Olson: High. Now give me a low pitch

Student: (The students all sing out a high pitch)

Ms. Olson: That’s high. Give me a low pitch

Students: (The students sing a low pitch)

Ms. Olson: Yes, that would be a low pitch. Very good. Musical instruments I’m just gonna show you a picture and I want you to tell me if you think it would make a high pitch or a low pitch. And you’re gonna see some of these same instruments.

(She shows the students of a drum on the Promethean Board)
What are those?

Students: Drums

Ms. Olson: High or low? What do you think?

Students: High

Ms. Olson: You think high? What do you think? (She points to several of the students to get them to respond to her question individually.

Student C: High (little girl)

Student D: Low

Ms. Olson: We’re making predictions right now

Student E: Low

Student F: High

Ms. Olson: What do you think?

Student G: High

This continues for a bit with her pointing to different students to give their predictions

Ms. Olson: She shows another instrument. Ok we have a guitar and a trumpet. What do you think those instruments would make… What type of pitch?

Students: High

She continues to go around the room letting the students respond. Most of them continue to say “high."

The lesson continues and the students listen to different sounds. The first sound is of birds chirping; the student must drag the picture of the bird to either the high or low picture to illustrate the pitch of the sound. Pictures include a cow, dog, lamb, an explosion, police siren, and car horn. The pictures include words that name the item. She assists students as they drag
the items to their correct pitch box. During the lesson, she tells me she got the flipchart from the website Promethean Planet. She reviewed several flip charts to find one with activities that matched the range of her students’ reading levels.

At the close of this Promethean Board flipchart activity, she asks the students to explain how they will create their PowerPoints related to the content taught. She then asks students from Groups C and D to describe the process they will use. I remembered from previous observations that she placed her students into groups based on their reading proficiency and Groups C and D consist of her higher performing students. Next, she opens a PowerPoint on her computer and displays it on the Promethean Board so the students can see what they needed to do to create their PowerPoints. She told the students they could work with a partner or by themselves. Then, she announced that Group A and Group B would do something other than creating their PowerPoints. At this time, I created a memo to remind myself to ask Ms. Olson why Groups A and B were not creating their PowerPoints today. After Ms. Olson reviews the instructions for creating a PowerPoint, the students repeat the process to Ms. Olson. As the students call out instructions, Ms. Olson follows them to create a PowerPoint.

Ms. Olson: What is the first thing that I have to get on? What is it called?

Student A: The first one that says PowerPoint 2013.

Ms. Olson: (She clicks on PowerPoint icon) Where do I go next?

Student A: to the theme that you like most.

Ms. Olson: To the theme that you like the most. So you can scroll down and choose the theme that you like. So we’re gonna choose…we’ll choose this one (she selects a theme) Alright. What do I do next?

Students: Choose a color
Ms. Olson: You can choose whatever color you want right here. So let’s say, I like this one right here, that dark wood. Now what do I hit?

Students: create

Ms. Olson: Create. I’m on my first page. What’s the name of our PowerPoint that we’re making?

Students: Sound

Ms. Olson: What do I put right here (She motions to the top of the PowerPoint page that has a text box).

Students: Your name

Ms. Olson: And I can add a what to it if I want?

Students: Picture

Ms. Olson: How do I add a picture? Where do I go to?

Students: Google…Go to Google

Ms. Olson: Ok, I’m at Google (She switches from the PowerPoint to the browser and types in Google)

Students: Then you type in sound

Ms. Olson: You type in sound or whatever type of picture you want. So we’re gonna put in instruments

Students: Yes

Ms. Olson: Cuz(because) you can have your own pictures on here. Where do I go to next?

Students: Images

Ms. Olson: Images. And images mean what?
Students: Pictures. Images mean pictures

Ms. Olson: Pictures. So what do I do now? How do I get my picture?

Students: You click on one of them

Ms. Olson: And I, now I have to do what?

Students: Right click on it. Save it

Ms. Olson: OOOOOOOhh y’all are so smart!

Students: Copy it

Ms. Olson: Right. Copy image. Where do I go back to now?

Students: You have to go back to the PowerPoint

Ms. Olson: And how do I put it on my page?

Students: You click it…right click

Ms. Olson: Right click it? Then

Students: Press it

Ms. Olson: Then, there’s your picture. It will show up and you move it around to where you want it, ok. So are we ready? And how do I go to my next slide? I’m ready to do a new slide. Where do I go to?

Students: New slide

Ms. Olson: New slide then I click, can I click any of them?

Students: Yes

Ms. Olson: Yes, because it’s your design. And can you ask some questions?

Students: Yes

Ms. Olson: And if you need help what do you do?

Students: Raise your hand
Ms. Olson: I don’t need you getting up screaming and coming to me. Right, so let’s get in line.

At this time, the students line-up to go to the computer lab and Ms. Olson takes her class to the computer lab so that all of the students will have access to a computer, because each classroom only has four computers.

Ms. Olson: And I’m gonna bring my jump drive so I can save your work.

As we are exiting the classroom, Ms. Olson says the following to me:

Ms. Olson: We finally got to this lesson. We’ve been doing it, I’ve been doing it all this semester.

Once the students move to the computer lab, Ms. Olson places them into groups to make their PowerPoints. The computer lab is arranged in 5 rows of 10 computers. First, she places the students from groups A and B, comprised of her lower performing students, into the first two rows. Here, instead of working on a PowerPoint, they will work on a variety of learning apps or websites of their choice through “myBackpack,” a 21st Century learning platform provided to all students in the school district, that gives the students access to digital learning tools. She places the remaining two groups, C and D, comprised of her higher performing students, into two rows to create their PowerPoints.

All log onto their computers as Ms. Olson monitors the group. Once the students in Groups C and D log on, they start to make their PowerPoints. At this time, she walks around the room to make sure they correctly create the PowerPoints. She reminds them that at any point they may raise their hands to get her attention. The students work independently with little help from Ms. Olson; they raise their hands when they need help copying pictures, but for the most part they work without her assistance.
When making the PowerPoints, the students must use all of the information from the science content reviewed this morning, including the science vocabulary. Creating the PowerPoints, requires the students to go from one application to another. All appear actively engaged. As Ms. Olson walks around, she expresses her delight in the students’ PowerPoint creations and calls out to no one in particular “I’m so proud of them!” Some of the students ask how to spell certain words. Ms. Olson instructs them to first use their phonics skills they review every day to spell the words. Ms. Olson then shares with me that she has been waiting eagerly to do this lesson with her students and added that she felt it was a “really good one.”

While observing this lesson, I notice her students can utilize the different ICTs. I created a memo, to remember to ask questions during the follow-up interview about their ease in using the ICTs. I also make a note to discuss their students’ ICT use with the other participants during the focus group interview. I then write the following memo reflecting my reaction to the different responses of the teachers to using technology:

I’m utterly amazed, to go from one teacher who has older students and does not feel that those students are able to manage using the technology to teach/learn things that have to do with literacy because she believes that they need just the hands-on pencil paper approach to develop their literacy skills, versus this teacher who embraces the technology more as a way to teach different ways of writing and reading through other content area. Look at the variables that are at play—teacher beliefs, use of technology, ease of use, independence, level of student: ability, age, teachers’ comfort level, frequency of use, variety of tools, purposes of tools. (Memo 12/10/15)
At this time, a fire alarm drill interrupts the class. The students quickly exit the building. Once the drill ends the students return to the room and resume their work without missing a beat. They appear eager to continue their work and need no redirection by the teacher. As the lesson ends, Ms. Olson shows each child how to save the PowerPoint, this enables them to resume their work at a later time. While the students worked on the PowerPoint, I notice the students not working on a PowerPoint remained as well.

Based on activities that occurred during the observation, Ms. Olson’s rating was a 15 out of 16 on TPACK; which designates her knowledge for the DL lesson as High TPACK. She scored a four, the highest level in three of the four categories listed on the TPACK rubric. Those categories included Instructional Strategies and Technologies, Technology Selection, and Fit. Ms. Olson received a four in Instructional Strategies and Technology because the technology optimally supported her instructional strategies. She provided applications, such as her use of the website www.sciencekids.co.nz/gamesactivities/changingsounds.html, to allow her students with different reading levels to manipulate objects as well as read words, an essential part of learning the content taught in the lesson. She also thoroughly reviewed the process of how to create a PowerPoint with her students before allowing them to create the PowerPoint in groups. During the lesson, Ms. Olson stated to me she had prepared her students for weeks to use PowerPoint. Her previous work and her consistent modeling of how to use the application led to her first-grade students’ successful use of the application. In addition, she received a four in the area of Technology Selection because her use of the Promethean Board, the website, and the PowerPoint application were compatible with the content taught. Curriculum Goals and Technologies was the only area in which I deducted a point. Her lesson objective included in her plan did not specify a technology goal. While the lesson was a science lesson she taught using
DL and it incorporated research, reading, and writing. Ms. Olson did not indicate a goal or significance of the use of the technology for the students to master along with the curriculum content being taught. Overall, Ms. Olson’s content, instructional strategies, and technology fit cohesively within her delivery of this DL lesson. Therefore, this lesson was given a score of four for its fit between content, pedagogy, and technology.

Figure 9. Ms. Olson’s Scored TPACK Rubric from observed lesson on 12.10.15.
To gain a deeper understanding of Ms. Olson’s thinking during the lesson and to clarify why she chose to use this DL lesson with her students, I used the memos recorded during my observation to guide my questions during the follow-up interview. I also referred to her comments she recorded after the lesson in her audio-journaling. This was to clarify her decision-making processes during the lesson and to get a clearer view of what she thought were the lesson’s successes and challenges, as well as to align my observation of her practices with her perceived view of the lesson as well as to corroborate the scores I assigned.

In her audio-journal, Ms. Olson revealed she felt the lesson went very well and believed she achieved her goal for the students to understand pitch and volume and to distinguish between the two. She stated she felt the use of technology, specifically the website Promethean Board, offered great assistance in helping the students to explore and understand the differences between pitch and volume. The following comments express how she felt the technology enhanced her students’ understanding of the concepts:

The technology was a great assistance to achieve in this goal because they were able to see, not only see they were able to hear the difference because sound is the energy that we hear so they were able to look at the instrument and tell what type of instrument it was, as well as tell it if it was sounding loud or soft or if it had a low pitch or a high pitch. (Audio-Journal Following Lesson 4, Dec. 10, 2015, lines 11-14)

Ms. Olson continued to express the positive effects of technology to help her students learn about sound and noted that trying to teach this concept initially by the students reading about the concept in books was not as effective as incorporating technology. She continued that
the interactive nature of the technology brought the content to life for her students. The
following statement represents her positive of using technology during her lesson:

In the beginning they were a little confused when I was just going through it in word
form or read in a book. However, whenever they had that chance to go up to use the
white board, they had a deeper understanding to visual because they were able to touch
the board, hit it gently, hit it softly and it made the variations of pitches as well as
volume. My students responded extremely well to the lesson. They were excited about it.
They were excited to learn about it. They were excited to remember and retain it which is
sometimes a struggle getting them to retain information. They seem like they were having
a lot of fun. Today's lesson, mostly all the technology pieces were very, very, very, very
well. The students were able to explain to me how to make a PowerPoint and they also
got to make a PowerPoint by choosing certain instruments and tell them if it will be a
high pitch or a low pitch or they could choose instruments or other variations of objects
that will have a loud sound or a soft sound. They definitely responded well to the
PowerPoint, they actually didn't want to stop making their PowerPoint. (Audio-Journal
Following Lesson 4, Dec. 10, 2015, lines 15-28)

Ms. Olson expressed her desire to continue using technology for DL with her students
because of their positive response. She proclaimed that technology offered a great teaching
strategy to help students, especially her lowest performing ones, to take part in the lesson and
that the interactive nature of the lesson helped the students retain the information presented. In
contrast, she noted, only using a book would not interest those who struggle with reading. The
technology gave them the opportunity to synthesize the information and the end product
provided a culmination of all that they had learned. The technology, she added, was not just a
game. On the contrary, she continued utilizing DL had a positive impact on their learning. She acknowledged the impact of DL in the following statement from her audio-journal:

I was extremely thrilled with this lesson. I was amazed at how well the students put the PowerPoint together, how eager they were to apply what they know, to put the PowerPoint together and how much pride they were taken and using technology as a means of learning and not just playing around, I was very excited about that. (Audio-Journal Following Lesson 4, Dec. 10, 2015, lines 47-50)

I used the audio journal reflections to gather additional information to inform what I observed during the lesson. Ms. Carter’s entry in her audio journal revealed that her pedagogical knowledge and technological knowledge were strong enough to engage the students when reinforcing their foundational skills during the lesson. Data analysis revealed Ms. Olson possessed a deep understanding of how to use DL effectively to increase her students’ content knowledge. She expressed her future goals were to continue exposing her students to DL to expand their interest in learning. She indicated that additional exposure to the technology would benefited the students in groups A and B, who did not get the opportunity to create their PowerPoints during the lesson. Furthermore, she said she would continue to develop the skills of her lower performing students by giving them more opportunities to work with different types of technology. Based on the analysis of the data, this DL lesson represents a High Level of DL implementation.

Second Finding: If This, Then That

Once I identified the levels of DL implementation represented in the observed lessons, I wanted to understand what additional variable not evaluated by the TPACK rubric or SAMR model impacted how the teachers used DL with their students. Therefore, I performed additional
analyses to answer the first research question, “What pedagogical practices do teachers of African American children in urban low SES classrooms use when integrating digital tools during their literacy instruction?” My analysis also provided information related to the second research question, “How do these teachers’ perceptions of Digital Literacies’ usefulness impact the ways they use Digital Literacies during their literacy instruction?”

Even though for each DL lesson I used data drawn from TPACK and SAMR, my rereading of the data suggested that other variables influenced the degree to which the teachers implemented technology. Therefore, I analyzed the data more closely and identified three intangible variables, the participants’ a) sense of efficacy in teaching of DL, b) beliefs about the importance of its use with their students, and c) responses to challenges to their use of DL. I refer to these as intangible variables because they are not easily observed or related directly to the instruction. Once identified, I resumed my analysis to determine if connections existed between the participants’ level of knowledge of ICTs (based on scores from the TPACK rubric) with these variables. My additional analysis of data from the participants’ follow-up interviews, their personal reflections during audio-journaling, and their focus group interviews, provided more answers to the three research questions. 1) “What pedagogical practices do teachers of African American children in urban low SES classrooms use when integrating digital tools during their literacy instruction?” 2) “How do these teachers’ perceptions of Digital Literacies’ usefulness impact the ways they use digital literacies during their literacy instruction?” and 3) “What challenges do the teachers face and how do they respond to these challenges as they integrate Digital Literacies?” Further, the analyses provided a deeper explanation of how those pedagogical practices might impact the teacher’s perceptions of DL and its usefulness and led to
my identification of three patterns of influences of the teachers’ use of DL within their literacy instruction.

The If This Then That finding illustrates how patterns existed between the three intangible variables: beliefs toward DL, comfort in using ICTs for DL, and response toward challenges and the teachers’ knowledge and implementation of technology as evidenced by TPAC and SAMR. I created algorithms to illustrate the relationship across the intangible variables and the TPAC and SAMR scores. I do not view these algorithms as representing firm patterns, rather they offer one way to describe the relationship of the variables and the teachers’ knowledge and implementation of DL. Before I present the algorithms, I offer a review of the aspects that constitute the algorithms: TPACK, SAMR, and the three intangible variables: the participants’ a) sense of efficacy in teaching of DL, b) beliefs about the importance of its use with their students, and c) responses to challenges to their use of DL.

To review, I used the TPACK rubric in conjunction with the SAMR model to determine the teachers’ knowledge and implementation of technology. The TPACK rubric identifies four categories reflecting a teacher’s knowledge of technology with scores of four points each for a total of 16 possible points. The SAMR model uses the categories of augmentation, modification, and redefinition to identify a teacher’s level of technology implementation. So a TPACK score between 14-15, combined with a SAMR level of augmentation; modification; or redefinition, represents a highly technically literate user of technology. Table 7 presents the connection of the TPACK scores and the levels of implementation present in SAMR.
### Table 7

**Connection between TPACK Scores and SAMR Levels**

<table>
<thead>
<tr>
<th>Scores (Competency Category)</th>
<th>TPACK Score</th>
<th>SAMR Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Technically Literate (High Scores)</td>
<td>14-15</td>
<td>Augmentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Modification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Redefinition</td>
</tr>
<tr>
<td>Moderately Technically Literate (Mid Scores)</td>
<td>12-13</td>
<td>Augmentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Modification</td>
</tr>
<tr>
<td>Minimally Technically Literate (Low Scores)</td>
<td>11 and below</td>
<td>Augmentation</td>
</tr>
</tbody>
</table>

I describe the three intangible variables as follows.

**Beliefs.** This subcategory represents the range of feelings a teacher expressed toward using ICTs with her students. These expressions ranged from positive to negative. Positive beliefs represent a teacher’s view that technology provides an added benefit when used and that it could successfully be used with students despite their academic level. Essentially, the teacher holds the belief that technology, rather than impeding student learning is a necessary component of education and required to enhance literacy. Negative beliefs represent a teacher’s expressed belief that technology impedes student learning and is neither a necessary component of education nor required to enhance literacy.
Comfort level. This intangible variable represents the teacher’s ease in her use of ICTs during DL lessons. I determined a teacher’s comfort level by the teacher’s expressions of how she felt about her ability to use technology, i.e. her sense of efficacy. The teachers in the study expressed a range of comfort levels with using technology from feeling anxious because they do not know what to do with the technology to feeling eager to use the technology.

Response to challenges. This intangible variable represents how a teacher responded to challenges when implementing DL. The challenges included but were not limited to school-related challenges (student behavior, lack of time, changes in schedule, missing parts of technology, no assistance, not enough technology) and systemic challenges (network outages, lack of a mandated or universal curriculum, standardized testing). Data revealed the four teachers responded differently to such challenges. While some appeared resilient, i.e., despite challenges they continued to use DL effectively, others appeared negatively impacted by the challenges in ways that prevented them from engaging in or creating DL lessons.

The following section presents the three algorithms. I describe each algorithm with a brief explanation of the participant’s level of technical knowledge represented by her TPACK score, her level of implementation represented by SAMR, followed by a description of the participant’s display of the three intangible variables. Vignettes drawn from data illustrate the algorithms. Figure 10 provides a visual model of the algorithms that are presented in this section.
Figure 10. Digital Literacies Pedagogical Algorithms different combinations of variables that impact teachers’ implementation and frequency of DL use.

If High Scores + Positive Beliefs + High Comfort Level + Resiliency toward Challenges, then it = Relevant Teaching of DL and Frequency of Use

This pattern represents a teacher who possessed a high knowledge of technology, as reflected in high TPACK scores; demonstrated high levels of technology implementation, as reflected in lessons classified at high SAMR levels; and believed technology plays an integral role in developing students’ literacy. Perhaps, the teacher’s resilience to challenges to the use of technology resulted from the combination of the teacher’s expressed positive belief towards the usefulness of technology and her high comfort level with that use. An example of a teacher’s resilience to challenges is when a teacher, in spite of lacking the knowledge of how to use ICTs or website; rather than becoming stymied by this lack of knowledge, she found ways to learn on her own instead of waiting to receive professional development or waiting for others to provide the needed information.
Ms. Olson’s use of technology demonstrates this algorithm. On all of her DL lessons, she received high TPACK scores for her knowledge of technology and based on the SAMR model she consistently integrated technology in ways that modified or redefined the use of literacy. She revealed during her initial interview that she loved using technology with her students:

I love technology. I do. I use different types of technology. Sometimes I'll pull the iPads and create a small group. Sometimes I will use a Promethean table and create a small group. They use the computers in my classroom. They also have a audio box that they can listen to, because listening comprehension is just as important as them being able to read and comprehend themselves. In addition I use my Smart board, which they're called Promethean boards, where students can interact. All the technology that I use keeps students engaged while working on the same skill or the same task, and maybe in a different way, differentiating how I go about having certain students do certain things. (Initial Interview, October 8, 2015, lines 80-87)

During my second observed lesson, her first-grade students decoded words she introduced within her lesson using various technology applications, websites, and technology platforms such as the iPad, Promethean table, and the computer. During the lesson, she also enhanced the students’ vocabulary acquisition by requiring them to perform research on the computer to find pictures and sounds that illustrated the vocabulary. In addition, some of her students used the vocabulary words in their PowerPoint presentations; which they ultimately used to teach other first-graders what they had learned during the lesson. Ms. Olson’s ability to integrate technology fully during her DL lessons appeared to be related to not only her TPACK and SAMR scores but also her positive view of using technology in her teaching as, evidenced
by the high level of \text{by-in} \text{she exhibited} towards technology. Her ability to master quickly how to use technology seemed to contribute to her positive view of technology, even when she was unfamiliar with the technology. Plus, her positive beliefs about the effectiveness of technology appeared to make her more apt to use it, despite challenges that arose during her instruction related to its use. She continued to use technology when problems frequently arose with the network or issues that occurred that were out of her control. Her belief in the positive effects the use of DL had on her low-performing students appeared to be another factor that influenced her continued efforts to engage her students in DL lessons. The following exchange during her initial participant interview on October 8 illustrates Ms. Olson’s view and use of technology:

Ruby: \text{Have you had any personal barriers in using technology? Like has something} failed or have you had within the school maybe not enough access or anything like that?

Ms. Olson: Yeah, of course. My Promethean board just went out. If I wasn't a good teacher and I just talked to the board, then I would be in trouble. However, I relied on my other technology devices, such as the iPads, the MacBooks, that I could check out in the library. Yes, this caused a big [inaudible 00:20:23] \text{... The first moment I was like, "Oh, my Lord, what am I going to do?" because this is how I project everything, but I went to another resource. Now I connect the projector. The board isn't interactive anymore, so I make up for that while using the computers and the Promethean table and the iPads and sometimes the clickers. Kahoot It is another form of}
technology that I just learned about and I really, really like it, so now I'm trying to implement that into my lessons.

Ruby: Have you found yourself having to rely on traditional modes of teaching literacy since the Promethean board isn't working?

Ms. Olson: No. I still use technology because I love technology. However, I still include some of the traditional. Some traditional strategies and procedures you have to just go with.

Ruby: How do you feel about your students needing to use technology? Is there more of a push from the district or your curriculum that's making you use technology more, or is it more of a personal ... I don't know how to say it ... like a personal thing that you just want to use the technology?

Ms. Olson: It's a personal thing, because I've seen the results that I've gotten when they use the technology. A lot of students are more successful. As I said, they are engaged. They're not going to be engaged if they're just cutting and pasting every day or writing every day, as in just paper/pencil writing. If you have something that you can actually put your hands on and you can see it while you're doing it in a fun way, I'm all for it. It's really much so a personal, but as a school, our principal wants us to engage our students in more technology, because it is a 21st century learning community and we want our students to be ready for the real world.
Ruby: That makes sense. How do you say it's impacting what you're teaching? Is it making it more accessible for students that have struggled in reading?

Ms. Olson: It definitely is. I see students making tremendous gains from using some of these apps. Some students that knew zero sight words and play the sight word games now know 3 to 5 sight words. I just feel like if they continue to use that, it can only increase their knowledge. It can increase their word base, their vocabulary. It can increase comprehension.

Ruby: Does it help with students that are more creative, or does it matter? Is it just opening ...

Ms. Olson: I choose different activities for different students. My higher students will not use the same app or the same activity as my low students, because of course I can see my high students getting bored if they know all their sight words: "I've got to just keep going over these sight words." They like the sight word drills where they can get on the Promethean table, touch, drill, touch, drill, touch, drill, and it's going fast and they can time themselves. Same skill, different way.

Ms. Olson continued by explaining the importance of using technology on a consistent basis. This illustrated that her beliefs toward the importance and value of using ICTs during DL was an
intangible variable that appeared to influence the frequency in which she incorporated DL lessons.

Ruby: Excellent. Is there anything more that you'd like to add about what you're doing with technology and literacy in your classroom?

Ms. Olson: I just feel like technology can enhance literacy and students can make tremendous gains if implemented consistently. You can't use technology this week and not have it that week. Then, to use various types of technology. Don't allow them just to get used to one type of technology. Use different types of technology. When you face those obstacles and barriers, you move to the next step. You find extra help, other resources that still keep them intact with using technology and learning.

(Camille Olson, Initial Interview October 8, Lines 243-291)

Overall, the success Ms. Olson experienced during her DL lessons made her more apt to integrate the technology during DL lessons. This coupled with her expressed comfort in using technology and her willingness to try new technology on which she had not been trained illustrate in the algorithm: If High Scores + Positive Beliefs + High Comfort Level + Resiliency toward Challenges, then it = Relevant Teaching of DL and Frequency of Use

If Moderate Scores + Positive Beliefs + High Comfort Level + Resiliency toward Challenges, then it = Relevant Teaching of DL and Frequency of Use

If the teacher had a high to moderate level of TPACK, implemented technology according to SAMR in her lessons in a way that minimally augmented traditional methods of literacy instruction but primarily transformed or ultimately modified traditional literacy
pedagogy, and displayed the belief that technology was an integral part in developing students’ ability to read it seemed the teacher was more apt to consistently utilize DL with her students and integrate ICTs during DL lessons. This was evident even in instances where the teacher was not fully knowledgeable about the ICTs or websites she used but they appeared to possess a firm understanding of a variety of ways that ICTs could be used. The teacher’s belief toward the usefulness and effectiveness of technology moved them to become self-informed, rather than wait on professional development or to gain more understanding from individuals who had familiarity with the technology and or applications. Thus, they were able to transfer what they already knew onto additional modes of technology to be used for DL resulting in an integration of technology that enhanced student learning.

Ms. Carter’s use of technology demonstrates this algorithm. Ms. Carter regularly used new applications and technology. Analysis of her lessons revealed that she received high to moderate TPACK scores for her knowledge of technology. Levels of TPACK varied from a moderate-level in her knowledge and practices to a high-level in her knowledge and practices. This was attributed to her use of both technology that was familiar to her as well as her use of technology and applications of which she had minimal or moderate knowledge due to its newness. She used such a wide range of technology and applications with her students because it was required of her in her new role as the Technology teacher. Therefore, it was difficult for her to be fully knowledgeable of all of the ways she could use all of the technology emerging throughout the year. In spite of that, she was able to figure out beneficial ways and methods that could be used during DL lessons. Her belief in its importance also motivated her to discover a myriad of ways DL could be taught.
Based on SAMR, her lessons were predominantly at the augmentation and modification levels. For example, during Ms. Carter’s fourth observed DL lesson, she utilized the website Zaption.com for reading comprehension. This website can be used to show videos of books with embedded comprehension questions. Ms. Carter indicated she wanted to use the program to extend the students’ comprehension skills. She spoke with the 3rd, 4th, and 5th grade homeroom teachers of her students to identify the students’ deficits. After each teacher expressed the same issue regarding a lack of comprehension during reading, Ms. Carter wanted to present the concept of reading comprehension using a different modality. This site presented an element of listening and visual cues that enabled a focus on decoding words as well as comprehending meaning. Instead this platform allowed the students to listen to the story and view the illustrations to construct the meaning to what they heard. The embedded questions served as a brief formative assessment that allowed students to express verbally what they understood about the story. In Ms. Carter’s computer lab all students could log onto the website, which allowed them to be individually active during the lesson. The website presented the story as an interactive ebook that played and was read to the students aloud as a whole class using the Promethean Board. At various points in the story, the application stopped and presented a question based on what was read. Each student, while sitting at his/her individual computer station was required to answer the question by typing a response. Then, each answer was analyzed by the program and scored for the students. According to Ms. Carter, during her interview following the lesson, this DL lesson fused traditional literacy practices with technology as the students had to figure out how to type in their responses. The website required the students to draw upon their ability to spell words correctly and to respond through written responses via complete sentences, particularly useful for students who needed substantial
practice. However, instead of writing using pencil and paper, the students used the computer to respond offering the use of an alternative modality to show their comprehension.

Ms. Carter expressed that this lesson had “a bit of a trial and error” component to it, because she did not have a full understanding of all of the website’s components and did not know everything about what the site offered. When asked about how she taught herself what she does know, she responded as follows:

Ms. Carter: keep playing around with it and then I kind of walk away. I heard about it months ago, and then I saw this young lady who's a tech specialist in the store. I was like, "Hey, I've been trying to use this," and she said, "Well, just try out the ones they have first." I think that was a good idea, so now that I kind of know how it is, I'll probably try to build one in the near future.

Ruby: Is this your first time using this app with students?

Ms. Carter: It is my third time using it, and this is my first time using it with lower-

Ruby: Grades.

Ms. Carter: Grades.

Ruby: What grade level did you try it with first?

Ms. Carter: Fourth grade.

(Interview Following Observation 4, December 2, 2015, lines 30-40)

Ms. Carter’s unfamiliarity with the website and its functions did not appear to impact her implementation of the application with her students. Instead, she seemed to display curiosity about the technology which motivated her to continue using the website despite her lack of knowledge. Her moderate to high level of TPACK served as a foundation to help her “figure
out” the basic use of the technology because she believed it could benefit her students. The following excerpt suggests that the expertise reflected in her higher TPACK scores increased her comfort level with unfamiliar technology, thereby resulting in her willingness to use the technology.

Ms. Carter: I keep playing around with it and then I kind of walk away. I heard about it months ago, and then I saw this young lady who’s a tech specialist in the store. I was like, "Hey, I've been trying to use this," and she said, "Well, just try out the ones they have first." I think that was a good idea, so now that I kind of know how it is, I'll probably try to build one in the near future.

Ruby: Is this your first time using this app with students?

Ms. Carter: It is my third time using it, and this is my first time using it with lower-

Ruby: Grades.

Ms. Carter: Grades.

Ruby: What grade level did you try it with first?

Ms. Carter: Fourth grade.

Moreover, the data revealed that when the teacher possessed a positive belief in technology’s impact on DL, a moderate to high efficacy in their teaching using ICTs, and strong knowledge of how to use technology, the teacher used technology despite the challenges that arose. For example, even though Ms. Carter showed confidence in using technology even when unfamiliar with an application and when she had no professional development in its use, she continued to use ICTs to teach DL lesson. For example, during her fourth observed lesson, she was plagued by issues with the network which took her more than 10 minutes to log onto the
website. Although frustrated, she did not scrap the lesson. Instead she redirected the students to log onto their individual computers until she was able to get everyone logged on. Instead of having a negative view towards the network challenge she adopted a “this is a part of what I have to deal with, so let’s move on” mentality, and waited for it to work. In fact, in her personal reflection about the lesson, she stated she was eager to try the lesson again under more favorable condition to see if she could even increase the impact of its use on her students’ comprehension. The difficulties experienced by Ms. Carter were not unusual. In fact during my observations, network system issues were prevalent. Interruptions occurred with the technology because of a slow network that caused applications to freeze up or not work at all, therefore her persistence when they occurred was an important variable in her use of DL.

If Low Scores + Positive Beliefs + Uneasy Comfort Level + Resiliency toward Challenges, then it = Moderately Appropriate Teaching of DL and Frequency of Use

This pattern reflects a teacher who possessed low knowledge of technology, as reflected in a low TPACK, and demonstrated a SAMR level of technology implementation at the substitution level, and held a positive belief in the importance technology played in her students’ literacy development. However, the positive belief in the usefulness of technology when coupled with a teacher’s lack of confidence in her use of that technology possibly was strong enough to influence the teacher’s use of the technology with the students. Furthermore, the use of technology despite the teacher’s limited knowledge of how to use the technology possibly could be attributed to the teacher’s resilience to the challenges experienced. Also the teacher’s use of technology perhaps was attributed to the teacher’s perceived belief in the significance of the technology in her students’ education. Taken together these added factors perhaps provided a purpose for her to use the technology in ways that added to traditional methods of teaching.
literacy. Dr. Laverne Brown’s use of technology demonstrates this algorithm. On her first observed DL lesson, I gave her a low TPACK score for her knowledge of technology, and I classified her implementation of technology at the SAMR substitution level. Although her initial level of technology knowledge was low, Dr. Brown possessed positive beliefs about how important technology was for her students, especially for acquiring skills in areas like literacy, in which many of her students were extremely deficient. Frequently during the study, Dr. Browne acknowledged she was not competent in her use of technology with her students because she did not know enough about how to use technology. When asked how she rated herself as a technically literate person, she responded. “I don’t consider myself technologically advanced at all, but I’ve always used a keyboard of some sort.” However, as the following excerpt from her initial interview, reveals she placed value on using technology with her students.

…my children are slower than the other children in second grade. My children are lacking in certain base concepts or ideals that they need in order to be successful in school…all of them in my class, because it’s self-contained it means they have shortcomings in language arts and in mathematics. (Oct. 16, 2015. lines 158-160)

They need lots of repetition. Some of them, um, based on SST meeting where we sit together with parents, teachers, and specialists to determine what their weaknesses are and how to overcome it, they need lots of repetition on baseline concepts and computers can do that for me with them without me having to stop the flow of the general class education. (October 16, 2015, lines 165-169)

Dr. Laverne Browne was not comfortable using technology because of her lack of familiarity with all of technology’s affordances. Although she did not feel comfortable, she believed that technology offered her students the extra support they needed to improve their
reading. Even though her lessons received low TPACK scores and she expressed discomfort with using technology, her positive beliefs about the value of technology in her students’ literacy development, influenced the frequency with which she utilized DL. She believed that technology made her instruction easier because her low performing students could use the technology to strengthen their reading skills as she worked with other students one-on-one.

Technology allows me a break after I’ve taught a concept. It allows the child to practice it as the surrogate parent. It becomes the surrogate parent. It becomes the surrogate teacher. It becomes the assessor and technology can allow them to manipulate ideas and concepts without interruptions with, from me without my shortcomings, which are that, “I don’t have any more time for this,” or “you don’t know this yet,” or “I’m tired of responding and I’m tired of the repetition.” The beautiful thing about technology too is that it can take them to places and experiences, give them experiences that they will not get in this classroom in this 4 X 4, or shall I say (pause) 6 X(by) whoever we are 12 deep. You know when I really look at it, you know, these are four walls. We lock these children in four walls and we want them to know the whole world. Technology is the way to get there. (Lines 204-212)

Overall, Dr. Brown acknowledged she did not possess the knowledge she needed to use the technology available to her, perhaps led her to use technology as a substitute for paper and pencil rather than as a way to modify or augment her literacy lessons. When viewed collectively, Dr. Brown’s use of technology illustrates the algorithm: If Low Scores + Positive Beliefs + Uneasy Comfort Level + Resiliency toward Challenges, then it = Moderately Appropriate Teaching of DL and Frequency of Use
If Low Scores + Negative Beliefs + Discomfort About Using ICTs + Negatively Impacted by, then it = Irrelevant Teaching of DL and Lack of Use

This pattern represents teachers who possessed low knowledge of technology, as reflected in low TPACK scores, demonstrated low levels of technology integration, as reflected in lessons classified at the lowest SAMR level, and possessed negative beliefs of the impact technology has on students’ literacy skill, especially those who struggled with literacy. These beliefs, at least for the teachers in my study, suggest the teachers’ negative responses to the challenges faced with the use of technology. Teachers who harbored such beliefs seldom used technology. Observations of teachers representing this algorithm, suggest the teachers possessed limited knowledge about technology. When these teachers expressed more comfort with using a traditional approach rather than using DL, at least for those in my study, the teachers represented in this algorithm often lacked resilience when they faced challenges to their use of technology.

Mrs. Tailor Bryson’s approach to technology demonstrates this algorithm. She rarely used the technology. In fact, it was four months into the school year before she designed a lesson I could observe that integrated DL lessons. In spite of her infrequent use of technology, she perceived her level of technology knowledge higher than that reflected in the low TPACK scores I assigned her observed DL lessons. While Mrs. Bryson rated herself as highly proficient and knowledgeable of DL at the beginning of the study, throughout the study her application of technology and exhibition of technical skills were limited.

As stated in her initial interview, she considered herself knowledgeable about ICT platforms and programs that could be used for DL. During her initial interview, when asked to rate her comfort level with using technology she rated herself as highly proficient, assigning herself an 8 out of 10. When asked to rate her level of comfort and understanding of DL for
literacy instruction, she rated herself an 8 out of 10. This rating did not align with my analysis of her DL lessons using TPACK that suggested Mrs. Bryson’s actual level of technology knowledge to be closer to that of a novice. My observations of her DL lessons revealed a lack of preparation in identifying and choosing appropriate technical devices to use with her students. Overall, the combination of Mrs. Bryon’s low scores, negative beliefs towards her students’ abilities, her hesitancy and discomfort when using ICTs all negatively impacted her use of ICTs for DL. In essence this combination of variables likely contributed to her lack of frequency of DL lessons as well.

The three patterns presented in the finding, If This, Then That illustrate how multiple intangible variables; beliefs, comfort level, and response to challenges, combined with teachers’ knowledge and implementation of DL likely influenced the teachers’ implementation of technology for DL. In the next section, I discuss another factor that appeared to influence the teachers’ decision to use or not use DL-- their perceptions of the role they played in exposing their students to technology.

**Third Finding: If I Don’t Teach it Then Who Will**

This third finding reflects the teachers’ view of their responsibility to use technology during literacy instruction with their students. The teacher participants’ view of their responsibility was revealed in the interviews and in their audio-journal reflections. Specifically, given the demographic of their students and their students’ struggles with reading, I wanted to understand how they perceived their role in exposing their students to technology as a means to achieve their academic success. The following represents different representations of this finding.
There’s Too Much at Stake; I Have a Responsibility, and Hold the Key to My Students’ success. This representation of “If I don’t teach, it who will?” reflects the feelings the teachers held about their responsibility to teach DL. Analysis of the data demonstrated that teachers who held these views expressed an awareness of the implications for their students if they did not assume the responsibility to prepare their students to use technology. They seemed motivated to implement DL because they viewed it as a priority, and they placed importance on its usage. Furthermore, they were aware that other teachers might not use DL. This lack of usage by fellow colleagues increased their feelings of responsibility to give their students the greatest opportunity to overcome academic issues common in this demographic.

In spite of possessing a low implementation of DL, Dr. Browne reflects this representation, “If I don’t teach it.” During her reflections about her personal experiences with technology, she revealed that her fear of not understanding how to use technology forces her to learn how to use it so that she can use it to teach her students. She knew the stakes for her students were high and they must learn how to use technology if they are to advance academically as well as advance in society. In the following excerpt from her initial interviews, she reveals some of what influenced her sense of responsibility.

As a teacher here at Thera Elementary School I came here last year. Um, I had been working in an APS for I’d say 23 years in Elementary Ed. And I really think technology for me began probably when as a child because I never really thought about it but my mother worked for IBM. She was in computer programming, I think it was early, probably, that was 53 years ago. And my mother was the first, one of the first blacks to work at IBM and program. She programmed some of the initial satellites in space that um the Pentagon used. So my mom worked for the Pentagon for a while and I think she
was very frustrated because she was doing that, and then she was working with us. There were four of us. I have 3 younger sisters and they ended up, my career really began as a result of me raising and taking care of my 3 younger sisters. And finally one day I remember as a child my daddy said, “You’ll make a fine teacher when you grow up.” Never planned to be one. But my experience with technology probably began like I said early and I never really thought about it.” (Initial Participant Interview, October 16, lines 36-46)

She continued to express that her lack of being “tech-savvy” left her with a low sense of efficacy in her ability to use technology with her students as evident from her statement, “I don’t consider myself technologically advanced at all” (initial interview). Yet, her personal fear of failing the students echoed her personal fear with using technology that originated in her childhood, supplied the catalyst that drove her to overcome her fear. That fear along with her understanding of what she believed her students needed from technology added to her awareness of society’s move towards digital literacy pushed her to use technology including DL. The following excerpt from her initial interview illustrates the role she perceived she played in exposing her students to DL.

Dr. Browne: And I was never really interested in technology, but never have I understood that I’ve always been around it. So when I got to college I became afraid because every year a new kind of technology was coming through and out of fear of failure, my mom always said I couldn’t do that kind of stuff, and I really couldn’t. I taught myself on word processors and computers I could constantly type because I was afraid of failing. And as a result now when I got to school and I began to teach students, I was not a big technology person. I was not much of one to use them with, to use
computers with them because the children needed one-on-one. It seemed much more like a tactile thing but now in the classroom since I’ve been here at Thera I’ve seen that some of my neighbors and teachers that I work around are very, especially the younger generation, they are highly technologically advanced. I know how to use things on the surface and get things done, but I don’t care how they work. That’s what other people are for. (Lines 67-77)

Dr. Browne also stated her shift towards implementing technology for DL as inevitable because she believed technology was a critical part in developing her students’ literacy and ensuring their future success in a technology driven society. Ms. Carter never received formal training in the use of technology. However, even though she had low TPACK scores and implemented technology at the lowest SAMR level, her awareness of the importance of her role in preparing her students motivated Ms. Carter to gain information in spite of these weaknesses. The following excerpt her illustrates Ms. Carter’s views:

(Lines 77-85)

Dr. Browne: “…And so what I did do was um I decided to get a grant. I realized I can’t be with all the children all the time and I’m getting tired as I get older and I can’t remember things, but children bore so easily and most of them are latch-key children so they are born in the technological age. They are technology babies, so I wrote a grant to get 5 iPads this year because I’ve been here just a year exactly and some kind of way I’ve gotten these 5 iPads and so over the summer out of fear about not knowing about the apps for iPads, I took 3 or 4 courses actually around me working full time in an educational camp, where they introduced me to various apps for
iT echnology because it seems as if the future, along with me doing problem-solving learning or problem-based learning that I find that you have to have an iPad. So um it kind of forced me into this. I didn’t choose this, it chose me.”

Ruby: Ok, so wait are you saying that prior to maybe a year or so ago, you weren’t using technology in this way that you’ve been using it?

Dr. Browne: No um, my previous principals used to tell us that we always had to do A.R. tests and have the kids on the computers doing this and that. I did what I had to because the job required it. But I’ve been a more hands on person with the children and now, with the type of children I teach, how fast-paced education is moving, the expectations of what they want, I can’t possibly keep up on my own. So I don’t have a choice but to use technology, and use it to my advantage for the children’s best interest.

**Being the Only One Willing to Surmount the Task.** Another representation of the findings If not me Then Who is their view that their colleagues left the task of exposing their students to technology to others. Ms. Olson’s first observed DL lesson with a class of first grade students revealed the obstacles she faced while teaching her fellow colleagues’ classes. As part of the school’s once a week rotation of core subjects during “Flex Day,” Ms. Olson taught all first-graders English/Language Arts. She used this time to implement a variety of ICTs to cover skills the students needed to master in reading and writing. As the students from the other three first grade classes rotated into her computer lab, Ms. Olson faced the challenge of teaching children with minimal exposure to DL. As a result, many students found her instruction challenging. During the follow-up interview of her first DL observation, she voiced frustration.
with being the only teacher on her first-grade team who regularly used DL in her instruction.

(Observation 1, Follow-up Interview, November 19, 2015, lines 36-60)

Ruby: Ok, one thing I did observe was, um, at one point you got a little bit frustrated with that group that was on the floor because they were having difficulty with the app. Do you, excuse me, think that that difficulty was because they haven’t had experience using the technology or was it the application itself?

Ms. Olson: Um, the application was pretty much self-explanatory, very easy. It was more of pictures and they just had to try to choose the word. It was more of them not being exposed and you know, using the technology in their class. And I asked them, you know, do you use technology in your class and some students says yes some students said no, um, so that might be something that, you know, their teacher want to kind of look at is, including that technology piece more often, so that they can be exposed and also sharing, learning how to share and or play games together on an app.

Ruby: Um, I then noticed that when you separated one of the children that it was easier for that one to do it by himself. Have you found that (3:57) there’s a lot, that it’s easier for the kids to work independently using iPads or in groups? And does it depend on your exposure, or the children’s exposure with it?

Ms. Olson: It definitely depends on the exposure, but it also depends on the students’ behavior. Some students just cannot get along with other
students and it makes it hard for them to share. But, once he was isolated or removed from another part, he did what he needed to do and he did it well.

Ruby: Ok, and then, um, did you think that the application, because I know there was another child that kind of just looked at the app, and didn’t really know what they were doing…Do you think that, um, some of the applications can prove to be a hindrance?

Ms. Olson: Absolutely, absolutely. I think, um all of the pictures and lack of exposure, not knowing where to touch on the iPad or keep closing the app out, you know, that, that’s an issue and sometimes it is the app itself or they need an easier app, so it it possibly could have been a little challenging or overwhelming for that child you know being that they had not seen it, um, prior to today. So that could definitely be an issue.

Ms. Olson’s first observation presented some of the challenges that occurred when using DL with students with little to no exposure to digital tools. At the beginning of the lesson, Ms. Olson separated the students into two groups by their ability to use the technology and apps. Students who did not know how to log onto a computer used an iPad, because IPads do not require students to login before they use it. She placed students with more technology expertise on the computers. She assigned each group to explore phonics, reading, or writing using applications and technology. As the students worked, Ms. Olson circulated to help any who needed assistance. As the lesson proceeded, she became visibly frustrated with the children’s inability to work together the groups to complete tasks she previously modeled for them.
In spite of the challenges she experienced with working with students with little technology exposure, Ms. Olson, as the computer teacher was motivated to ensure all of the students would be exposed to DL. Plus she knew she was the only teacher with access to all of the students. Her reflections recorded during audio-journaling exposed her interest in teaching DL to the students in spite of the challenges that came with teaching students from other classes who had few opportunities to use DL.

Plus, she expressed that using DL with her students on a regular basis offered a way to increase their level of understanding of phonics, reading, and writing. She even felt that the use of the various ICTs for literacy instruction made a significant difference with some of her students designated as EIP. She acknowledged that at times she became frustrated with being the only teacher in the school who consistently implemented DL. Although at times she was frustrated with her colleagues’ minimal use of DL, she still welcomed the opportunity to expose the students to DL. She had observed the positive effects DL had on these students who lagged behind their peers in reading. During her reflection following the first observed DL lesson, Ms. Olson indicated she welcomed the challenges that came with teaching other colleagues’ students and used that experience to inform herself about which aspects of her teaching she needed to alter to further meet the students’ needs.

Ms. Olson did say that even though the students from the other classes were not as proficient in using DL as her homeroom class, she noticed a difference in their development during the short period of time that she used DL with them. The following comments drawn from the interview that followed her observation reflects this view.

Ms. Olson: …you know, trying to get other classes that you haven’t had the entire year is can be challenging, you know, trying to get them on the same level as where my class is.
(Ruby: ok) And I would just probably offer suggestions to the teachers to you know, try to include more technology in your class, so when that opportunity do comes again, where I can work with them, you know, they’re able to apply what they know and use the technology with a purpose.

Ruby: And in the short time that you do get to their classes, have you seen a difference in their um, understanding as it relates to literacy?

Ms. Olson: Absolutely, Absolutely, for my own class I’ll speak. Um, I have students now writing complete sentences. I have students writing more sight words and I have students to create and build words, break down words just from using the different apps in my class. I have students learning more about different content, such as science and Social studies using the Promethean Table, where they get to write about it, or they can read about it and then, you know maybe type a sentence that they, something that they understood from what they read using that app on the Promethean Table.

(Observation 1, Follow-up Interview, lines 136-148)

**Just a Few Among Many.** Another representation of the finding perspective of “If I don’t teach it, who will” is based on the four teachers view of the teachers within their school who do not use the technology readily available to them. During the final focus group interview, the four participants commented on the need to develop a school culture in which using technology was the norm and not something considered as an accent to teaching. These teachers recognized that the teachers in the school knew they needed to expose the students to technology for DL. This view was magnified because Thera is in the beginning phases of becoming a STEM certified school. The school does have a small group of teachers, including my participants, who regularly used technology in their teaching. The participants in my study believed themselves to
be a bridge to those who do not use technology. My participants attributed this minimal use by their colleagues to several factors including: lack of technological knowledge, lack of pedagogical knowledge, lack of by-in, and the lack of a desire to move away from traditional instructional practices. The participants discussed their colleagues’ hesitation to embrace a move towards integrating technology with DL. The following exchange represents their concerns about how the school addresses this issue.

Ruby: Ok, one thing I did observe was, um, at one point you got a little bit frustrated with that group that was on the floor because they were having difficulty with the app. Do you, excuse me, think that that difficulty was because they haven’t had experience using the technology or was it the application itself?

Ms. Olson: Um, the application was pretty much self-explanatory, very easy. It was more of pictures and they just had to try to choose the word. It was more of them not being exposed and you know, using the technology in their class. And I asked them, you know, do you use technology in your class and some students says yes some students said no, um, so that might be something that, you know, their teacher want to kind of look at is, including that technology piece more often, so that they can be exposed and also sharing, learning how to share and or play games together on an app.

Ruby: Um, I then noticed that when you separated one of the children that it was easier for that one to do it by himself. Have you found that (3:57) there’s a lot, that it’s easier for the kids to work
independently using iPads or in groups? And does it depend on your exposure, or the children’s exposure with it?

Ms. Olson: It definitely depends on the exposure, but it also depends on the students’ behavior. Some students just cannot get along with other students and it makes it hard for them to share. But, once he was isolated or removed from another part, he did what he needed to do and he did it well.

Ruby: Ok, and then, um, did you think that the application, because I know there was another child that kind of just looked at the app, and didn’t really know what they were doing…Do you think that, um, some of the applications can prove to be a hindrance?

Ms. Olson: Absolutely, absolutely. I think, um all of the pictures and lack of exposure, not knowing where to touch on the iPad or keep closing the app out, you know, that, that’s an issue and sometimes it is the app itself or they need an easier app, so it it possibly could have been a little challenging or overwhelming for that child you know being that they had not seen it, um, prior to today. So that could definitely be an issue.

(Final focus group interview, March 30, 2016, lines 538-554)

The teacher participants identified themselves as a small group within the school who saw the need for technology and embraced its use even though their colleagues did not. For Ms. Carter, her role as the school’s technology teacher provided the opportunity to talk with each teacher about his/her students during her technology class. Often, she acknowledged, these
conversations were sometimes met with disinterest. The following exchange occurred during one of my observations of Ms. Carter when a teacher arrived to pick-up her students.

(Ms. Andrea Carter, Interview Following Observation 3 12/1/15)

She informed a fellow teacher, Ms. Baker, about the lesson that the students had been participating in, to build their foundation of coding. She told Mrs. Baker the students’ fourth-grade homeroom teacher that the students had been working on following directions to develop algorithms. She expressed to Mrs. Baker that her students needed additional work on following directions and giving directions using code. To which Ms. Baker simply shrugged off the comment made to her and stated that she didn’t have time for that, expressing her disinterest in what Mrs. Carter was teaching. Mrs. Carter stated that despite the disinterest that was displayed by many of the teachers that she discussed their students’ technology practices in her class, she stated that she still always wants teachers to be aware of the learning that is transpiring in her class because she knows that some of them are unaware of what they do while they are with her. She also stated in her follow up interview that her goal was to help teachers to have a better understanding of how technology can be used to deepen their students’ skills in reading comprehension and in math. An example of this occurred during the third lesson that she presented during an unplugged coding activity with a group of fourth grade students.

“I like to let them know what we're doing I think, not just the kids, sometimes think this is computer class and they're just bonkers, they don't look at it as technology. It's kind of like, "I think they look at it kind of like their specials, like art or music, like they're here to have fun. It's structured learning. I just get that sometimes from the teachers as well. I
like to let them know how I'm tying in what they're doing in their home classes in here. ”

(Lines 219-226)

Despite her repeated attempts to engage teachers in the process and to show them what their students could do using DL, the teachers remained reluctant to accept her help in using technology during their literacy lessons. The following exchange with Ms. Andrea Carter represents her beliefs about her role in exposing teachers to the effectiveness of technology when used with the students:

Ms. Carter: I've offered ... Not just coding, just technology things, how you can enhance your lessons. For me technology was a saving grace. I've been teaching a long time, so for me it kind of has spiced up what I'm doing.

Ruby: Okay.

Ms. Carter: I'll say this, they say, "Okay." Then when it's time to do the lesson it's kind of like, "Oh, I'm not." They're not really as open. The coding, I ended up just going ahead to try in-house just to see how well our kids would do. Because I see so many kids on Twitter. I follow lots of technology teachers and lots of schools, schools across the nation, and I see all of the kids, they don't look like our kids, and they're coding and they're having fun. They're in kindergarten, they're in first grade. There's no reason why our kids can't do it.

Ruby: Right.
Ms. Carter: I think if you expose them to it all I can say is you know what, I exposed them to it, and we did it, and I tried, and our kids can do it.

(From Ms. Andrea Carter’s Interview Following Observation 3, 12/01/15)

starts at line 238

Ms. Carter was aware that as the only technology teacher in the school, she needed to be proficient with using technology. She also realized that she served as the primary means for disseminating the information about how and when to use technology. Her encounters with teachers who were not committed to using the technology despite the students’ interest in using DL increased her acceptance of her responsibility to prepare the students. Her position as the school’s technology teacher provided an opportunity to affect the entire school, even though she only worked with them once a week for 45-60 minutes. Given that few of her colleagues consistently used DL or technology, she perceived herself as the best source, and in some cases the only source, for exposing the students to these tools.

Further discussions with the teachers during the focus-group interview revealed that they served on schools’ STEM committee. From their work on the committee, they knew that many teachers in the school found the technology component of STEM the most difficult. They perceived that the teachers seemed well versed in the science, engineering and the math components. The participants discussed that while the school’s move towards STEM was mandatory, not all teachers knew what to do or were willing to embrace the use of technology. They felt a responsibility to prepare not only the students but their fellow teachers as well. However, the response to this issue varied among the participants. Dr. Browne believed using technology should be a mandatory component of their pedagogy. While Ms. Carter and Ms.
Olson believed they should continue to focus on exposing and sharing knowledge with their colleagues. The participants maintained they could serve as a bridge to assist teachers within their school to learn more about how to use the technology. They explained that because they seemed to be the ones most comfortable with using technology, they could and should show others what to do. They felt that by serving as examples and showing others how to use technology they could pass on their knowledge. Perhaps this would motivate their fellow teachers to embrace the use of technology. Then following exchange during the final focus group interview represents their acute awareness of the impact they could have on the school.

Ruby: would you say that your comfort level with the technology is highly impacting how you're using it or if it's not impacting how you're using it?

Ms. Carter: Laverne?

Dr. Browne: Yes it is, but I also need something that works, like my overhead Promethean.

Ms. Carter: Ms. Carter, and it definitely does impact how, because I'm evolving with the technology, so it does impact it.

Ms. Olson: Yes, a tremendous impact on students' performance, even their confidence.

Ruby: It comes from seeing you?

Ms. Olson: Comes from, yes. That confidence, that motivation. If I can't learn it by reading a book, I'm going to learn it electronically, because there's a will, there's a way.

Ruby: Then you pass it.
Ms. Olson: Yes.

Dr. Browne: Then she gives it to me and she gives it to me too, because I will go and ask them. I'm not afraid to go and ask.

Ms. Carter: I absolutely love it. It makes my day. When you ask me something, "What do I do?" I start smiling. [inaudible 01:05:39]. No. I love it.

(Final Teacher Participant Focus Group, March 30, 2016, lines 907-922)

The participants acknowledged that they represented a connection to their students to the outside world. They expressed the importance of this connection for all students but particularly for the students whom they teach. This includes their responsibility to utilize DL and the ICTs that make it possible for their students to be academically successful. They must assume the responsibility to prepare their students to function in society because many lack opportunities to engage in its use at home. The teachers spoke of this in the following exchange.

Dr. Browne: What keeps me, what holds me is the fact that technology helps make my job easier. I could not sit in my classroom with the types of children I have and their emotional social behaviors without modern technology. Even when I leave this job and go to my other one, I teach children who are in a group home. Ironically, APS supplies the technology that is there. It's the technology that really allows me to bridge everything we can't run out and get and everything we can't do. It bridges everything outside world.

Ms. Olson: It does help bridge gaps.

Ms. Carter: That's what I was trying to say to Taylor. Her student is not an anomaly in our population, but there has to be something to help bridge that gap. His social needs, he has social needs, he has emotional needs, but he still has a
learning need, and he still will have the desire, but you just have to give him some type of autonomy, because he feels like there's nothing in his life that he can control, so he doesn't care about anything at this moment.

I had a student like that last year, but I made him in charge of my class. I had to relinquish and let him be in control, "I need you to go do this. This is what I need you to do. You know what? I need you to do this, and make sure you do what I ask you to do, because I don't want, if someone talks to me about you, you can't ... “You guys know my student, he fought grownups in the building, you know everything that happened with him. However, in my class he was a learner because that was the context in my room, “this is what we do in here.”

Ruby: That's despite their circumstances and-

Ms. Carter: Because when you enter this building, you're mine. When you come in this room, you're mine. You're putting on your student hat. Miss Ms. Carter's in charge, I take care of you. There's nothing in here that you can't have. You're hungry, I have it. Anything you need, I got it. Outside here-

Ms. Olson: You’re correct

Ms. Olson: Lotion. Chapstick

Ms. Carter: You need lotion, you need food, you need water, what you need, baby?

Ms. Olson: Because that's what she always say, "What you need, baby?" [crosstalk 01:08:34].

Dr. Browne: You do that with all the children.

Ms. Carter: I do.
Ms. Olson: She does.

Dr. Browne: I notice, I'll walk by and observe you-

Ms. Olson: That's exactly what she say, "What you need, baby?"

Dr. Browne: ... and when you're in here, you do that with every child. I haven't seen you not do that.

(Final focus group interview, lines 934-969)

As reflected in their comments during the focus group interview, they visualized their role in using DL and emphasized their responsibility to their students and characterized themselves as models for how DL could be used. Moreover, they believed they demonstrated how to become constant learners who without fear or embarrassment explored how to use effectively technology for DL with their students even when they had no idea of what to do. The teacher participants believed this was even more important because of the students whom they teach. I explore in the next section their perceptions of their experiences of using technology with their population of students through a CRT lens.

**Critical Race Theory: Using the Teachers’ Voice to Create a Narrative of their Experience Teaching Predominantly African American Children**

Throughout the qualitative study, CRT informed the focus of my observations and follow-up interviews. I used CRT as a lens to examine the experiences, beliefs, and pedagogical practices used by these African American educators so that I could gain a deeper understanding of how their implementation of DL was influenced by their experiences within the school context. For example, I asked each participant to describe her role in teaching African American students. I examined each teacher’s perceived role in improving outcomes of her students during DL lessons. Further, CRT provided the lens to understand how the choices the teachers made
and their practices when using DL were influenced by their knowledge of the experiences, perspectives, and histories of their traditionally marginalized students. And CRT guided my examination of how the teachers used the information about their students to inform their classroom practices and use of DL. Essentially, a CRT offered a deeper understanding of their implementation of DL with the students at Thera. That analysis revealed the challenges they experienced. In this section, that concludes my presentation of my study’s findings, I present what I learned from looking across my data through a CRT lens.

Throughout this chapter the teachers make reference to their students’ reading difficulties. Further examination of their views revealed that attributed many of those difficulties to the social and emotional challenges their students faced. These challenges, they believed impacted their instruction in general and their use of DL specifically. In the following exchange, the teachers’ speak about these challenges.

Ms. Olson: In this environment we deal with a lot of students that have challenging home environments, which rolls off into the academic day and it kind of holds them up with learning. And then we also have a lot of students that do not have a lot of parental involvement or the resources needed, especially technology, to enhance their education and learning.

Ms. Carter: Our students also have lots of emotional things. They have lots of emotional needs that need to be met that tend to interfere with their academics as well.

Dr. Browne: One of the problems that they have as well is there’s a social break down in the system. We have children who have come from generation after generation of dysfunctionality and social reform [efforts] that was for
people who could not do for themselves. So, when you come from an
environment in a situation where the children do not have parents that
have been in control of their own lives they rely on the social structure
then everything becomes,” y’all are supposed to”. So we have these kinds
of children, which means that they are more disabled by enablers in our
society for their social structure and the breakdown of it.

When I then asked, “Does this impact their students’ low reading ability their inability to use DT
to introduce reading?” the teachers responded:

Mrs. Bryson: I know within my class I have parents who are illiterate, so they don’t
know how to help their children.

Ms. Olson: Kids are affected tremendously because they first do not come with a
heavy, uh, sense of vocabulary. Their vocabulary is very limited, which
also affects their academic day, especially reading and literacy.

Mrs. Bryson: And even with the parents not knowing, the students come in,[and] I don’t
feel like they [students] care about their learning. So they come in, they
play, they become behavior problems, and even if you’re trying to help
them, and even talking to the parents about retention, it doesn’t phase
them.

In other remarks, the teachers attributed their students’ social and emotional
challenges to their parents.

Dr. Browne: And that would explain why I spend so much of my time looking in
parents’ eyes expecting them to be affected by the academic failure of
their children and I hear them say to me, and I quote, “ Y’all failed my
kid. I’ve had him in all these different schools and he, he or she, they got
learning problems and y’all should’ve caught it by now and done something about it. And … when my kids start flipping over desks and carrying on cause they don’t know no nothing cause y’all didn’t catch that they had a problem when they was early.” And so, that’s their frustration. And that is literally what I’ve been told. So I realized that it doesn’t behoove me to discuss academics because some of these parents actually told me today, “If you gotta, just fail ‘em.” And that is not the attitude of a parent who wants their child to learn. So I’ve wasted my breath. (Lines 40-74, initial focus-group interview, 11/19/15)

Based on member checks following my analysis of the data, Dr. Laverne Brown attributed the parents’ problems to generational issues of poverty, discrimination, and ill-conceived federal policies were other issues they, as teachers, could not overcome. Dr. Laverne Browne indicated she had repeatedly encountered the consequences of these issues in her 23 years of teaching. In fact, she had taught long enough that she taught the parents of the students she now teaches. Thus across generations, she had witnessed the same pattern of academic challenges.

Although the teachers stated that the vast majority of their students had “bright minds,” and had the ability to learn, many students faced issues outside of their control that impeded the students’ ability to be impacted positively by the teaching that occurred within the school walls. The teachers acknowledged that their students faced challenging home environments. Many of the students had only one working parent, several siblings, and a lack of resources, out of school issues that impeded their learning inside of the school. The teachers expressed that when parents spend most of their time working because of their obligations to provide for their families, they were unable to participate in their children’s academic lives. For other students, the teachers
remarked that their parents just did not seem to care about their children’s education, so they left the responsibility to the teacher.

Analysis from the data collected during the focus-group interview also revealed that each of the teachers felt they faced a heavy burden being the sole person responsible for addressing the students’ academic needs. This burden, they indicated, was coupled with being responsible for meeting the emotional and behavioral challenges with little or no support from their students’ immediate families and caretakers.

In the previous exchanges the teachers’ voiced their frustration. Within those comments, the teachers conveyed their sentiment that the students’ cultural and social backgrounds impacted their learning, their reading acquisition, and their overall ability to use DL. Their comments implied frustration with issues they had no control over and could not remediate despite their instructional planning and teaching. In the next excerpt, the teachers address their use of technology. Using technology, they noted, sometimes did not minimize these challenges but intensified them. They knew that state curriculum standards, which were drawn from CCSS required the students to be proficient in using technology to communicate and express literacy skills. And they knew that not only was the students’ proficiency evaluated on the State’s annual test, the students were required to take that test on a computer. Therefore, the teachers understood they had to incorporate DL within their instruction to give their students a chance for success. However, as suggested in the comments that follow, at times the teachers felt that such success was an unobtainable goal.

Dr. Browne: … with this agenda over us where we have to be a school that has to produce [(test scores, and academically] we’re trying desperately to, you know…

They continued and indicated that using DL might help their students improve their reading
Ruby:     Do you feel like, and this is for all of you, do you feel like you have a firm understanding of what you need to teach your children to prepare them to be digitally literate?

Mrs. Bryson:     I think I’m proficient, it’s that time. I got to find that time cause I’m the EIP [teacher], I have the EIP students (Robertson chimes in, “That’s right”) and I’ve got babies in there that don’t know vowel sounds…

Ms. Olson:     They’re all over the place [in their reading ability]. Mrs. Bryson

Mrs. Bryson:     They don’t know their sight words. So to me I wanna do technology cause I (Robertson: right) used to do technology… in the classroom, but it’s not a priority.

Ms. Carter:     But you have a priority.

Mrs. Bryson:     I’ve got a baby in here that can’t read. I’ve got a baby in here who don’t know “is”, or “it”, or “and”.

Dr. Browne:     So when a teacher has taught her heart out, say in first grade, with them for a year and I get the child and I know this is a good teacher (referring to the first grade teacher). I’m not judging my colleagues, but I’m sitting here going, “This child doesn’t know anything. And it’s not because of lack of teaching.” [Participants Mmm hmm in unison suggesting agreement] It’s because of lack of retention. We have too many children, too many standards to teach, and too little time to do it in. We’re going to have to incorporate technology, which doesn’t get impatient with children, Because this thing will keep saying, “Not right yet, but try it again” (Patton: Mmm hmm), “Great” …
Dr. Browne: Because we are pulling our hair out, that’s why I’m bald headed now. We are pulling our hair out trying to teach these chi’ren [slang for children] and it’s like we not putting anything in, and we ain’t getting nothing out. And I know that we are [teaching]. I’m sorry, I get excited about it.

(Lines 161-267, initial focus group interview, 11/19/15):

In other comments, teachers stated that the students’ behavior impacted their use of technology when teaching literacy. In the following exchange, the teachers discuss their concerns with their students’ short attention span and the ease with which they “get off task.”

Dr. Browne: with 16 arms and 32 children to deal with. And today’s children just really don’t quite retain information they way um, the children in the past did. And part of it is, here’s the flip side of technology at home…overstimulation of garbage with technology at home⁵, [Mrs. Bryson: Mmmm hmm- suggesting agreement with Dr. Browne] when they get to school their brain is li, is on lock-down because of over, we all are. Technology at home that’s blaring at them without structure and substance [One of the teachers responds, “Mmmmmm” again suggesting agreement] overstimulates and adds to [their] ADHD.

Ruby: So do you feel like when you get here and you have these different platforms that you’re using, that you have to kind of redirect them toward the purpose ¹of using them?

Dr. Browne: Absolutely!

Ms. Carter: And I do on a daily basis. I have to sometimes, I can be walking, on row three (in her computer lab) and I go back to row one, I can tell [when a
student is] not where you’re supposed to be, and go click on your history,

“Oh, you decided to go to YouTube instead of working on…

Ms. Carter: Because they don’t, (Ms. Olson: responds, “Yes”) (Mrs. Bryson: Mmm hmm-yes) they don’t know that I can go check on your history.

Ruby: OK

Dr. Browne: We have to manage everything in our room, and with children that are younger and that have short attention spans and limited structural skills there’s no such thing as sitting at a reading group exclusively during a literacy block or during centers and working it. These children, you have to go over there and check them. If a child gets off [task], and goes on the wrong program then that computer time was a waste of my time because they got more saturation of garbage\textsuperscript{lb} [Mrs. Bryson: “Mmm hmm,” suggesting agreement] while they go onto YouTube and the ______ (inaudible) this stuff…

Mrs. Bryson: Taking pictures of themselves

Dr. Browne: And then I have lost instructional time for that child with something that’s off the task, so just teaching them to stay on task in the technology is serious. It’s a daunting, it’s an undaunting task and it’s a daunting one.

We really need to let the parents know.

(Initial focus-group interview, lines 295-328, 11/19/15)

In addition to responding to issues that the teachers believed resulted from the students’ social and emotional issues, the teachers expressed that at times they felt disconnected from their African American students because, although they are African American, their economic status was different from their students. Their students’ low SES may have contributed to the students’
lack of the same experiences or knowledge to which they as teachers were exposed. As a result, the teachers did not see themselves from the same social and cultural group as their students even though they are all African American and from their own personal experiences understood the discrimination of being African American in a society dominated by White middle class values.

The teachers’ perceived disconnection from their students holds significance to their efforts to teach their students. Although, they are African American women who teach in a predominantly African American school, they did not see themselves as from the same sociocultural environment and thus did not identify with their students’ demographic. The difference of most concern they stated of was the students’ language usage. When the students used the slang from their cultural vernacular in school, the teachers maintained, negatively impacted their literacy growth. Concerns the teachers held about their students’ language extended beyond their use of slang and contributed more broadly to the struggles some of the students experienced with speech. These struggles, they offered, were related to the speech patterns present in the vernacular used by many African Americans who lived in communities where use of slang and broken English were common. Also, the teachers noted that they often found themselves speaking in the students’ vernacular as a way to build rapport with the students, but regretted having to do so. The next excerpt illustrates the teachers’ feelings of being different from their students despite being of the same ethnic heritage.

Ms. Olson: the graduation rate was actually higher back in the days when we were uh, in school

Ruby: So do you think that technology has changed the way that children are learning, like made it worse?

Ms. Olson: It definitely has, ONLY because of their home environments, if they’re learning “Laugh Out Loud”, they’re Andrea writing and typing that on the
computers. You know, you have to know the language. It goes back to that academic vocabulary, all day, every day, and being able to follow directions, multistep directions.

Ruby: Because, they’re not doing multi-step directions (35:10)

Dr. Browne: They’re not and they’re not capable of it and part of it is, like I said, oversaturation of technology elsewhere. So we just really have to hone, like everything else you just have to structure everything. Technology is advancing, people are coming out with stuff, crazy stuff, so fast

Ms. Olson: You don’t have to think anymore

Ms. Carter: That is what I think is the largest problem. And if you hear me talking to this student, “Read your screen.” Student, “It’s not doing.” Andrea-“read your screen son. It says that you have to press go, you have to press start.” But that thinking, we have to, you said it earlier when we were just talking, that they’re on that, “Ya’ll have to do” (meaning the students expect everything to be done for them) (Dr. Browne: Yep) It’s…we have placed these supports too deep for them.

Dr. Browne: We have…Paper and pencil really they have to get back to it, then, they can move to technology. They do have writing programs though… and you were talking about it. I, we both had the EIP classes. They’ve got …some writing programs that are really good for children that don’t have their what is that word….

Ms. Carter: foundational skill

Dr. Browne: yeah, that stuff

Ms. Carter: Uhhh huh (yes)
Mrs. Bryson: Uh

Dr. Browne: you know, children who are struggling with that stuff [academic foundational skills]. It’s there… and it will help fill in some of the [gaps] I look at how the children have gaps in speaking, I’ve never seen children who don’t have articles in their speech, like they are a noun, and I catch myself

Mrs. Bryson: What that is? (mimicking a student’s speech)

Ms. Carter: But you know my mother, my mom says that a lot, that I think since I’ve been living here, I don’t speak at the same level

Lavern: Oh yes, everybody talks really country

Ms. Carter: So when I go home, my mother, “What did you say?” and I say, “What did I say mommy” and she’ll say, but it’s the point of adjusting to them (the students) cause we’re trying to connect with them…

Dr. Browne: Yes

Ms. Carter: But we have got to keep it up.

Dr. Browne: Keep our standards high, and remind one another

Other Participants: Inaudible

Ms. Carter: I know it. It’s something I’m telling you I’m aware of. It’s something that we have to as teachers remember. But we’re doing it so we can get a relationship, and you understand what I’m saying so you know where I’m coming from.

Dr. Browne: Yes, I understand where you’re coming from because my people from home say, you talk so country…

Ms. Olson: Yaaaaaaaas (meaning yes with the current dialect/twist of “yes girl”)
Dr. Browne: … [My mom says] “what is wrong with you? You used to have the best diction and speech around. You talk so country.” I’m like, when in Rome, do as the Romans do.

Ms. Carter: Mmm hmm (yes)

(Lines 532-581, initial Focus Group Interview with Teacher Participants, 11/19/15)

The teachers’ acknowledgement of not fitting in with their students but needing to use practices that reflected their students’ demographic reflects the idea of a subculture that existed within a culture. Even though the teachers and the students are members of an African American culture who share similar experiences, such as living within the U.S. as a marginalized minority, the teachers did not view themselves as African Americans affected by the challenges experienced by their counterparts raised in a lower SES. Their counterparts, according to the teachers in this study, did not place a high importance on education, and as a consequence did not respond to their instruction. This culture within a culture acknowledges that the teachers found it difficult to determine what should be used to teach this group of students.

When analyzed through a CRT lens, their words take on a greater significance. Their comments suggest that they were aware that they are African American educators who are part of an educational system with responsibility to prepare their students to participate in society. In addition, they were aware that the educational institutions had failed students such as theirs. And they had experienced first-hand the difficulty of teaching their students all they needed to know to be successful academically.
Conclusion

In summary, the information presented in this chapter represents a comprehensive examination of the four teacher participants’ use of DL within their literacy instruction with their African American students. My study identified three levels of DL implementation. Further, the findings demonstrate that technology knowledge alone did not predict how educators use DL with their students. Rather, the study disclosed that a host of variables played a role in determining how or even if these teachers used DL to develop the literacy skills of their students. Therefore, the findings from this study suggest that to understand a teacher’s pedagogical practices when implementing DL one must account for the teacher’s beliefs, comfort level, and response to challenges. Plus, my application of CRT to the teachers’ words offered a critical lens that I used to examine the experiences, beliefs, and pedagogical practices used by these African American educators. They examination provided a deeper understanding of how their implementation of DL was influenced by teaching their students.

I close with a brief summary of the answers to the three research questions.

Question 1: What pedagogical practices do teachers of African American children in urban low SES classrooms use when integrating digital tools during their literacy instruction? I used the TPACK rubric and the SAMR model to gain a more comprehensive examination of the teachers’ DL pedagogical practices. TPACK provided a means to examine multiple aspects of those practices, such as the congruence they reflected between the technology and the content taught. SAMR provided a means to determine if the DL pedagogical practices used by the teacher substituted, augmented, modified, substituted, or transformed traditional pedagogies. Using these instruments revealed three levels of implementation of DL pedagogical practices.
These included Limited DL implementation, Moderate DL implementation, and Full DL implementation.

Question 2: How do these teachers’ perceptions of Digital Literacies usefulness impact the ways they use digital literacies during their literacy instruction? The teachers’ perceptions of DL appeared to contribute to the teachers’ level of DL implementation. These perceptions are influenced by three intangible variables--the teachers’ beliefs toward using DL, the teachers’ comfort in using DL, and the teachers’ responses to challenges to their use of DL. I combined these variables with their knowledge of technology as represented in their TPACK scores and their SAMR level of implementation to create algorithms of teachers’ use of DL. These algorithms demonstrated the multiple factors that interact to influence the teachers’ use of DL. To illustrate one teacher’s belief in the need for her students to use DL was stronger than her lack of knowledge in using a specific digital tool. In spite of her lack of knowledge she learned how to use the DL tool. In contrast, another teacher’s belief that her students’ lack of foundational reading skills prevented the effectiveness of DL, therefore she rarely used DL.

Question 3: What challenges do the teachers face and how do they respond to these challenges as they integrate Digital Literacies? Teachers experienced multiple challenges in their implementation of DL. These challenges included but were not limited to school-related challenges (student behavior, lack of time, changes in schedule, missing parts of technology, no assistance, not enough technology) and systemic challenges (network outages, lack of a mandated or universal curriculum, standardized testing). Although identifying these challenges is critical to understanding teachers’ use of DL, my study revealed that how the teachers responded to challenges to their implementation often influenced how or even if they used DL. To illustrate in some instances the teacher demonstrated resilience to a challenge, for example lacking the
knowledge of how to use ICTs or a website. Rather than the teacher becoming stymied by this lack of knowledge, she found a way to learn on her own how to use the tool instead of waiting to receive professional development or waiting for others to provide the needed information.

In closing, the findings presented in this chapter provide a deeper explanation of how teachers of predominantly African American students within a low SES school implement DL during their literacy instruction. I hope by providing this information, the study provides insights into teachers’ technological practices and reasons why they may choose to implement or choose not to implement Digital Literacies.
5 DISCUSSION

This study examined how teachers of predominantly African American urban, low SES students used Digital Literacies (DL) during literacy instruction. The teachers from Thera Elementary, who volunteered to participate in this study, provided a lens through which I could closely examine the pedagogical practices of teachers who incorporate DL into their instruction. This examination of teachers’ instructional practices revealed the impact that variables such as teacher beliefs, comfort with technology, knowledge of appropriate and relevant instructional practices, and responses to challenges can have to the teachers’ level of DL implementation and usage. As I observed each teacher in her classroom environment, I saw DL implemented in a variety of ways. Teachers selected ICTs to engage their students based on the content that was being taught. More broadly, technology was used in a variety of ways, which included remediation to review skills, exploration, and research to locate information, and assessments to gauge student understanding. As I began to compare the practices of the teachers, I recognized degrees of variation in their implementation of DL. When I initially analyzed the data, I found the teachers exhibited a range of proficiency in their DL knowledge and in their ability to integrate the technology into their DL lessons.

Data from the study suggest that the degree the teachers implemented Digital Literacies was related to a combination of factors. While a teacher’s pedagogical knowledge appeared to be a primary factor in how well she taught literacy using DL, a teacher in my study who possessed low pedagogical knowledge in DL still effectively used DL to teach her students when coupled with a strong belief in the importance of DL. This phenomenon occurred with Dr. Browne, who intentionally integrated technology based on her students’ needs. Her unfamiliarity and low comfort level with the ICTs used to teach DL did not prevent her from consistently
implementing it with her students. Essentially, she overcame her anxiety towards technology because she believed it was necessary for her students’ academic success. Furthermore, she found the interactive nature of DL benefited her low-performing students. Her perceived benefits of using DL with her students outweighed her fears. Other intangible factors that appeared to influence her level of implementation included the importance of improving student outcomes and the responsibility she felt to meet her students’ academic needs. As expected, however, participants who implemented DL on a consistent basis were knowledgeable about DL and possessed a positive belief in technology’s effect on student outcomes. Participants with a negative view of DL and who believed was not a sound instructional method to use with their low-performing students, were less inclined to use DL.

Therefore, only looking at the participants’ knowledge of DL and its implementation during literacy lessons did not provide a complete picture of the participants’ pedagogy. In some cases, those factors may not be the prominent indicators of teachers’ instructional practices. This is similar to findings from other studies. Tsai and Chao (2012) in their study found that external barriers such as the lack of adequate time, lack of access to technology, and lack of institutional support potentially affected a teacher’s ability to learn new digital tools. Also, they found teachers’ pedagogical beliefs, technology beliefs, and willingness to change practices contributed to their failure to use technology. The teachers in my study also demonstrated that a teacher’s level of knowledge of DL was not the determining factor whether a teacher might utilize DL. As in the Tsai and Chao study, data from my study suggest that the degree to teachers implemented Digital Literacies was related to more than the teachers’ knowledge and skill in implementing DL.
This study also revealed challenges with using DL related to teachers’ perceptions of their students. I conducted the study in a low urban SES, predominantly African American elementary school. My data suggest that this context may have contributed to how the participants responded to DL. Teachers in this study seemed affected by their perceptions of how beneficial DL is with students from this demographic. Many of the students at Thera Elementary performed below grade level in reading, thus increasing the significance for their teachers to determine what type of instruction best suits their needs. Two participants, Dr. Browne and Mrs. Bryson, taught classes in which all of the students were classified as below-level and in need of additional support in reading. Both participants voiced concerns about this and the challenges they faced when using DL with her students. While both participants indicated their students’ inability to use technology presented enduring challenges, each participant responded differently. Dr. Browne believed that it was her responsibility to educate the students in ways that prepared them for the rigor and practices of the 21st century. This belief likely fueled her frequent use of DL despite the challenges. In contrast, Mrs. Bryson’s beliefs that her students did not possess the skills necessary to use the technology prompted her to defer to using traditional methods for teaching literacy rather than implementing DL.

This study suggests that providing a technologically-rich school environment does not guarantee that the technology will be used. This finding finds support in other studies (Cope & Kalantzis, 2000). It is important to note that the context of any given educational environment could impact the pedagogical practices of teachers regardless of their level of technical, content and pedagogical knowledge of Digital Literacies. The teachers at Thera Elementary acknowledged that their school was unique. Unlike many other schools in similar demographic communities, Thera is technology rich. Schools from the surrounding area are not equipped with
the variety and vast amount of technology found at Thera. While the school has ample technology, the participants noted that most teachers did not regularly use it. Ms. Carter wanted to assist teachers in her school with using technology and expected that helping the other teachers was part of her responsibility as the Technology Teacher. Few teachers, however, reached out to her for help. Even Dr. Browne and Mrs. Bryson admitted that they never sought help from Ms. Carter, even though she offered. Teachers may have all of the technology in the world. Nevertheless, time constraints and deadlines to complete other tasks, such as teaching academic content and preparing students to take a myriad of tests that occur throughout the year, often serve as barriers to the implementation of DL. As suggested by other studies and evident in my study, these demands become more of an issue when the students perform below grade-level expectations.

This study suggests that another barrier to the teachers’ use of DL during literacy instruction is the absence of ongoing and relevant professional development. Even though the school provided an array of technology, teachers were not provided professional development on how to integrate it into their lessons. Even with the expectation that the teachers were to teach using technology, they received no specific directions on what to do. The state’s curriculum standards, drawn from the Common Core standards, assign teachers the responsibility to prepare their students to use the technology for communication purposes. Despite that, Common Core does not specify what the use of technology should "looks like." Thera Elementary is even seeking to become a Science, Technology, Engineering, and Math (STEM) certified school, yet training for how to address the T, technology, part of STEM is left to chance. As found in Hutchison and Woodward’s (2014) case study of a teacher’s integration of computers and iPads in a Language Arts class, when teachers are not intimately familiar with the digital tools they
choose to use with their students, the tools can render the lesson ineffective and in some cases overwhelm the instruction.

Several of the study participants expressed frustration with their colleagues who appeared uninterested in using DL with their students. They noted that some of their colleagues even viewed it as an extracurricular activity. Even when their colleagues acknowledged the important role DL played in the lives of the students and their future success, they continue to use more traditional methods when teaching literacy. According to Hobbs (2011) in her analysis of digital and media literacy in schools, educators should not ignore the role media and technology play in the lives of their students. Instead, she posits that educators should employ the use of digital literacy because it is a transformative power in the lives of their students. And educators need to acknowledge that digital media used for everything from communication to games saturates their students' culture and environment outside of the school. When they go to school, they are often taught using educational strategies that are stagnant and do not spark the students’ interest. Nowhere is this more evident than in urban school where teachers are still facing the challenge of increasing their struggling students’ academic achievement.

This profound statement by Hobbs (2011) echoes the sentiment of a few of my study’s participants: “In order to meet today’s learners, educators need to be responsive to students’ experience with their culture—which is what they experience through television, movies, YouTube, the Internet, Facebook, music, and gaming.” Even in schools like Thera some of the students likely participate in networking communities like Facebook or collaborate with online partners to play interactive games. Educators must take advantage of the students’ interests and skills outside of the classroom and build a bridge that allows them to continue to communicate via technology with others and deepen their knowledge. They simply need to adjust the focus
from perceiving technology as primarily a source of entertainment to one with an academic value.

**Insights Gained From Critical Race Theory**

Applying Critical Race Theory as a theoretical lens helped to reveal that the teachers held such strong beliefs about preparing their students to be technologically proficient. The students of the teachers in my study were from a financially challenged demographic and attended an urban elementary school composed predominantly of African American students. Such populations have been repeatedly marginalized in educational settings and have performed for decades at levels below their White MC peers (Ladson-Billing, 2000; Whitherspoon & Mitchell, 2009). Now that curricular standards and professional organizations call for schools to ensure students become digitally literate, results from other studies and evident in my study suggests they are not being prepared to use these new technologies (Gormley & McDermott, 2014). Of concern is that just as African American students have been subjected to inequities in learning to read and write in school via traditional literacy practices, now it is likely they are at risk of being left behind in the technical world as well.

The effect the school's context exacted on the practices of this group of educators was evident throughout the study. The context represented an important variable that cannot be separated from the teachers' experience of using DL. This was evident in the administrators and teachers' stated personal views of working with the students at Thera. Analyzing these views through a CRT lens suggests that implementing DL within Thera Elementary, a school in a low SES community whose student population is 99% African American, brings additional challenges because of the cultural and historical context in which it is situated. For Dr. Lisa Smith, the principal of Thera Elementary, her experience growing up as an African American
child bussed to a predominantly White, affluent school in the same district as Thera affected her view of the type of school she desired for her students. She worked to create an environment where the children she served had access to the same quality of technology and education experienced by those who attended schools in the higher SES areas in the district.

As African American women, the participants drew upon their personal lived experiences when they determined what pedagogy would best educate their students. They knew that understanding how to use the digital technologies used by the mainstream had profound implications for their students’ future success. They also knew that these new digital literacies demanded a shift in teaching to ensure their students’ success in a technically driven society. Moreover, if their students did not learn how to use these new literacies, their students would experience another component of an achievement gap. A gap Alvarez (2003) referred to as a ‘digital divide’ (Alvarez, 2003) that represents students’ lack of access to the technologies as well as the educational opportunities experienced by many minority students who live and attend schools in urban, low SES communities.

Even though the teachers in this study were cognizant of the importance of incorporating DL into their literacy instruction, their efforts were confounded by their limited knowledge and lack of adequate professional development to enhance their implementation of DL. Not only were their efforts constrained by their lack of knowledge of how to implement DL within their instruction, but they faced the additional challenge to adapt their use those technologies with students with low reading proficiency. These combined challenges, their lack of proficiency in using digital technologies to teach and their students’ lack of reading proficiency, compounded their ability to respond to their students’ basic skills needs.
The teachers expressed in their interviews and discussions with me their concerns about addressing these challenges. CRT gave focus to my analysis of the participants’ point of view as expressed to me through their words. It allowed me to examine more deeply how the participants perceived their roles and responsibilities as African American women responsible for the educational preparation of African American children. CRT allowed me to situate those words within the broader view of systemic racism still experienced by African American students attending schools whose institutional programs exist to serve White middle-class students and as such serve as a legacy of decades of racism and discrimination. The participants ‘voices' revealed they were keenly aware of the effects of race and the socioeconomic circumstances of the population of students whom they served. Issues situated within social, racial, cultural and historical contexts were woven throughout the participants' attempts to implement DL. In addition, they were aware of what was at stake for this group of traditionally marginalized students. While all of the teacher participants acknowledged that the students whom they served were low achieving and extremely behind in their literacy skills, this awareness elicited a variety of pedagogical responses from the participants. A brief discussion of three different responses follows.

Andrea Carter believed that exposing her students to DL was an obligation and expectation, despite the students' academic challenges. She viewed the use of DL as a vehicle that could strengthen the students' literacy skills and enable them to overcome their reading challenges. Her use of the myriad applications, websites, and ICTs proved to her that exposing the students to DL helped them to grow academically. Furthermore, she felt that DL afforded the students an interesting and challenging platform that offered a variety of entry points for learning how to communicate with people around the world. From her perspective, the students’
socioeconomic background was not seen as a deficit, but rather as a challenge she could overcome by creating learning experiences that incorporated the students' interests.

Laverne Browne's efforts to use technology with her students was driven by insecurities she developed as a child toward her ability to use technology. Her mother, an expert in using technology, held low expectations in her daughter's ability to master technology. To defy those expectations, Dr. Browne as a young black girl committed herself to mastering the use of technology and motivated her to ensure that her African American students had the opportunity to use ICTs. Dr. Brown worked to make sure that her students would not be disadvantaged by lacking the knowledge of how to use technology. Her commitment motivated her to work through her personal struggles and insecurities to learn how to use DL with her students.

Tailor Bryson had a different response. Even though she knew that DL was a necessary part of literacy instruction, she opted to use traditional instructional practices because she believed they were more effective than those incorporating technology. She attributed her minimal use of technology to her students' lack of academic skills. In the place of technology, Ms. Bryson stated she preferred to use traditional paper and pencil forms of literacy with her students because she believed they better met the needs of her below grade level students.

Applying the lens of CRT provided a means to examine the lived experiences and perceptions of these four African American women. These experiences and perceptions revealed how, as well as the degree to how much; they incorporated digital technologies within their literacy instruction. Teachers expressed concerns about the social and emotional challenges the students brought to the school and that, in their views, contributed to their academic weaknesses. They spoke of the language the students brought to school that also, in their views, contributed to their academic weaknesses. These challenges faced by their students led to feeling disconnected
to their students. These revelations, I believe, would have remained hidden without the application of the CRT lens.

I now turn that lens toward the TPACK and SAMR, the instruments I used to evaluate the teachers’ knowledge and implementation of technology. Neither instrument addresses assumptions within a CRT frame because they do not consider if teachers’ pedagogical knowledge or implementation of digital practices serves students like those who attended Thera. For example, the TPACK rubric does not include items that evaluate the implementation of digital literacy practices with students who perform below expectations in literacy. The African American students at Thera, the majority of whom performed below the reading level, needed to master basic reading skills. The same absence exists for SAMR. Although SAMR addresses the degree to which a teacher implements digital technology within a lesson, it does not assess how that implementation transforms a student’s understanding of how to use technology. In addition, neither the TPACK nor SAMR situates the use of digital technology with populations with low academic achievement. Finally, neither instrument addresses if teachers' pedagogical and technological knowledge serves diverse minority populations. The lack of representation of these issues within these instruments creates a gap and weakens their usefulness when assessing teachers’ pedagogical knowledge and implementation in schools that serve students similar to those at Thera.

In summary, interpreting the teachers’ words through a CRT lens revealed that the teachers’ pedagogical knowledge and use of technology were just two factors that influenced their use of DL. Other factors that influenced their use included the teachers' perceptions of their students and the communities in which the students resided would have remained hidden without the application of CRT. Further by applying this same lens to the instruments I used to evaluate
teachers' pedagogical knowledge and implementation of DL, disclosed that they fail to address the unique issues teachers face when implementing technology with AA students who attend schools in low SES urban communities.

**Instructional Implications**

This study's findings suggest several instructional implications. All provide ways to enhance teachers' use of DL during literacy instruction with the ultimate goal to assist their students in gaining the competencies necessary to be successful in today’s hyper-technological 21st-century society. To that end, I offer the following implications.

*Teachers cannot and should not be expected to use technology with their students without first understanding it for themselves.* Teachers need to be assisted not only in how to use DL to enhance literacy instruction but in how to plan and pair the use of technology with curriculum goals and with a clear plan for its usage. The focus should be to help teachers understand the importance and value in using DL. Otherwise, teachers with no formal training in utilizing DL may continue to have negative perceptions and avoid its use altogether.

*All stakeholders need to share a common vision about the use of technology in the school.* Stakeholders include students, parents, teachers, and administrators. This vision must be clear to all but particularly those expected to use technology with the students. Ideally, this vision is developed from the ground up with teachers taking the lead rather than from the top down with district and schools administrators taking the lead.

*Buy-In is key!* If teachers resist the shift to move from traditional methods, such as pencil and paper, to incorporating DL to redefine and reshape classroom literacy instruction, that resistance will block the school’s efforts to meet the goal for their students to use technology for communication and learning. Teachers need to align their goals with school and curricular goals
to ensure their students become technically literate and prepared for the technically rich and dependent 21st century. If teachers understand the vital role they play in helping students to achieve the academic skills necessary for their students’ future, they may be more apt to use the tools required for their students’ success.

*It is necessary to establish a school culture that views DL implementation as an integral part of instruction.* The responsibility of ensuring that students gain the skills, knowledge, and dispositions required for their current and long-term academic success cannot be left to a few teachers in the school. Teachers in my study spoke of the importance of creating a culture of technology integration, where everyone works toward a common goal. Priority should be to develop an open and safe community in which teachers take risks required when acquiring new ways of teaching. Teachers need professional development situated within their school to increase their skills and knowledge of how to implement DL but the intangible or hidden variables that impact teachers’ use of technology need also to be acknowledged and addressed.

*Rethink ways to engage students who struggle with reading.* Teachers are faced with the task to develop ways to meet the needs of their struggling students. Teachers should work towards building a culture of progressiveness. Schools need to align their instructional practices with the growing and shifting needs of their student. Today’s students’ lives are steeped in digital communication that ranges from the “Twittersphere,” blogging, emailing, playing interactive video games, Skyping, and more. While they use these digital tools outside in their everyday lives, too often their school environment does not reflect these changing modes of communication. Instead, too many students are still primarily engaging in reading and writing in traditional ways that do not mirror the constantly shifting 21st-century landscape.
Approach DL and the incorporation of technology into a curriculum teachers must learn in the same way they learn the content required to teach math, science, and social studies. As it stands now, using DL and technology are requirements written into the curriculum, yet no concrete methodology exists for how this should occur. Teachers need direction in what teaching with DL and technology should look like and that their use does not just replace traditional methods but redefines those methods.

Tools used to examine the pedagogical practices of teachers of diverse populations should account for variables that are unique to those populations. Given that literacies and digital literacies are socially situated practices used to link individuals within and across communities, it is critical that instruments such as TPACK and SAMR, account for these practices. Such accounting would allow a deeper examination of teachers’ use of DL and offer a way to examine teachers’ inclusion of culturally relevant and responsive practices necessary to meeting the needs of students from all backgrounds. Neither instrument, TPACK or SAMR, examines if teachers' possess the technological or pedagogical knowledge required to serve adequately diverse minority populations. Such lack of representation of these issues within these instruments creates a gap and weakens their usefulness when assessing teachers’ pedagogical knowledge and implementation in schools that serve students similar to those at Thera.

Research Implications

The findings of this study suggest the following research implications.

While this study offered a comprehensive analysis of teachers’ technology implementation using the TPACK and SAMR rubric, I only examined four teachers within one school. Examinations of more educators of African American students in urban low-income settings would provide more evidence of the variables that impact teachers’ use of DL.
Additional research on this topic would offer more insights and may provide additional information that could positively impact educators.

*Future research needs to examine how intangible variables, such as teachers’ sense of efficacy in using technology, lead to teachers choosing not to incorporate technology and DL within their literacy instruction.* Some of the teachers in this study acknowledged the importance for their students to acquire the skills, knowledge, and dispositions required for their future success in an increasingly technological world. They did not use the technology or the DL when instructing their students. The findings from this study suggest a combination of factors influence teachers’ decisions whether or not to incorporate technology and DL within their literacy instruction. Additional research may offer insights into how to identify these variables as well as how to help teachers overcome their negative influence.

*Research needs to identify the challenges that get in the way of teachers using DL with their students and examine ways to minimize their negative influence on teachers’ use of technology and their implementation of DL.* Teachers in this study faced multiple challenges in their efforts to use technology and implement DL. Research needs to identify these challenges and should investigate how school administrators can minimize the challenges teachers face. Additional studies that examine DL while applying a CRT lens may also reveal additional ways that teachers can implement DL with children of diverse populations.

**In Conclusion**

To date, limited research exists that has examined the use of digital literacies with young African American children who attend school in urban, low SES communities. By situating my study within a school in such a community, I sought to understand the unique challenges the teachers faced that influenced how or even if they used DL. Of significance, the school in which
the study occurred study was technology rich. Thus the teachers had the technology they needed. The African American students who attend schools in low SES urban community schools depend on their teachers to ensure they gain the knowledge, skills, and dispositions required for their future success in a technologically-driven 21st century. Thus, I hope my examination of the four teachers’ attempts to use digital literacies and technology during their literacy instruction offers insights into how to assist teachers in those efforts.
REFERENCES


Information and Technology (ICT) Literacy Panel (May 2002) in Digital Transformation: A Framework for ICT literacy, in


