THE BELIEFS AND INSTRUCTIONAL PRACTICES OF TWO EXEMPLARY PRIMARY GRADE TEACHERS WHEN INTEGRATING TECHNOLOGY WITH LITERACY INSTRUCTION: A QUALITATIVE CASE STUDY

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THE BELIEFS AND INSTRUCTIONAL PRACTICES OF TWO EXEMPLARY
PRIMARY GRADE TEACHERS WHEN INTEGRATING TECHNOLOGY WITH
LITERACY INSTRUCTION: A QUALITATIVE CASE STUDY

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ABSTRACT

The purpose of this study was to investigate the beliefs and instructional practices of two exemplary primary grade teachers as they integrated technology into daily literacy instruction. In addition, this study sought to expand the knowledge base for integrating technology with literacy instruction in the primary grades and to provide exemplary models for those teachers wishing to effectively integrate language arts with technology into their own daily practice. The results of this study are drawn from data regarding the research questions that guided this study:

1. What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?
2. What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?
3. What experiences helped form these beliefs and practices?

Data collection procedures for this study included classroom observations, in-person teacher interviews, and the collection of various artifacts generated by the teachers for their instructional purposes. The constant comparative (Merriam, 1998) method of analysis identified common themes across all data sources that reflected these teachers’ practices and beliefs about integrating technology into their daily literacy instruction (Miles & Huberman, 1994). For each research question, a descriptive case study of each teacher was presented with examples drawn from the data, followed by a cross-case comparison of the two teachers.
It was found that teachers supported their instructional practices for integrating technology to support literacy instruction by scaffolding with developmentally appropriate instruction, integrating the curriculum, establishing a collaborative environment in their classrooms and with their colleagues, and by nurturing the development of oral communication skills as they allowed the children to interact with technology to support literacy learning. It was found that the teachers believed in the development of oral communication, in engaging children in both physical and cognitive ways as they interacted with technology, being motivated and motivating their students, collaborating on a variety of levels, and integrating the curriculum meaningfully. It was also found that the teachers had experiences that influenced them in using technology and those experiences involved motivation and collaborative encounters.
This work is dedicated to my dear parents,
Daniel and Norma Rossetti
and to my very special aunt and uncle,
Joe and Joanne Bulso

...your unconditional love and guidance has brought many blessings into my life
and has given me the foundation for my academic achievements...

With much love, always.
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Implementing computers in the classroom requires more than mechanical change by the teacher. There is the extremely important element of personal change. A teacher putting the new tool to work in the classroom may experience a change that goes well beyond materials or techniques. There is the potential for change in the whole spirit of the classroom with the teacher acting as a resource person, assisting learning in a more informal, independent, and non-coercive environment. (p. 321)

Guha, 2003

For once, this isn’t about them, the objects of our labor: our students, and indeed, our own children. It is as much about us as teachers and the reorganization of teachers’ work in what are, in our lifetimes at least. (p. 309)

# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>vi</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION TO THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>10</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>11</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>11</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>15</td>
</tr>
<tr>
<td>Research Questions</td>
<td>21</td>
</tr>
<tr>
<td>Assumptions</td>
<td>21</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>22</td>
</tr>
<tr>
<td>Delimitations</td>
<td>24</td>
</tr>
<tr>
<td>Limitations</td>
<td>24</td>
</tr>
<tr>
<td>Summary</td>
<td>25</td>
</tr>
<tr>
<td>II. REVIEW OF RELATED LITERATURE</td>
<td>27</td>
</tr>
<tr>
<td>Introduction</td>
<td>27</td>
</tr>
<tr>
<td>Current Thinking on Integrating Technology With Literacy Instruction</td>
<td>27</td>
</tr>
<tr>
<td>Effective Teaching</td>
<td>37</td>
</tr>
<tr>
<td>Developmentally Appropriate Practice</td>
<td>39</td>
</tr>
<tr>
<td>The Evolving Definition of Literacy</td>
<td>41</td>
</tr>
</tbody>
</table>
Summary .......................................................................................................................... 103

IV. RESULTS OF THE STUDY ...................................................................................... 105

Overview of Mr. Mathison’s Classroom ................................................................. 106

Overview of Ms. Glass’s Classroom ................................................................. 108

Research Question 1 ............................................................................................. 111

Mr. Mathison ........................................................................................................ 112

  Engagement With Technology ........................................................................ 112

  Collaboration / Team Building .................................................................... 120

  Technology-Centered Discussions .......................................................... 124

Summary of Mr. Mathison .................................................................................. 126

Ms. Glass ............................................................................................................... 126

  Engagement With Technology ........................................................................ 126

  Collaboration / Team Building .................................................................... 133

  Technology-Centered Discussions .......................................................... 137

Summary of Ms. Glass ......................................................................................... 139

Cross-Case Analysis of Instructional Practices .................................................. 140

Research Question 2 ............................................................................................. 142

Mr. Mathison’s Beliefs ......................................................................................... 143

  Engagement With Technology ........................................................................ 145

  Collaboration / Team Building .................................................................... 151

  Technology-Centered Discussions .......................................................... 155

Summary of Mr. Mathison’s Beliefs .................................................................. 155

Ms. Glass’s Beliefs ................................................................................................. 157
Collaboration in Teaching

Fostering Oral Communication Skills

Question 2: Teacher Beliefs

Developing Critical Literacy Through Oral Communication and Schema

Facilitating Cognitive and Physical Engagements

Motivation for Integrating Technology

Collaboration in Supportive Environments

Integrating Technology With Literacy Instruction

Question 3: Influential Experiences

Motivational Events

Collaborative Encounters

Key Findings

Grounded Theory

Implications for Practice

The Use of Technology to Support Oral Communication Skills

The Importance of Implementing Technology in a Collaborative, Supportive Environment

The Importance of Facilitating Technology use in Developmentally Appropriate Ways

Technology Fosters Motivation for Teaching and Learning in Both Teachers and Students

The Importance of Scaffolding Instruction

The Importance of Teacher Empowerment

Recommendations for Further Research
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Selection Criteria for Participants</td>
<td>89</td>
</tr>
<tr>
<td>2. Research Plan</td>
<td>94</td>
</tr>
<tr>
<td>3. Research Plan</td>
<td>95</td>
</tr>
<tr>
<td>4. Summary Chart for Research Question #1</td>
<td>112</td>
</tr>
<tr>
<td>5. Summary Chart for Research Question #2</td>
<td>143</td>
</tr>
<tr>
<td>6. Summary Chart for Research Question #3</td>
<td>170</td>
</tr>
<tr>
<td>7. Summary Chart for Research Questions 1, 2, and 3</td>
<td>199</td>
</tr>
</tbody>
</table>
CHAPTER I
INTRODUCTION TO THE PROBLEM

The use of technology in primary grade classrooms is an important topic of inquiry. The infiltration of technology into the homes and schools of young children is rapidly increasing with each passing year. Turkle (1995) stated, “Today’s children are growing up in a computer culture; all the rest of us are at best its naturalized citizens” (p. 77). Leu (2000a) supported this notion as he confirmed, “The Internet is entering classrooms at a faster rate than books, newspapers, magazines, movies, overhead projectors, televisions, or even telephones” (p. 2). As new technologies continually emerge, our young learners are naturally becoming aware of their surroundings.

Additionally, Leu suggested,

Each of us in the literacy community must begin now to integrate the Internet with our work to support children. We should not leave this task to others who specialize in technology; to do so would marginalize the important insights about literacy instruction each of us possesses. If you are a classroom teacher, you cannot afford to leave it to the “computer teacher” during time in the computer lab. (p. 2)

Following Leu’s suggestion, primary grade teachers of today have a duty to support the literacy development of their students through the integration of technology into the curriculum. This can be a very exciting time for primary grade teachers as Katz (1992) noted, “teachers are in the forefront of the technological revolution that is overtaking the educational system and have the potential to increase efficiency, within the teaching process by effectively utilizing the computer” (p. 39).
As literacy educators, a significant responsibility of primary grade teachers is to support students in the development of reading, writing, speaking, and listening skills, all of which build the critical foundation for how young learners will communicate to others now and in their futures. As children take an interest in learning to read, they become well aware that text abounds in their environment. They easily begin to notice that text can be found not only in books, but also on computer screens and other technological devices in their world. Therefore, in today’s rapidly changing technological environment, the development of literacy will not exclusively take place when children interact with traditional print-bound instructional resources. Rather, literacy development in young children will take many diverse forms, which may include but will not be limited to exploring the World Wide Web, reading and writing electronic mail messages, and reading electronic books. These are merely a sampling of the ways in which technology will need to be integrated into daily language instruction by primary grade teachers in their efforts to support the literacy development of their young students.

Leu (1997) has been one of the key informants and supporters of the literacy community and beyond regarding the notion of integrating literacy instruction with information technology. Leu has coined the term “deixis” to describe the changing nature of literacy, as we know it. What is unique about Leu’s term is that it refers mainly to the time and speed at which the nature of literacy and literacy instruction is continually changing. Leu noted that during the course of the last 20 years, this fast-paced changing nature has been the most rapid in the history of literacy. As can be gleaned from this brief description of the nature of literacy as deixis, one can easily realize how complex the
nature of literacy has become and will become in the literacy futures of the young children we teach today.

Leu (2000b) also noted that society has defined literacy in terms of the ways in which people are required to function in order to be considered “productive members” of the groups in which they work and live. Leu commented that in a sense, “literacy” has always been deictic in that the forms and functions and purposes of literacy have changed through history. The definition of “literacy” has changed over time and continually will change as new envisionments for literacy emerge. This cornerstone theory guides many of Leu’s (1997, 2000, 2001, 2002; Leu et al., 1999) writings.

Leu (2002) and his colleagues have engaged in a considerable amount of productive work focusing on the integration of technology with literacy instruction and are leading the way for many promising researchers and teachers to infuse the literacy curriculum with technology. Leu (2000b) stated that technology needs to be integrated into the literacy curriculum to meet the demands of increased globalization of world economies and systems of communication. If educators hold a pragmatic philosophy of teaching, then their goal is to prepare students for their literacy futures. The current trend is that the world is becoming globalized with much help from the industry of Information and Communication Technologies (Leu, 2000). Technological tools are allowing us to connect with people in places across the world for a variety of reasons, including international business. In order for the United States to continue to compete in this global marketplace, we must prepare our young children with the tools necessary for success in their futures. Business is changing from a localized center of operation to a more distributed forum of working employees. Large companies often deploy their employees
to various locations around the world to oversee the day-to-day operations of projects on which they are working (Leu, 2000). The work world of today is taking shape with team-based leadership, which requires many literacy skills of those working as successful and contributing members of a team. Literacy students of today will be faced with many challenges that involve using the Internet on a daily basis in order to accomplish the tasks on which they are working (Leu, 2000). As adults, our students will be required to access and locate information needed to solve the problems to which they are assigned. They will need to critically evaluate whether the information they retrieve is valuable and worthy in helping to reach their team’s potential goal. They will ultimately have to report their findings and their completed work to their peers and their supervisors. In this environment for which we are preparing many of our young children, complex and varied literacy skills are necessary which include: critical literacy, comprehension, and effective communication skills.

Leu (2000a) strongly supported the use of technology with young children and encouraged teachers to explore the deictic nature of this skill called “literacy” that they are striving to help students attain. Leu noted that being literate will more than likely be replaced with the notion of “becoming literate” as these technologies are constantly changing and the envisionments for their use will continue to change as well. Leu strongly valued helping teachers support one another as they explore ways to facilitate the uses of technology with literacy instruction in their classrooms (Leu, 2001). The project that Leu was most noted for is the “Internet Project” designed to establish venues in which teachers can directly communicate with each other to share projects they have worked on in their classrooms. Leu believed that if we are to prepare our young students
for their literacy futures, it is essential to include technology as we help our students along the journey of becoming literate.

Mossberger, Tolbert, and Sansbury (2003) concurred that in order to possess the skills needed to thrive in the information age; one must be skilled in three areas. First, a sufficient degree of technical competence is needed in order to access information. Second, the ability to analyze and evaluate pertinent information is necessary as information is continuously available. Third, a high level of basic literacy skills is essential for both technical competence and critical analysis and evaluation of information. Further, Mossberger et al. suggested that the information-literate person must,

determine the nature and extent of the information needed, access needed information effectively and efficiently, evaluate information and its sources critically and incorporate selected information into his or her own knowledge base and value system, use information effectively to accomplish a specific purpose, understand many of the economic, legal, and social issues surrounding the use of information, accessing and using information ethically and legally. (p. 41)

Due to the changing nature of literacy and the forms and functions of what it means to be literate, it is no surprise that the research base on this most critical topic is problematic. In general, the area of technology infused with literacy instruction has not been a topic that has been widely embraced in the literacy research agenda. More traditional topics such as fluency and comprehension seem to have taken precedence in the research agenda over the new instructional strategies that technology-based language arts activities require.

Several researchers have engaged in studies that examine many questions related to integrating technology with literacy instruction in the primary grades. A review of research that was conducted by Michael Kamil, Sam Intrator and their colleagues (Kamil
& Intrator, 1998: Kamil, Intrator & Kim, 2000; Kamil & Lane, 1998) noted that only 12 articles published out of a sampling of over 350 had appeared in the scholarly research databases of PSYCHINFO and ERIC.

In their most recent review of literature, Michael Kamil and colleagues (Kamil, Intrator, et al., 2000) highlighted findings that were overwhelming. Kamil and his associates analyzed 437 studies in the 4 major literacy journals including Written Communication, The Journal of Teaching English, The Journal of Literacy Research, and Reading Research Quarterly. Of the 437 literacy studies they found, only 12 of them focused on the integration of literacy and technology. In addition, a vast majority of these studies focused on children who were eight years of age or older. Most of the research studies found by Kamil and colleagues were of an empirical nature. What this may suggest is that an entire population of the literacy research community, those focused solely on children ages 8 years or younger, and those with a more qualitative research orientation, simply did not have the wealth of information from which to draw as they worked to continually inform and craft their own personal teaching and research agendas during the years of 1986-1995.

In the research that Kamil, Intrator, et al. (2000) reviewed, they noted some emerging themes, which included motivation, positive experiences for certain populations, and the value in using hypermedia. Yelland (2005) supported the notion of motivation as it relates to the teacher and stated, “the role of the teacher in the learning process is critical” (p. 224). If teachers can become motivated with regard to using technology to support their teaching, perhaps their beliefs and instructional practices in
support of literacy will be positively impacted through continued validation in the research literature.

Similarly, in 2003, Lankshear and Knobel confirmed that there was an absence of research related to early childhood literacy and technology available for review. They stated,

On this basis, we conclude that the trend observed by Kamil, Intrator, and colleagues of extreme marginalization within specialist reading and writing journals of research articles concerned with new technologies and literacy continues, with this marginalizing exacerbated for the early childhood years. (p. 64)

Lankshear and Knobel further reviewed literacy journals, specifically early childhood journals and technology journals. From their search, they confirmed that in looking at 554 articles in 9 journals, only 18 studies reflected the broad area of utilizing new technologies and only 5 studies were specifically related to technology and literacy. Yelland (2005) stated,

The last decade has been characterized by unprecedented change. The time has actually spanned two centuries in which our lives have been transformed by new technologies but school curricula have remained much the same as they were despite calls for reform and pockets of innovation that are evident in exciting early childhood education classrooms. (p. 223)

Yelland also suggested that exploration of innovative uses of technology and the ways in which new knowledge might be acquired is a direction that future research should take.

Identifying the benefits of integrating technology with literacy will allow us as researchers and educators to address this critical need for more research that supports the integration of the two. Our research efforts should focus on how and why teachers are integrating this technology rather than on the technology itself as it is ever changing.
Due to the lack of a solid research base in this area, many teachers and administrators alike have let other pressing topics and instructional approaches take a front row over technology integration. The U.S. government recommends that school districts spend 30% of their allocated budgets on professional development (U.S. Department of Education, 1999); however, school districts were reported as spending only 6% of their budgets on professional development for teachers (CEO Forum, 1999; U.S. Department of Education, 1999). By studying classroom teachers who innovatively integrate technology with daily literacy instruction, meaningful professional development opportunities focused on this critical topic may begin to appear in U.S. schools more frequently.

Several professional organizations have addressed the use of technology in the classroom. The International Reading Association (IRA; 2001) has published a position statement regarding the use of technology to support reading instruction. The IRA strongly believed that this is an area that needs further attention if educators are to provide students with the literacy education they well deserve for success in the 21st century and beyond. The IRA statement suggested,

The Internet and other forms of information and communication technology (ICT) such as word processors, Web editors, presentation software, and email are regularly redefining the nature of literacy. To become fully literate in today’s world, students must become proficient in the new literacies of ICT. Therefore, literacy educators have a responsibility to effectively integrate these technologies into the literacy curriculum in order to prepare students for the literacy future they deserve.

The Report of the National Reading Panel (NRP; 2000) also stated that credible experimental and qualitative research on the integration of technology with literacy is
lacking, but concludes that this is an important and essentially unexplored field. The NRP suggested,

One of the most striking findings of this analysis is that there is a surprising lack of published research. . . . Research is urgently needed to answer these and other questions that will affect the penetration of computer technology into conventional reading instruction:

1. What is the proper role for integration of computers in reading instruction?

2. In what contexts can computers be used to either replace or supplement conventional instruction?” (pp. 6-9)

Similarly, The National Association for the Education of Young Children (NAEYC, 1996) has published a statement supporting the use of technology in literacy instruction with young children. The NAEYC strongly believed that nothing can take the place of authentic materials in the early childhood setting; however, they do support the integration of technology and literacy activities in meaningful ways into the classroom context. The sentiment of the NAEYC is that the integration of this type of instructional device must be systematic and developmentally appropriate. NAEYC stated,

As part of the teacher’s overall classroom plan, computers should be used in ways that support these existing classroom educational directions rather than distort or replace them. Computers should be integrated into early childhood practice physically, functionally, and philosophically. (p. 3)

A research study conducted by Carroll (2001) aligned perfectly with the suggested guidelines from NAEYC to encourage the use of technology to support what naturally occurs in the classroom. In the study, Carroll observed and interviewed a teacher in a primary grade classroom for a number of weeks. The study had a number of findings but the most critical point was that this particular teacher viewed the technology as “one more tool” in support of the literacy development of her students. This teacher
strongly believed that technology had to be seamlessly integrated into the natural happenings in the classroom for the experience to be truly meaningful.

In a report entitled, “Technology Literacy for the Nation and for Its Citizens,” the International Society for Technology in Education (ISTE) stated, “If this nation does not pursue technology literacy for every individual during and beyond the schooling process, talents for innovation in technology will be lost and economic success of individuals will be limited” (1995, p. 2). ISTE also suggested that, “It is vital that as the U.S. positions itself for continued world technology leadership that capacity be built among all citizens for understanding, coping with, and applying emerging technologies” (p. 2). Clearly assistance needs to be offered in an effort to help teachers see that technology should not be thought of as an “add on” but rather a support for what they are already doing in their classrooms.

Teacher beliefs are critical to classroom practices. It is important for teachers to not only recognize their belief systems, but also to have the capability to act upon their beliefs in ways that support classroom instruction. Kagan (1992) reported,

Teacher belief appears to rise out of the exigencies inherent in classroom teaching, it may be the clearest measure of a teacher’s professional growth, and it appears to be instrumental in determining the quality of interaction one finds among teachers in a given school. (p. 85)

In learning more about effective teachers and their beliefs, we are likely to come closer to understanding the qualities and dispositions that efficacious teachers possess.

Statement of the Problem

This study sought to investigate the beliefs and instructional practices of two exemplary primary grade teachers as they integrated technology into their daily literacy instruction. The other intent of the study was to determine whether the teachers had
experiences that may have helped them to form these beliefs and engage in these practices.

Purpose of the Study

The purpose of this study was to investigate the beliefs and instructional practices of two exemplary primary grade teachers as they integrated technology into daily literacy instruction. In addition, this study sought to expand the knowledge base for integrating technology with literacy instruction in the primary grades and to provide exemplary models for those teachers wishing to effectively integrate language arts with technology into their own daily practice.

Theoretical Framework

Works by Dewey (1900, 1915), Vygotsky (1978) and the theory of constructivism (Brooks & Brooks, 1993) provide a theoretical framework for this topic of study.

Dewey (1900) stated, “What the best and wisest parent wants for his own child, must the community want for all of its children. Any other ideal for our schools is narrow and unlovely; acted upon, it destroys our democracy” (p. 3). A common thread which can be found in the work of Dewey and in statements from the professional societies of the International Reading Association (2001), International Society for Technology in Education (1995), and The National Association for the Education of Young Children (1996) is the important realization that children of today must be prepared for success as adults in the future. In honoring this critical goal, it is imperative that all teachers integrate technology into daily instruction. Dewey (1900) further claimed that “it is radical conditions which have changed, and only an equally radical change in education
One aspect of radical change that is suggested would be the teacher’s role in the classroom. Hannafin and Savenye (1993) stated that,

Dewey, although not referring to technology use, advocated student initiated activities in 1933. The teacher is at times the learner and explorer along with the students, not the all-knowing controller of activities. (p. 28)

In addition, as many teachers hold pragmatic philosophies, they must continually remind themselves of their goal of teaching which is to prepare students for life as a practical reality. Dewey (1900, 1915) believed that,

We cannot overlook the importance for educational purposes of the close and intimate acquaintance got with nature at first hand, with real things and materials with the actual processes of their manipulation, and the knowledge of their social necessities and uses. (p. 8)

If teachers are to follow the recommendation of Dewey’s principles, they should become more skillful in constructing an environment in their classroom in which technology can be used for social purposes. In constructing this environment, teachers must carefully consider accepting this decidedly different role in the classroom (Hannafin & Savenye, 1993).

Vygotsky (1978) stated,

We should like to emphasize from the outset that this development is subject to the influence of the same two main factors which take part in the organic development of the child, namely the biological and the social. . . . Also an organism internally prepared absolutely requires the determining influence of the environment in order to enable it to accomplish that development. . . . However, the relation of the two factors in the development of this kind is materially changed. The active part is here played by the organism, which masters the means of cultural behavior supplied by the environment. (pp. 63-64)

These three statements can be interpreted to have an emphasis in helping to shape the nature of instruction, specifically with regard to literacy learning in primary grade classrooms of today. As teachers plan and construct their classroom learning
environments, taking into consideration the developmental and social needs in support of literacy development is not novel (Vygotsky, 1978). Clearly, grounded in Vygotskian thought, these considerations have in past decades and in more recent times helped to shape the nature of primary grade environments, as we know them. As technologies continually emerge, teachers will need to take into consideration the implications for how these instructional resources will be most appropriate in meeting the developmental needs of their students and how they will best facilitate social interaction and growth (Vygotsky, 1978). Vygotsky maintained that the relation of these two factors, biological and social, are changed by materials and these “materials” can be realized in new technologies that continually emerge and have the potential to be integrated into daily language instruction (Vygotsky, 1962). Finally, Vygotsky stated that the “organism” or the child needs to be given the tools to master his or her learning environment and these tools should involve the organism as becoming active in learning (Vygotsky, 1962). What this means for teachers then is that they must provide learning opportunities for children to engage socially with technology for meaningful purposes on a daily basis, thus requiring an active stance on the part of their learners.

Vygotsky’s (1978) view of human development as “socio-cultural” has primary relevance with regard to this research study. Although Vygotsky stressed an active role for children as they develop, he further believed that the social development of children was the result of their “collective actions” and that these actions transpire within society. Vygotsky claimed that through interaction and practical activities, children acquire new skills and knowledge and within this view, he emphasized the importance of gaining and
using language. Vygotsky also stressed the importance of social and individual levels in the development of children.

Constructivism is another theory that helps to provide a foundation for this research study. Constructivist thinking is grounded in the belief that learners will construct their own meaning from the experiences they encounter (Brooks & Brooks, 1993). As Brooks and Brooks suggested, “Constructivism is not a theory about teaching. It’s a theory about knowledge and learning . . . the theory defines knowledge as temporary, developmental, and socially and culturally mediated” (p. vii). This notion aligns with Vygotsky’s theory, “What the child can do in cooperation today, he can do alone tomorrow” (1962, p. 104). What this means for teachers is that literacy is a social process and there is a strong foundation for the relevance of using technology in its support. Further, as stated by Ravitz, Becker, and Wong (2000),

A constructivist teaching approach attempts to make learning a more self-directed, personally responsive, and a socially mediated process in which a learner’s own motivation and effort are just as important, if not more central, to a student’s education than the content or facts learned. (p. 4)

It is then up to the teacher to design and embrace a learning and teaching environment that supports constructivism as a tool for integrating technology with daily instruction.

The value of designing an environment that supports constructivism as a tool for integrating technology into daily instruction can be further illustrated in the work of Davis and Shade (1999). They found a very high level of literacy for real purposes involved with the integration of technology and literacy instruction in primary grade classrooms. Davis and Shade also noted that levels of social interaction increased when computers and technology were integrated with literacy instruction. To support Davis and Shade’s notion of increased interaction, Katz and Rice (2002) stated, “The Internet
complements and even strengthens offline interactions, provides frequent and diverse uses for social interaction, and extends communication with family and friends” (p. 326). When students are engaged in talking, reading, writing, and listening in meaningful and interesting ways with the use of computer-based literacy resources, levels of cognition can also be supported (Davis & Shade, 1999).

Labbo (1996, 2000, 2004b) and colleagues have strongly supported the use of computers as learning stations in many kindergarten classrooms. Again, the “talk” that has been reported from observing children as they interact with one another in computer-based learning centers is encouraging. In addition, Labbo (1996, 2000, 2004b) and her colleagues have noted that young children are capable of comprehending various forms of media not limited to print-based technologies. Labbo coined the term “screenland” and suggested that when children interact and live in screenland, they are not only gaining critical literacy skills, but their imaginations are being stretched to new heights.

Gee (1996) also reminded us that our definition of literacy must be broadened and that we should take into account the social context of literacy practices. This involves looking at literacy through historical, political, and sociocultural lenses. By acknowledging insights of theorists such as Vygotsky, Dewey, and those embracing a constructivist stance, teachers may have a theoretical framework compatible to integrating technology into daily practice.

Significance of the Study

The current knowledge base informing the use of technologies to support constructivist knowledge is relatively small. Reinking (1997) stated, “The connection
between technology and literacy seems to be a new topic because, previously in our lifetimes, the technology of print was unchallenged” (p. 285).

With regard to the concept of the use of computer technologies, a great deal of research has been conducted that focuses on the “actual” technologies rather than what is being done with that technology. Focusing on the technology itself is not significant as Leu (1997) pointed out, because our yesterdays, todays, and tomorrows will never be the same with regard to the continual development of new technologies. There has been some relevant work done in the area of teachers and their uses of computers to support instruction. However, most of the work to date has focused on using technology in a generic sense, without a specific focus on integrating it with daily literacy instruction (Anders, Hoffman, & Duffy, 2000). Owston (1997) confirmed that it is now time to shift our focus from technology to teachers’ use of technology. These notions therefore validated the need for this research study.

We are living in a standard-based movement; therefore, literacy leaders and learners are being held accountable on a variety of levels. Just as there are standards for literacy learning that our students must achieve at both the national and state levels, there are now a set of standards that students must master with regard to information technologies. These standards have been set forth by The International Society for Technology in Education (ISTE) and, at the early stages of learning, require a great amount of modeling and scaffolding by teachers to offer support as young learners acquire these basic functional level skills. ISTE has also set forth standards for teachers, which relate closely to the International Reading Association’s (IRA) Standards for Professionals. Both sets of standards include the following aspects in specific terms
related to their disciplines, which address knowledge of the discipline, creating the learner environment, instructional practices and resources, and professional development and ethics.

It is important to note that both sets of professional standards which practicing teachers must master are so closely related across and between these two disciplines. One theory that is pertinent to this line of discussion is that suggested by Greene (1988). Greene illustrated the most ideal way of integrating literacy with technology. Greene referred to literacy in this way, “LlTeracy” emphasizing the “IT” in the context of the word literacy. In taking a closer look at the IRA Standards for Reading Professionals and the ISTE Standards for Teachers, it is clear that their relationship is natural and hopefully this realization will begin a purposeful effort to formally merge the two disciplines of Literacy and Information Technology.

Becker and Anderson (1998) worked with a National Science Foundation Grant which involved administering a survey to approximately 4,000 teachers of grades 4 through 12 in districts nationwide. The survey was entitled The Teaching, Learning, Computing Survey, and much writing was done with regard to its implementation. One of the key findings from Becker’s work suggested that most teachers continue not to use the computer as a teaching tool in their classrooms. Becker (2000) reported,

Outside of word processing, very few teachers have their students make frequent use of computers during class . . . it is primarily those [other] rare classes of students and [other] teachers who use more sophisticated computer software as resources and tools for doing productive and constructive academic work. (p. 26)

In reflecting on this very important finding, the need for work in these rare classrooms was validated. Becker and Anderson’s (1998) work further confirmed that a certain “type” of teacher would be more inclined to use the computer to support literacy
instruction in his or her classroom. Typically, these teachers would be those who were leaders in their school communities, those professionals who go above and beyond what is expected, and those who truly want to positively impact not only the students they teach but also the colleagues with whom they teach. An additional key finding in Becker and Anderson’s work was that teachers in this study who used computers to support instruction held a constructivist view of teaching and learning.

There is a definite lack of research involving teacher beliefs and the integration of technology with literacy instruction. Investigations have been conducted on the topic of beliefs in isolation (Fang, 1996; Pajares, 1992) and as they relate to the disciplines of literacy (Bawden, Buike, & Duffy, 1979; Gove, 1983) and technology (Becker, 1991; Honey & Moeller, 1990) respectively; however, substantial research needs to be conducted in an effort to merge the areas with regard to teacher beliefs and literacy instruction and the use of technology as a supportive tool. Guha (2001) noted that, “Few studies have been done to investigate elementary teachers’ perception of computer usage in classroom instruction” (p. 280). Additionally, this research should be contextualized in authentic settings in an effort to illustrate what is actually happening in classrooms of today (Labbo, 1996).

To highlight some of the work that has been done regarding teacher beliefs and practices in the isolated areas of technology integration and literacy teaching, the following two studies are discussed.

Work conducted by Honey and Moeller (1990) focused on interviewing a group of 20 teachers regarding their beliefs about the use of technology to support instruction. The goal of Honey and Moeller’s research study was to explore teachers’ thinking on
how and why they do or do not use information technologies in their classrooms. Honey and Moeller interviewed veteran teachers in one suburban and one urban district and on average, each teacher had 18 years of experience. A major finding of this study suggests those highly motivated teachers who wish to continually learn and who also embrace a student-centered approach to teaching are most successful in the integration of information technologies with their everyday classroom teaching. This finding also supported the work of Becker (Becker & Anderson, 1998; Becker, 2000, 2001) and colleagues.

O’Connor (2002) also conducted a study on teacher beliefs about literacy teaching and learning. O’Connor found that most teachers held beliefs about literacy teaching that focused on a more balanced approach to teaching literacy. O’Connor named the theoretical framework guiding her work, “The Five Habits of Highly Effective Reading Teachers.” These habits included choice, individual conferencing, teaching for continuous progress, curriculum integration, and child-centered teaching. As can be gleaned from these five habits, many align nicely with a constructivist approach for facilitating literacy instruction. A constructivist approach aligns with both literacy instruction and the integration of information and communication technologies.

In the general research literature, the importance of work in “actual” classrooms can be cited by Labbo (1996, 1999, 2000, 2004b) and her colleagues. Labbo believed that to truly get a sense of what works and what does not in relation to the integration of literacy and technology, researchers must go into classrooms and take account of what is actually happening. Wepner and Tao (2002) also agreed with this notion and highlighted the fact that in previous work, most of the research has focused on accounts of what
teachers are doing or have done and that these accounts have been given by the teachers themselves. More work clearly needs to be completed in the context of actual classrooms so that researchers can see how computer technologies are actually living in these classrooms. Labbo’s prediction is that for the 21st century and beyond, the teacher will be the instrumental factor in facilitating the use of computers for literacy learning.

Many of the research studies conducted up to this point, specifically those focusing on teacher beliefs, have used primarily a self-reporting mechanism like a survey tool to gather findings on teacher beliefs (Bawden et al., 1979; Becker, 1991; Gove, 1983; Olson & Singer, 1994; Karchmer, 2001; O’Connor, 2002; Tsitouridou & Vryzas, 2003). This research study adds to the literature as the researcher conducted classroom observations and teacher interviews focusing on instructional practices and teacher beliefs when integrating technology into daily literacy instruction. The focus on literacy and technology related to teacher beliefs found in this study adds to the limited research reported on teacher beliefs in specific content areas.

The overwhelming evidence that in order to prepare children for life in the 21st century, teachers must use technology as an instructional tool, supports the significance of this research study. Technology offers many opportunities for students of today and requires foundational skills that children will use their entire lives. It is crucial that teachers begin to build the bridge that supports literacy through the use of technology at a very young age. Studying the practices and beliefs of primary grade teachers who successfully integrate technology into daily literacy instruction begins the process of building this bridge. Exemplary teachers can serve as models for others. Perhaps their beliefs and practices will provide inspiration and encouragement to other teachers who
may be searching for ways to integrate technology meaningfully into their own instructional practices.

Research Questions

This study used case study research methodology and design to determine instructional practices and beliefs that guided two exemplary primary grade teachers as they integrated technology into daily literacy instruction.

The following research questions guided this study:

1. What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?

2. What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?

3. What experiences helped form these beliefs and practices?

Assumptions

The following assumptions upon which this study was based have been confirmed by review of the literature and/or the professional experiences of the researcher.

The study assumed that the integration of technology is a valid and necessary part of beginning literacy instruction.

The two teachers in this study were identified as “exemplary teachers” through recommendations by administrators in their schools, experts in the field of education, informal initial observations by the researcher, and initial teacher interviews conducted by the researcher.

The two teachers demonstrated the integration of technology with daily literacy instruction in authentic and meaningful ways.
The two teachers were able to articulate their beliefs about integrating technology with literacy instruction.

The two teachers were able to generate authentic and meaningful artifacts and demonstrate authentic interactions that supported the richness of data collection and analysis for the purposes of this research.

Definition of Terms

This section provides the definition of major terms used in this study.

Beliefs—Implicit theories about the learning to read process which validate instructional decisions and behavior (Barr & Duffy, 1978; Gove, 1981; Harste & Burke, 1978; Mitchell, 1978). Teacher belief is defined broadly as tacit, often unconsciously held assumptions about students, classrooms, and their academic material to be taught (Kagan, 1992).

Case Study—A detailed examination of one setting, or a single subject, a single depository of documents, or a particular event (Bogdan & Biklin, 2003, p. 258).

Constructivism—A constructivist teaching approach attempts to make learning a more self-directed, personally-responsive, and socially-mediated process in which a learner’s own motivation and effort are just as important, if not more central, to a student’s education than the content or facts learned. This involves creating a learner environment so that students identify their own issues and problems to be solved rather than having questions defined for them, decide how to explore an issue or solve a problem rather than having these procedures defined by the teacher, reflect further and makes sense of what they have experienced, and interact with peers by presenting their
solutions, describing how solutions were reached, and receiving feedback (Ravitz et al., 2000).

Curriculum Integration—Making connections across disciplines and to real life (Drake & Burns, 2004).

Deixis—The forms and functions of literacy have regularly changed over time. This will continue into the future but at a much faster pace (Leu, 2000a).

Developmentally Appropriate Practice—The National Association for the Education of Young Children (NAEYC) defined developmentally appropriate practice as “the outcome of a process of teacher decision-making that draws on at least three critical, interrelated bodies of knowledge” (Bredekamp & Copple, 1997, p. vii) which include: What teachers know about how children develop and learn, what teachers know about the individual children in their group, and knowledge of the social and cultural context in which those children live and learn.

Educational Technology—The full range of digital hardware and software used to support teaching and learning across the curriculum. That includes desktop, laptop, and handheld computers and applications; local networks and the Internet; digital peripherals such as cameras, scanners, and adaptive devices. It generally does not include older analog media such as film and overhead projectors (Center for Applied Research in Education, 2000).

Exemplary Teachers—Teachers possessing qualities from the Professional Standards set forth by the International Reading Association (IRA) and the International Society for Technology in Education which for IRA include: Knowledge of foundations of reading and writing processes and instruction; candidates using a wide range of
instructional practices, approaches, methods, and curriculum materials to support reading and writing instruction; candidates using a variety of assessment tools to plan and evaluate effective reading instruction; candidates creating a literate environment that fosters reading and writing; candidates viewing professional development as a career-long effort and responsibility; and for ISTE includes evidence of technology operations and concepts; teaching, learning, and the curriculum; assessment and evaluation; planning and designing learning environments and experiences; productivity and professional practice; attendance to social, ethical, legal, and human issues.

Literacy — The ability to make and communicate meaning by using symbols in society. Literacy is not “isolated bits of knowledge rather it is the ability to use language in daily activities” (Moll, 1994, p. 202).

Primary Grade Teachers—First and second grade teachers in public school districts including both urban and rural settings.

Delimitations

This study was conducted in a combination of urban and rural school districts surrounding a Midwestern city. The participants for this study were chosen based upon purposive sampling and did not include representation from other urban or suburban districts in the United States. The study focused solely on primary grade teachers of first and second grade students.

Limitations

This study was limited by the use of case study methodology and a small sampling size, as its findings were not generalized to the greater population of primary grade teachers in the United States. The validity of the case study design was limited in
that it was valid only to those readers who were able to identify in some way with the content of the study and its participants. As Merriam (1998) noted,

In a qualitative study the investigator is the primary instrument for gathering and analyzing data and, as such, can respond to the situation by maximizing opportunities for collecting and producing meaningful information. Conversely, the investigator as human instrument is limited by human being . . . Human instruments are as fallible as any other research instrument. (p. 20)

A final limitation of this study was that if the study had been conducted by a different research with another group of exemplary teachers, the data may have yielded different findings.

Summary

This chapter included a brief overview of the integration of technology in support of early literacy teaching. The significance of this critical area of research was presented as well as a discussion of the theoretical framework aligned to this topic. In addition, the research questions, assumptions, definitions of terms, delimitations, and limitations guiding this study were also presented.

The results of this study were intended to help primary grade teachers identify with their own beliefs and serve as inspiration in their future efforts to integrate technology into daily literacy instruction. Ultimately, the goal of this study was to positively impact teaching practices and belief systems, hopefully resulting in an increased number of primary grade teachers using technology as an instructional tool in support of literacy instruction.

Works by Dewey (1900, 1915) and Vygotsky (1978), and the theory of constructivism (Brooks & Brooks, 1993) provided a theoretical framework for this topic of study. The purpose of this study was to investigate the beliefs and instructional
practices of two exemplary primary grade teachers as they integrated technology into daily literacy instruction. In addition, this study sought to expand the knowledge base for integrating technology with literacy instruction in the primary grades and to provide exemplary models for those teachers wishing to effectively integrate language arts with technology into their own daily practice.
CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

This chapter offers a discussion of literature relating to the topics of teacher beliefs, early childhood literacy instruction, and the integration of technology. A discussion of the overview of current thinking on the topic of integrating technology with literacy instruction lays the foundation for the chapter. Characteristics of effective teaching are presented. In addition, effective literacy practices in general and those focusing on early literacy instruction are offered. Pertinent literature concentrated on integrating technology with literacy instruction leads into a discussion of teachers’ beliefs as they relate to literacy, technology, and the integration of the two. The chapter concludes with a discussion of professional development with an emphasis on addressing early childhood teaching and encouraging the utilization of technology.

Current Thinking on Integrating Technology With Literacy Instruction

The number of research studies focusing on the use of media with young children and the development of new literacies is continually growing. Found also in this emerging body of research is the hope that adults will give considerable attention to fostering these new literacies. If appropriate attention guides the way for continued research regarding this critical topic, educators will likely move closer to the goal of making education more relevant to their students’ lives, thus helping to develop productive citizens while also motivating struggling readers (Hagood, 2003).
Donald Leu (1997) has been one of the key informants and supporters to the literacy community regarding the notion of integrating literacy instruction with information technology. He has coined the term “deixis” to describe the changing nature of literacy, as we know it. What is unique about Leu’s term is that it refers mainly to the time and speed at which the nature of literacy and literacy instruction is continually changing. Leu (2000b) commented that during the course of the last 20 years, this fast-paced changing nature has been the most rapid in the history of literacy. Leu reminded us that society has defined literacy in terms of the ways in which people are required to function in order to be considered “productive members” of the groups in which they work and live. Leu determined that, in a sense, “literacy” has always been deictic in that the forms and functions and purposes of literacy have changed through history. The definition of “literacy” has changed over time and continually will change as new envisionments for literacy emerge.

Before further exploring the historical context in which literacy leaders and learners must position themselves, a description is given of three philosophical theories that undergird this notion of using technology to support literacy for a variety of purposes. These three theories are transformative theory, transactional theory, and literacy as deixis.

Transformative theory has been supported by Reinking (1997) as he has studied the unique nature of hypertext. Reinking’s belief in embracing a Transformative Theory is that technology transforms the nature of literacy. This means that technology changes the ways in which people of all ages are required and choose to manipulate texts they are reading.
To illustrate his point, Reinking (1997) reminded us of the comparison between reading traditional print-based text versus nontraditional hypertext. In a traditional text, the reader is in a sense being led by the author through a story path that is typically controlled by the author. The reader is “along for the ride,” so to speak, but does have opportunities to skip ahead or return to previous pages in the story that might be of particular interest. However, for the most part, the author has constructed this path that will lead the reader through a journey of the author’s choosing whereby not allowing the reader to have complete control of the literacy journey. Additionally, when reading a traditional text, the reader is engaged with a low-tech one-dimensional type of text that has limited variability and sequence. As mentioned before, the journey or the path has been primarily constructed for the reader by the author.

In contrast, Reinking (1997) claimed that when readers have the opportunity to interact with hypertext, they are ultimately in control of their literacy journey. In hypertext fashion, links and graphics are interwoven and attract readers to construct meaning in a variety of directions—in a multi linear fashion as opposed to a strictly linear one. Readers are encouraged to be selective in reading and can return or skip to other potentially related links. Reinking clarified the design of hypertext as nonlinear and a set of modules that are connected by semantic links. This design allows text to respond to the needs of the reader while also placing a burden on the reader to develop a course of action when navigating through the information. Reinking pointed out that,

Current notions of reading and writing will be expanded to include electronic literacy, the ability to understand electronic text in various forms. It is misguided to view electronic, or digital texts, as nothing more than a printed page displayed on a computer screen. (p. 6 as cited in Labbo, 1999)
Mayer (1997) reminded us that caution needs to be taken when generalizing findings from traditional texts to different forms of hypermedia. Each technology is comprised of unique resources and contexts for constructing meanings, which also require different strategies. Mayer also suggested that caution be taken when generalizing patterns from older technologies to newer digital technologies.

With the changing nature of literacy to reflect this transformative stance, it is clear that literacy instruction has the potential to become quite complex. This will require literacy leaders to scaffold the necessary support and provide critical reading strategies so that younger readers, or less experienced readers, will be able to navigate this new text with efficiency and safety. Thus, the nature of literacy continues to transform, due to the development of recent information and communication technologies has and continues to transform.

In Transactional Theory, the viewpoint taken is that literacy and technology interact with each other simultaneously. The technology is consistently changing the nature of what technology should be able to do and allow the reader to do. In turn, the changing nature of literacy has an effect on what technology should be designed to do. According to Rosenblatt’s (1985) theory of reader transaction,

We need to see the reading act as an event involving a particular individual and a particular text, happening at a particular time, under particular circumstances, in a particular social and cultural setting, and as part of the ongoing life of the individual and the group. We still can distinguish the elements, but we have to think of them, not as separate entities, but as aspects or phases of a dynamic process, in which all elements take on their character as part of the organically interrelated situation. Instead of thinking of reading as a linear process, we have to think rather of a complex network or circuit of inter-relationships, with reciprocal interplay. (pp. 100-101)
Transactional theory as it relates to literacy and technology helps to underscore that the relationship and interactions between the two are in a constant state of change—each informing the other.

Lastly, the theory of “Literacy as Deixis” has been described by Leu (1997). What is unique about this term “deixis” is that it refers mainly to time and the speed at which the nature of literacy and literacy instruction is continually changing. Leu (2001) noted that during the course of the last 20 years, literacy has changed at a faster pace than ever before. Leu (1997) also pointed out that literacy in a sense has always been deictic in nature and changing due to society’s expectations for literate citizens.

Historically, Leu (2000b) reminded us that in the earliest of societies, for example in ancient Mesopotamia, the Sumerians used cuneiform tablets to record information regarding their crops and food supplies. In Post Reformation Europe, we were reminded that the Protestants disagreed with the notion that only priests could read scripture and offer salvation. The change here came about when Luther encouraged people to begin to read the scriptures on their own. Due to the technology of the printing press invented by John Gutenberg, the Bible became more publicly accessible and resulted in the document being widely read thus allowing people to independently read and find their own salvation. In Jeffersonian democracy, the nature of literacy reflected the ability to cast a reasoned vote in the voting box in hopes of maintaining a democratic and ideal society. In the Industrial world, the nature of literacy shifted to the work place where people were required to read and write for the purposes of producing an end product.

In today’s Information Age, the widespread uses of technology for the purposes of literacy are changing more rapidly than ever. Leu and Kinzer (2000) pointed out that,
What is clear is that literacy will no longer be an end state; instead, it will become a continuous learning process for all of us. Being literate will be an anachronism. Becoming literate will be the more precise term, since each of us will always be acquiring new literacies as new technologies for literacy regularly appear. (p. 121)

In today’s society, to become fully literate, individuals must have the capability to access information from a variety of print sources, they must then be able to evaluate the legitimacy of the information they find, they must use the valid and reliable information to solve problems for real purposes, and then communicate their solutions to a wider audience. Labbo (1999) also supported the notion of integrating the acquisition of literacy skills with real life societal expectations. She defined literacy by stating that, “Educational goals and purposes for literacy instruction should reflect a synergistic relationship with society’s expectations for how literacy is utilized and valued in various societal endeavors” (p. 2). Labbo further claimed that teachers embrace their instructional roles based upon their deeply held philosophical beliefs and their understanding of learning theories. This greatly impacts their instructional decision-making, which will in turn determine how communicative technologies will be used in their classrooms. Labbo concurred with Leu and Kinzer (2000) by emphasizing,

If one of the goals of literacy education is to better prepare all students to function as literate beings in society, it is crucial to weigh how well the use of communicative technologies present in the classroom coincides with the use of those tools in the larger society. (p. 2)

Leu and Kinzer (2000) recommended that teachers will need to help children develop skills to learn from each other. Leu and Kinzer also emphasized a great need for more collaborative learning experience to regularly occur in classrooms of today. The goal of these collaborative learning activities will allow children to learn strategies from each other for successfully utilizing these information resources. Leu and Kinzer
speculated that in this way, children will learn effective literacy strategies that will prepare them for their futures, which will indeed require collaborative skills. Finally, Reinking (as cited in Labbo, 1999) validated these notions by stating, “The penetration of digital reading and writing into all aspects of daily literacy activity has increased and will ultimately have a profound effect on what is considered mainstream reading and writing” (pp. 5-6 as cited in Labbo, 1999).

As indicated in the third volume of the “Handbook of Reading Research” (Kamil, Mosenthal, Pearson, & Barr, 2000),

The challenge is closely related to the increasingly deictic nature of literacy within rapidly changing technologies of information and communication: As newer technologies of information and communication continually appear, they raise concerns about the generalizability of findings from earlier technologies. (p. 749)

Despite this challenge, several researchers have engaged in studies that examine many questions related to integrating technology with literacy instruction in the primary grades. A review of research that was conducted by Kamil, Intrator and their colleagues (Kamil, Intrator, et al., 2000; Kamil & Intrator, 1998: Kamil & Lane, 1998) noted that only 12 articles published out of a sampling of over 350 had appeared in the scholarly research databases of PSYCHINFO and ERIC.

In their most recent review of literature, Kamil, Intrator, et al. (2000) highlighted findings that were staggering. Kamil, Intrator, et al. (2000) analyzed 437 studies in the four major literacy journals including Written Communication, The Journal of Teaching English, The Journal of Literacy Research, and Reading Research Quarterly. Of the 437 literacy studies they found, only 12 of them focused on the integration of literacy and technology. In addition, a vast majority of these studies focused on children who were
eight years of age or older. Most of the research studies they found were of an empirical nature. What this suggests is that an entire population of the literacy research community, those focused solely on children ages eight years or younger, and those with a more qualitative research orientation, simply did not have the wealth of information from which to draw as they hoped to continually inform and craft their own personal teaching and research agendas during the years of 1986-1995.

In the research that Kamil, Intrator, et al. (2000) reviewed, they also noted some emerging themes, which included motivation, positive experiences for certain populations, and the value in using hypermedia. Yelland (2005) supported the notion of motivation as it relates to the teacher and noted that the role of the teacher in the learning process is critical. If teachers can become motivated with regard to using technology to support their teaching, perhaps their beliefs and instructional practices in support of literacy will be positively impacted through continued validation in the research literature.

Similarly, Lankshear and Knobel (2003) confirmed that there was an absence of research related to early childhood literacy available for review. They stated,

On this basis, we conclude that the trend observed by Kamil, Intrator, and colleagues of extreme marginalization within specialist reading and writing journals of research articles concerned with new technologies and literacy continues, with this marginalizing exacerbated for the early childhood years. (p. 64)

Lankshear and Knobel further reviewed literacy journals, specifically early childhood journals and technology journals. From their search, they confirmed that in looking at 554 articles in nine journals, only 18 studies reflected the broad area of utilizing new
technologies and only five studies were specifically related to technology and literacy.

Yelland (2005) reminded us that,

The last decade has been characterized by unprecedented change. The time has actually spanned two centuries in which our lives have been transformed by new technologies but school curricula have remained much the same as they were despite calls for reform and pockets of innovation that are evident in exciting early childhood education classrooms. (p. 223)

Yelland (2005) suggested that knowledge about innovative uses of technology and the ways in which new knowledge might be acquired is a direction that future research should take. As can be surmised from the collection of research on this relevant topic to date, there is a paucity of research in this area in general and that paucity seems to be underscored in the work of children between the ages of 0-8.

In addition to these individually researched topics regarding technology, studies have also been conducted at the national level. Most notably, the Report of the National Reading Panel (2000) stated that with regard to the topic of using technology in reading, a deficient amount of research is currently available. They conducted reviews of existing experimental and qualitative studies and came to the following conclusion:

Here again, credible experimental and qualitative research is lacking. This is understandable in light of the recent development of the relevant technology and its application to reading instruction and student learning. Nevertheless, the Panel believes that this is an important and essentially unexplored field. (p. 20)

In the general research literature, the importance of work in “actual” classrooms can be cited from Labbo (1996, 1999, 2000, 2004b) and her colleagues. This is grounded in their belief that to truly get a sense of what works and what does not in relation to the integration of literacy and technology, researchers must go into classrooms and take accounts of what is actually happening. Wepner and Tao (2002) also agreed with this notion and highlighted the fact that in previous work, most of the research has focused on
accounts of what teachers are doing or have done and that these accounts have been given by the teachers themselves. More work clearly needs to be completed in the context of actual classrooms so that researchers can see how computer technologies are actually living in these classrooms. Labbo (1999) believed that although the influx of these new technologies have brought about new and unique ways of teaching at distances outside of the four walls of classrooms, the prediction is that for the 21st century and beyond, the teacher will be the instrumental factor in facilitating the use of computers for literacy learning.

With regard to the concept of the use of computer technologies, a great deal of research has been done that focuses on the “actual” technologies rather than what is being done with that technology. Focusing on the technology itself is not significant, as Leu (1997) pointed out, because our yesterdays, todays, and tomorrows will never be the same with regard to the continual development of new technologies. There has been some relevant work done in the area of teachers and their uses of computers to support instruction. However, most of the work to date has focused on using technology in a generic sense, without a specific focus on integrating it with daily literacy instruction.

Owston (1997) confirmed that it is now time to shift our focus from technology to teachers. Focusing on classroom-based studies will allow for the discovery of instructional conditions and put to use the ultimate learning potentials within various forms of digital literacies. Owston pointed out, “the potential of new technologies for learning, such as the World Wide Web, is likely to be found in the way in which these technologies are exploited, not in the technology itself” (p. 758).
Effective Teaching

Harris (1998) conducted a review of the literature on effective teaching and noted “The research literature concerning effective teaching is both vast and complex” (p. 169). Findings from Harris’ review conclude that effective teaching is highly dependent upon the goals and outcomes of instruction. Harris confirmed that effective teaching is linked to reflection, inquiry, and continual professional development. In addition, Harris asserted that there are central qualities that effective teachers possess that continually emerge from the research literature. These qualities include possessing knowledge of their disciplines, decision-making skills, assertive behaviors, and a strong commitment. Banner and Cannon (1997) suggested that what teachers do cannot be distinguished from who they are.

Fereshteh (1996) believed “the strongest factor in being, or becoming, an effective teacher is not what she or he was taught, but how he or she was taught and why he or she was taught that way” (p. 73). Fereshteh recommended six roles that effective teachers must adopt. These roles include being a manager, role model, motivator, professional, instructional expert, and an intellectual.

Zemelman, Daniels, and Hyde (1998) offered 13 principles for best practices in teaching and learning which include being student centered, experiential, holistic, authentic, expressive, reflective, social, collaborative, democratic, cognitive, developmental, constructivist, and challenging. Effective teachers take cues from the interests, concerns, and questions of their learners and strive to embed these naturally into daily instruction. Witmer (2005) suggested that building strong relationships with students can be a vehicle in fostering student-centered teaching. Zemelman et al.
suggested that effective teachers follow developmentally appropriate practice by designing and implementing hands-on, concrete experiences for their students allowing their students to be directly immersed in the content of the subjects they study. Effective teachers plan for experience where students encounter whole ideas and use authentic materials in purposeful contexts. Effective teachers embrace collaborative approaches to teaching and learning which naturally allow for the self-expression of students and the opportunity for students to interact socially in learning activities. Effective teachers encourage reflection from both themselves and their students. Campbell, Kyriakedes, Muijs, and Robinson (2004) conducted a review of literature on effective teaching and values. They argued, “a preferable approach to the identification of values in teacher effectiveness is through self-evaluation” (p. 453). In addition, Zemelman et al. (1998) suggested that effective teachers value democracy, cognition, and provide a challenging environment where all students may thrive. Glasser (1990) reminded us that,

While students may appear to be very different from each other, they are all driven by the same needs. The teacher who understands this will focus a great deal of effort on managing in a way that students can satisfy their needs by doing school work. When they do, and in the process discover that it is in their best interest to do quality work, the teacher’s needs are satisfied. (p. 16)

Check (2001) conducted a study on the positive traits of effective teachers and the negative traits of ineffective teachers. The investigation involved a 25-item questionnaire and was administered to 747 college students, 104 senior high school students, and 93 eighth graders. In addition to check-off items, there were two opportunities for the participants to respond to open-ended statements. Analysis of the results of the questionnaires revealed qualities for effective and non-effective teachers. Check reported “the following teacher traits to be essential for effective teaching; proper dress, grooming,
extensive use of examples, employment of humor, effective communication in teaching, valid testing techniques, and availability for extra help” (p. 326).

Fenstermacher and Richardson (2005) examined the notion of quality teaching and focused specifically on the question of quality teaching. Fenstermacher and Richardson confirmed,

Good teaching, then, while constituted by elements that cohere in the person of the teacher, is enabled by nurturing conditions and is also responsive to these same conditions. Good teaching may be thought of as symbiotic with types of learners, nature of the surround, and opportunities to teach and learn. (p. 208)

Ruddell (1995) helped remind us that “influential teachers are those special teachers whom we recall in a vivid and positive way from our academic experience—kindergarten through college years—and who have had a major influence on our academic or personal lives” (p. 454). Ruddell defined effective teachers as those using highly motivating and effective teaching strategies, helping students with their personal problems, creating a feeling of excitement about the subject matter content or skill area they teach, exhibiting a strong sense of personal caring about the student, and demonstrating the ability to adjust instruction to the individual needs of the student.

Developmentally Appropriate Practice

In 1996, The National Association for the Education of Young Children (NAEYC) published a position statement on appropriate practice in early childhood programs serving children from birth through age eight. In their statement, NAEYC defined “Developmentally Appropriate Practice” (pp. 4-5) as decision making that is the outcome of three critical areas of knowledge. These three areas include what teachers know about how children learn and develop, what teachers know about the individual children, and teachers’ knowledge of the social and cultural context in which the children
live. Examples of developmentally appropriate practices include effective planning for both small and large group activities, organizing space, materials, and time for these group activities, promoting self discipline in children, evaluating and guiding children’s progress using authentic assessments, involving families, and integrating the curriculum (Kostelnik, Sodeman, & Whiren, 2004).

Bredekamp and Copple (1997) elaborated on the notion of the teacher as decision maker. She recommended that decisions be made by taking into consideration the three areas of knowledge suggested in the statement from NAEYC (1996) in addition to using multiple sources of knowledge. Bredekamp and Copple reminded us, “Decisions about our practice are based on knowledge that is always changing; our understanding about child development and learning, individual children, and social and cultural contexts” (p. 51).

Buchanan, Burts, Bidner, White, and Charlesworth (1998) conducted a study, which focused on identifying classroom characteristics and teacher characteristics related to self-reported beliefs and classroom practices of first, second, and third grade teachers. Buchanan et al. found that many primary teachers agree with principles advocated by the NAEYC as related to beliefs and practices. In addition, they found that both developmentally appropriate and developmentally inappropriate practices can be predicted by classroom and teacher characteristics.

Hemmeter, Maxwell, Ault, and Schuster (2001) conducted a study to test the psychometric properties of The Assessment of Practices in Early Elementary Classrooms (APEEC), a measure of developmentally appropriate classroom practices. This observation instrument was developed to provide a practical tool for classroom teachers
as well as those researchers involved in looking at early elementary classrooms. The instrument was designed to help those interested in early childhood to better understand the practices of elementary classrooms (K-3) serving children of various backgrounds and abilities. The format of the instrument consists of 16 observation/interview sheets that are categorized into three main groups with the following subgroups, physical environment, instructional context, and social context. A recent review of the literature confirmed that to date, there have not been any research investigations that have used this instrument.


The Evolving Definition of Literacy

The definition of “literacy” has changed over time and continually will change as new envisionments for literacy emerge. This idea has guided a number of Leu’s (1997, 2000b, 2001, 2002; Leu, Karchmer, & Leu, 1999) writings about this very important topic in literacy research and education.

In a review of many “definitions” that theorists have discussed, a trend that seems to have emerged is the broadening of this notion of literacy. In previous times, literacy has typically been thought of as “print-based.” With so many new forms of literacy abounding, the definition and thinking about how to acquire this essential skill will continually expand in an effort to encompass a wider range of text types.
J. W. Cunningham (2000) spoke about literacy and how in the past, literacy has focused solely on the act of “reading.” Cunningham made a claim that with the advent of many “audiobooks” available in a variety of forms on the Internet and in other forms that do not require Internet connectivity, the skill of “listening” will become critical for success in these times. Cunningham discussed two types of listening that reflect “academic” listening and “social” listening and identified the fact that even though listening is a skill that children and adults will have to master throughout their lives, the defining and separation of these distinct ways of listening will have to be defined in educational settings. We know, however, that both types of listening are prevalent in the classroom, but a distinction and allowing our students to engage in both types will be critical for their success in becoming literate. Cunningham also recognized how the Internet will change the way that children read and will require them to be critical consumers of the texts they encounter “on screen.” This is truly the case with self-publishing in particular, and he noted that children along with the guidance of adults, will at a very early age be required to question everything that they might read “online.” The book editors and publishers that helped teachers for so many years to provide a safety net so to speak with the materials we were given or chose to use, are not present in “online” environments. The Internet is an open playing field for all types of authors, which requires teachers to model critical reading for the safety of everyone when using it. Many (2000) agreed with J. W. Cunningham’s (2000) view of “safety” on the Internet, and supported the idea of providing children with the necessary critical reading skills that will keep them safe from inappropriate or offensive content they may find while reading “online.”
Gunderson (2000) highlighted the importance of widening the view of literacy to include languages other than English. It has been noted that a vast majority of Internet sites and resources available are written solely in English. This fact reveals the problem that many people in this country are monolingual and in effect, this will have negative effects in their ability and success to enter and work in the global world we are preparing them for. Gunderson suggested that English has been a “colonizing” language and that we need to think broader now so that many languages are represented “online.” This may also include language not just limited to text or symbols but could very well encompass additional semiotic forms of literacy that we can only hope that teachers will allow their students to interact with.

Mosenthal (2000) supported the notion that we need to be aware of “who” is defining the objectives that comprise literacy. Typically, he believed that two parties are involved with this very important task—the initiators of these new definitions and the supporters. Mosenthal cautioned those who initiate “new definitions” of literacy to clearly think about their objectives and reasons behind their ideas as these can have powerful impacts on the political and agenda-setting arenas.

Millard (2003) called for the idea of supporting “popular culture” in the classroom with regard to literacy instruction. Millard noted that many of our students immerse themselves in their culture and can truly identify with it; therefore, allowing us an avenue to explore that will be motivating and meaningful for our students, yet will also provide a valuable context in which to base our literacy teaching.

Daley (2003) supported the idea of broadening the definition of literacy to include not only symbols, but also multiple modes of media. Daley supported the notion that
varieties of multimedia should be available when supporting learners of all ages in their literacy development.

Neuman (2000) commented on what “libraries” of the 21st century will be like compared to the print-based environments to which many have become accustomed. Neuman commented that librarians of today will no longer be bibliophiles, but will instead take on the role of “technician” or troubleshooter. Since the interactions that library patrons will have may be in person or virtual, the ability to communicate in multiple forms will be necessary. Neuman also reflected on what the physical layout and activity might be in a modern day library and noted that much unlike having children read print bound books silently at library tables as they once have, library patrons of today will be very social and will interact either “in person” or virtually around computer screens. This new vision will of course require people to become literate in their essential communication skills of speaking and listening in a variety of ways, which will again redefine the nature of what we think as being literate.

Hartman (2000) compared and contrasted several elements of traditional print-based literacy with the literacies that we will encounter in the future. Hartman suggested that literacy will shift in form to multiliteracies. No longer will it be adequate for people to know how to read and write effectively, multiliteracies will grow to include various other forms of communication that are not solely print bound. Hartman also suggested that in the past, literacy has often focused on “one” text at one time, whereas today, with the infusion of the Internet, it has reached into all of our literacy acts. Literacy will become and is becoming “intertextual” where the meaning sought from one text relies upon meaning that may be found in another text by simply clicking a button. The ability
to navigate effectively through several texts in one sitting will definitely be a requirement in achieving a functioning level of literacy. Hartman pointed out that in previous times, literacy has been “linguistic,” meaning that it has focused mainly on words (i.e., text in print or in spoken language). Hartman believed that we are shifting to more semiotic forms of literacy that will include multiple forms of media like sound and imagery.

Hartman also spoke to the ways in which literacy instruction is changing for teachers and students alike. He noted that literacy materials have traditionally been packaged into organized groups of resources that teachers use in various sequences throughout their school year. Hartman believed that today and in the future, with the emerging and plentiful resources on the Internet, teacher materials will need to be retrieved electronically. This will support teachers in becoming more technologically literate themselves, but will also allow for greater distribution of literacy materials to wider populations and greater access to all. Lastly, Hartman commented on the nature of teaching and activities related to literacy. He described that historically literacy had involved “assignments” that teachers have laid out for their students. Hartman noted that there is now a shift from a directive teaching approach to a workshop approach where essentially the “assignments” of the past are now becoming “literacy projects.”

The work of New (2002) offered the notion that the cultural aspects of the society in which adults are preparing children for life as adults specifically define literacy. Additionally, New supported the idea that literacy can serve as a tool for socialization and bringing people together in support of common goals and values.

It is evident that the definition of “literacy” must be expanded to include much more than the very simplistic skills of reading and writing. In addition to the skills of
reading and writing, we also know that “literacy” encompasses listening and speaking, which naturally align closely with New’s (2002) notion that literacy should be a mechanism for socialization.

As can be gleaned from this discussion, literacy is continually evolving as the nature of what it means to be or become literate depends specifically upon the context for which we are preparing the children we teach.

Effective Literacy Instruction

The International Reading Association (IRA) is the largest professional organization of those involved in the teaching of reading. IRA members have a sincere dedication to the promotion of high levels of literacy for all learners. The IRA embraces three goals, which include improving the quality of reading instruction, disseminating research and information about reading, and encouraging the lifetime reading habit. As the 2005-2006 president, Richard Allington (2005-2006) believed that

IRA must become more active in creating collaborative alliances with other professional organizations to advance the concerns of members in the policy arena. Education rests at the top of domestic policy agendas, and IRA must develop more powerful strategies for influencing legislation concerning literacy teaching and assessment. (p. 1)

In 1997 at the request of Congress, a national panel was convened to assess the research-base on how to effectively teach children to read. This panel was named the National Reading Panel and was charged with the task of providing a report that should represent the panel’s conclusions, an indication of the readiness for application in the classroom of the results of this research, and, if appropriate, a strategy for rapidly disseminating this information to facilitate effective reading instruction in the schools. (p. 1-1)

The National Reading Panel (NRP) used as its framework five essential skills of reading instruction including phonemic awareness, phonics, fluency, vocabulary, and
comprehension. From their review of research, the NRP found essential characteristics for teaching each of these critical skills.

In an effort to provide a resource for implementing the findings of the NRP into classroom practice, the International Reading Association (IRA) compiled a selection of articles entitled, “Evidence-Based Reading Instruction: Putting The National Reading Panel Report Into Practice.” Taken from this collection of articles, a brief description of the characteristics for each of the five essentials follows.

Phonemic awareness is the ability to hear, identify, and manipulate the individual sounds, or phonemes, in spoken words. The NRP found that phonemic awareness can be taught and learned. Phonemic awareness taught with letters is more effective than phonemic awareness taught without letters. Teaching one or two phonemic awareness skills is more effective than teaching three or more skills. Phonemic awareness teaching sessions of about 30 minutes for a total of 5-18 hours are most effective. Computers are effective in teaching phonemic awareness. Phonemic awareness is most effective with pre-K and K children and children at risk (Putting the National Reading Panel into Practice, 2002, p. 3).

Phonics is the understanding that there is a predictable relationship between phonemes, the sounds of spoken language, and graphemes, the letters and spelling that represent those sounds in written language. The NRP found that systematic phonics instruction makes a more significant contribution to children’s growth in reading than do alternative programs providing unsystematic or no phonics instruction. Specific systematic phonics programs are more effective than non-phonics programs. Systematic phonics instruction is effective when delivered through tutoring, through small groups,
and through teaching classes of students. Systematic phonics instruction produces the biggest impact on growth in reading when it begins in kindergarten or first grade before children learn to read independently. Systematic phonics instruction is significantly more effective than unsystematic or no phonics instruction in helping prevent reading difficulties among at risk students and in helping to remediate reading difficulties in disabled readers (Putting the National Reading Panel into Practice, 2002, p. 35).

Fluency is reading with speed, accuracy, and proper expression without conscious attention. The NRP found that repeated and monitored oral reading has a significant positive impact on word recognition, fluency, and comprehension. Fluency instruction is appropriate for children in grades two through high school, particularly for struggling readers. Fluency instruction is equally effective for good and poor readers (Putting the National Reading Panel into Practice, 2002, p. 83).

Vocabulary is stored information about the meanings and pronunciations of words necessary for communication. The NRP found that children learn meanings of most words indirectly, through every-day experiences with oral and written language. Some vocabulary, particularly technical and very subject-specific words, is learned through direct instruction. Quality vocabulary instruction leads to gains in reading comprehension. Effective methods of vocabulary instruction include keyword, incidental learning, repeated exposure, pre-teaching of vocabulary, restructuring reading materials, and use in context (Putting the National Reading Panel into Practice, 2002, p. 112).

Comprehension is the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text. The NRP found that when readers are given cognitive strategy instruction, they make
significant gains in measures of reading comprehension over students trained with conventional instruction procedures. Specific strategies that are effective in teaching comprehension includes monitoring, cooperative learning, graphic organizers, story structure, question answering, question generating, and summarization. Teaching a variety of reading comprehension strategies in natural settings and content areas is most effective (Putting the National Reading Panel into Practice, 2002, p. 137).

The International Reading Association (2000) published a statement defining the qualities that effective literacy teachers should possess. The IRA believed that effective teachers share several critical qualities which include understanding reading and writing development and believing that all children can learn to read and write, continually assessing children’s individual progress and relating reading instruction to children’s previous experiences, knowing a variety of ways to teach reading, knowing when to use each method and knowing how to combine the methods into an effective instructional program, offering a variety of materials and texts for children to read, using flexible grouping strategies to tailor instruction to individual student, and being a good reading “coach” (IRA, 2000).

The literacy community is fortunate to have many experts who have helped to shape the very nature of this intriguing discipline. The following discussion offers insights from selected distinguished literacy educators as they relate to each of the five essential components of literacy instruction.

Yopp and Yopp (2000) defined phonemic awareness as the awareness that a stream of speech consists of sound sequences called phonemes. When children are phonemically aware, they realize that the smallest unit of sound does influence
communication. Yopp and Yopp confirmed that phonemic awareness activities should be child appropriate. They have several recommendations for classroom instruction that include designing phonemic awareness activities that are playful and engaging, deliberate and purposeful. Yopp and Yopp also recommended that teachers should view phonemic awareness as only one part of instruction in a broad literacy program. When planning, teachers should consider the unit of sound being emphasized and whether the activities planned will be strictly oral or involve the use of manipulatives such as sound chips or letters. Joseph (1999) recommended the use of word boxes as one type of manipulative appropriate for use with phonemic awareness instruction. He described word boxes as rectangular-shaped boxes that are divided into sections. The sections in the word boxes correspond to sounds in heard words. By manipulating these words and writing in the sounds they hear as words are spoken, children not only have the opportunity to grasp the phonological but the orthographic features of words as well. Joseph recommended that word boxes can be incorporated with technology as well as used in conjunction with lessons focusing on vocabulary development.

Opitz (1998) supported the use of children’s literature in developing phonemic awareness. As children read and hear quality literature, they are naturally immersed in the play of language as they engage with the qualities of rhyme, alliteration, and sound substitutions. Fisher, Flood, and Lapp (1999) supported Opitz’s (1998) belief that the use of quality literature with young children improves phonemic awareness. Fisher et al. recommended that hearing words in context as well as receiving explicit instruction on language structure can benefit children as they develop phonemic awareness.
P. M. Cunningham (1999) reminded us how critical phonemic awareness is for reading success. She contended that children who enter elementary school with phonemic awareness are more likely to learn to read successfully. Conversely, she suggested that children lacking phonemic awareness may have greater difficulty in learning to read successfully.

Stahl (1992) suggested nine principles for teaching phonics effectively. These principles included building on children’s concepts on how print functions, building on the foundation of phonemic awareness, instruction that is clear and direct, instruction that is integrated into a total reading program, instruction that focuses on reading words not learning rules, including onsets and rhymes, using invented spelling practice, developing independent word recognition strategies, and developing automatic word recognition strategies.

Strickland (1994) and Tharp (1982) suggested that,

Systematic phonics instruction should be properly timed, to occur when children have begun to attend to print and have gained a good understanding of the purposes for reading and writing. This timing is important, because an early over emphasis on phonics and other low-level skills tends to give students of diverse backgrounds the impression that reading is nothing more than sounds, letters, and word identification, and their reading achievement is likely to suffer. (as cited in Kamil, Mosenthal, et al., 2000, p. 847)

P. M. Cunningham (1999) recommended teaching phonics using a Four Blocks framework. Using this framework, teachers have the opportunity to embed meaningful phonics instruction into guided reading, self-selected reading, writing, and working with words. Although there is an emphasis today on using the working-with-words block as a vehicle for direct instruction, Cunningham supported a more holistic approach to phonics
teaching that encompasses opportunities for children to read and write while gaining necessary phonics skills.

Morrow and Tracey (1997) believed that in order to effectively integrate strategies for phonics instruction into classroom practice, teachers must be encouraged to reflect on their practices of teaching phonics. Morrow and Tracey suggested that teacher reflection, enhanced knowledge, and increased self-reflection will support phonics learning for children.

Samuels (1997) recommended repeated reading as a strategy that will help develop fluency for developing readers. Samuels pointed out that repeated reading is not a method used for teaching all beginning reading skills. Instead, he suggested the use of repeated reading as a supplement to any reading program. Samuels believed that teachers can foster the development of fluency by helping students to achieve automaticity. One valued function of repeated reading is that it gives students the practice necessary to become automatic.

Rasinski (2000) believed that one of the key elements in helping students to achieve fluency in reading is finding appropriate texts for readers. He suggested the use of poetry and the development of Reader’s Theatre scripts as two possible ways to practice fluency with appropriate texts. Rasinski also recommended many configurations for building fluency including the use of buddy reading or paired reading.

Richards (2000) suggested that in order for teachers to help students attain reading fluency, the teacher’s role is critical. This role will involve accurately identifying the nature of fluency for each child, which encompasses reading rate, recognition of words, and phrasing.
Rupley, Logan, and Nichols (1999) affirmed that vocabulary growth is an essential component of any balanced reading program. They believed that a focus on vocabulary instruction will help children infer meaning from the texts they are reading and ultimately comprehend. Rupley et al. recommended that vocabulary instruction should encourage children to discuss, elaborate, and demonstrate meanings of words. They supported the use of strategies such as semantic word mapping, webbing, concept of definition maps, and semantic feature analysis as effective activities in building vocabulary. Ainsle (2001) suggested simulating adventure activities when helping children develop vocabulary. She recommended the use of the “word detective” strategy where students try and find the “suspects” or unknown words based upon clues and lists of previously known words. Laframboise (2000) encouraged children to take ownership in their learning of vocabulary words and be cognizant of whether they are totally unfamiliar with the word, have some familiarity with the word, or are completely familiar with the word. Children are supported in gauging their own learning as they are exposed to new words, reflect on familiar words, and practice using a variety of words during home and school activities.

Dowhower (1999) supported the use of strategy instruction to increase comprehension of text. Dowhower suggested that students become completely engaged in monitoring comprehension when completing activities such as the Directed Reading Thinking Activity and completing a K-W-L (What I Know, What I Want to Learn, and What I Learned) chart. Shanahan and Shanahan (1997) recommended using strategies that help children connect with character perceptions as an effective way to build
comprehension. Strategies that support character involvement include Story Grammars and Character Perspective Charts.

As has been discussed, one of the main ways to build comprehension is by using strategy instruction such as graphic organizers in the classroom. Merkley and Jeffries (2001) suggested that when using graphic organizers with children teachers should provide opportunities for student input, connect new information to past learning, make reference to upcoming text, and take advantage of opportunities to reinforce decoding and structural analysis when appropriate.

Effective Early Literacy Instruction

In fostering early literacy development, the role of the teacher is critical. Gambrell (1996) reminded us that,

One very important way in which teachers motivate students to read is by being an explicit reading model. Research suggests that teachers who love reading and are avid readers themselves have students who have higher reading achievement than do students of teachers who rarely read (Landberg & Linnakyla, 1993). (p. 20)

Durkin (1990) also suggested, “Instruction refers to what someone or something does or says that has potential to teach one or more individuals what they do no know, do not understand, or cannot do” (p. 472). Durkin claimed there must be successful instruction as well as pertinent instruction. Specifically, she recommended that, “For reading, pertinent instruction has objectives that contribute to real reading as opposed, for example, to test-taking ability” (p. 472). She believed that instruction could be unplanned and still result in successful outcomes. Durkin identified effective teachers as those knowing exactly what it is they want to teach. She suggested that superior teachers are
those who would then be able to explain to anyone the reasons for choosing particular activities.

According to research that has been presented in the Handbook of Early Literacy Research (Neuman & Dickinson, 2002), there are several “definitions,” so to speak, that continually impact the nature of how early literacy instruction is approached in school settings. Research conducted by Whitehurst and Lonigan (2002) specifically support the nature of the literacy acts in which children involve themselves prior to beginning formal schooling. For decades, there has been a debate as to what constitutes “formal reading instruction.” An emergent literacy approach supports the notion that formal literacy instruction begins at birth and continues well into the early years of a child’s life, including during preschool. A school-based approach accepts readiness and reading schools that have only been introduced in a formal academic setting. Both approaches support the idea that literacy acquisition continually develops as children enter Kindergarten and grade school and continues further as they emerge into adulthood.

As mentioned previously, Whitehurst and Lonigan (2002) are supporters of the idea that the formal literacy instruction children acquire begins at the preschool years and even before. They supported that children can acquire literacy in terms of two distinct models, one being the inside out model and the other being the outside in model. In terms of the inside out model, children gain literacy skills and are able to “read” and decipher meaning primarily from the graphemes and phonetic cues they can decipher from the printed word. This type of model aligns closely with the “bottom up” model of literacy teaching where skills are the basis for early development of literacy. The outside-in model embraces a very different philosophy where children are encouraged to use more
than the clues they can actually “see” or manipulate on the printed page. This second model would assume that teachers would embrace a more holistic or “top down” view of literacy teaching where many other factors come into play such as motivation, prior experiences.

Also noted in the Handbook of Early Literacy Research (Neuman & Dickinson, 2002) are the ideas presented by Goldenberg (2002). He described the characteristics of exemplary literacy instruction as involving six key elements, which include environment, explicit instruction, vocabulary development, motivation, discussion, and home-school connections. Goldenberg identified the “environment” as being a key element in the literacy development of young children. The classroom should be poised with a nurturing teacher and should include many authentic reading materials and intimate “reading spots” that encourage a welcoming and safe learning atmosphere where literacy acquisition can thrive. Explicit instruction is the second characteristic, and with this, the teacher should take advantage of those “teachable moments” and heed spontaneous learning opportunities when they arise; however, teachers should also plan explicit and direct instruction for critical skills that individual students are required to master. According to Goldenberg, vocabulary development should be a very natural characteristic, as teachers in these environments should model a love of language and should use interesting and unique words for a variety of purposes routinely. A love of reading and writing will prevail through teacher modeling and excitement and in turn, children will naturally adopt this view thus increasing their motivation to learn to read and write even more. Thoughtful discussions about the nature of what children are reading and writing should occur frequently. Lastly, an extremely important component should be the nurturing of
home-school connections. According to Goldenberg, literacy teachers should encourage the development of the relationship between the parents/families of the children they are teaching and what is happening regularly in the classroom. Teachers can facilitate this relationship building in a number of ways including sending regular communications to the families of their students and planning for literacy events that parents and family members are encouraged to take part in during the school day.

The literacy community is also fortunate to have many experts, including those previously mentioned in this discussion, who have helped to shape the very nature of effective early literacy instruction. The following discussion will offer insights from selected distinguished early literacy educators as they relate to each of the five essential components of literacy instruction.

Bruneau, Genisio, Casbergue, and Reiner (1998) recommended that teachers integrate phonemic awareness into instruction in daily activities in the classroom. One way to incorporate phonemic awareness into daily instruction is to encourage the use of invented spellings (Richgels, 2002). Richgels reminded us, “Invented spelling’s connection to phonemic awareness is a connection between spoken language and written language” (p. 149).

Strickland (2004) confirmed the notion that oral language and literacy develop together and that children who fall behind in oral language and literacy development, are not likely to become successful beginning readers. Strickland stated,

Listening and speaking provide children with a sense of words and sentences, build sensitivity to the sound system so that children can acquire phonological awareness and phonics, and are the means by which children demonstrate their understandings of words and written materials. (p. 87)
Strickland further reminded us that “Language-poor families are likely to use fewer ‘different’ words in their everyday conversations, and the language environment is more likely to be controlling and punitive” (p. 87). Therefore, it is imperative that early literacy teachers model a love of literacy (Gambrell, 1996) and provide an enriching classroom context, one in which language development is continually fostered.

Stahl (2002) recommended that phonics instruction can take a variety of forms. These multiple forms of instruction include traditional analytic approaches, embedded synthetic approaches, and non-traditional constructivist approaches. Stahl believed that, “It may be that phonics instruction is effective because it allows teachers to cover more material than other types of instruction” (p. 343).

Neuman, Copple, and Bredekamp (2000) recommended,

All children need some direct help with letter/sound patterns and decoding skills. But such help is usually most effective not in isolated lessons but within the context of meaningful reading experiences, taking children’s dictation and reading it back, and supporting them in their efforts to read and write. A useful habit for teachers to develop is talking about letters and sounds as they write messages to children or help them compose written products. For example, a teacher may say, “This sentence has several words starting with b, that sound we hear in bear, baby, and boy. Let’s read that again . . .” and point to each b as she reads the word. (p. 90)

Neuman et al. also recommended,

One of the best ways to help children learn letter/sound relationships is to draw their attention to initial word sounds known as onsets (such as p- in pie, or bl – in block) and word endings or rimes (such as – ake, ent, and ish). We can do this as we read and reread stories and versus rich in alliteration and rhyming. We may explicitly draw children’s attention to such patterns while reading or writing with them. When working with first graders or kindergartner’s (and occasionally interested preschoolers), we can involve children in making word lists, word banks, or books of words that share interesting spelling/sound patterns. (p. 92)

Invernizzi (2000) defined oral reading fluency as “accuracy, speed, and expression. It is one of the critical ingredients necessary for reading comprehension and
is cultivated primary through practice” (p. 462). Martinez, Roser, and Strecker (1999) suggested the use of Reader’s Theatre as a great way to develop children’s fluent reading in a meaningful way. Reader’s Theatre has no sets, costumes, props, or memorized lines. Rather, the goal is for the performer to effectively read the script aloud thereby allowing the audience to visualize the story as it unfolds. Another advantage of Reader’s Theatre is that it is both fun and motivating for children.

Winters (2001) supported the idea of building conceptual connections to provide vocabulary anchors while learning new words. Constructing vocabulary frames for previously taught words and modeling of thinking aloud are effective strategies for scaffolding vocabulary instruction. Winter recommended involving children in active processing of words they learn as a way of engaging them in vocabulary instruction. Smith (2000) promoted the idea of providing a schema on which to build vocabulary instruction and suggested that as emergent readers hear, sing, discuss, play with, and write songs they are building important background knowledge. With each new experience, children learn concepts and word meanings they may encounter in the future.

Dickinson and Sprague (2000) recommended that teacher-child conversations can help in the acquisition of vocabulary. They support Gambrell’s (1996) notion that early literacy teachers must serve as models for children. Dickinson and Sprague confirmed the importance of the teacher and reminded us “children’s language experiences are heavily influenced by their teachers . . . and that patterns of teacher-talk can be associated with children’s later development” (p. 270).

The role of the teacher is instrumental in helping children to acquire vocabulary. Pressley et al. (2001) found that,
Much explicit teaching occurred: Students were taught word recognition skills, self-monitoring behaviors, comprehension tactics, and writing strategies. This explicit teaching occurred through teacher modeling, but more important, reteaching occurred in reaction to student needs. Indeed, opportunistic teaching and reteaching was very salient in the most effective for-locale classrooms, with the teacher consistently monitoring students as they read and wrote. The teachers offered mini-lessons on an as-needed basis. (p. 46)

Schwartz (1997) recommended that improving comprehension can be developed by helping even our youngest of learners take note of what cueing systems they are using in the quest to make meaning from text.

Block (1999) suggested that the teaching of comprehension be viewed as a crafting process,

Lessons that teach students to craft their comprehension set pupils up for success . . . They learn in an environment that cultivates taking risks to move to higher levels of comprehension, and to participate in discussions which revolve around issues of timeless importance. (p. 116)

Pressley (2001) confirmed that,

The development of comprehension skill is a long-term development process which depends on rich world, language, and text experiences from early in life, learning how to decode; becoming fluent in decoding, in part, through the development of an extensive repertoire of sight words; learning the meanings of vocabulary words commonly encountered in texts; and learning how to abstract meaning from text using the comprehension processes used by skilled readers. (as cited in Kamil, Mosenthal, et al., 2000, p. 556)

How Children Make Sense of Language

Halliday (1985) reminded us that spoken language is one of the first ways in which children construct meaning for events in their lives. Making meaning is grounded in the connection of all language processes. Dialogue and discussion are needed in the classroom so that children can expand their reading and writing skills (Harste, 1994). Language and social experiences support one another as children rely on their social experiences to make connections and meaning with texts they encounter. Corden (1998)
suggested, “spoken language is not used simply to express thoughts, it is used in the creation of them” (p. 27). Further research reveals that discussion in the classroom helps to develop literacy skills that encourage deeper understanding, higher level thinking, and improved communication skills (Gambrell, 1996). Essential to fostering these types of discussions is the establishment of a safe learning environment where children feel comfortable in expressing themselves for a variety of purposes.

Reader response theory also has positive implications for using dialogue and discussion to support language acquisition in the classroom (Squire, 1994). As Rosenblatt (1994) described reader transaction as collaboration between the reader and the text, so too should oral collaborations be nurtured amongst the teachers and students in early childhood classrooms. Rosenblatt suggested,

The transactional view of the human being in a two-way, reciprocal relationship with the environment is increasingly reflected in current psychology, as it frees itself from the constrictions of behaviorism. Language, too, is less and less being considered as “context-free.” Children’s sensorimotor exploration of the physical environment and their interplay with the human and social environment are increasingly seen as sources and conditions of language behavior. (p. 270)

Goodman and Goodman (1981) further reminded us,

that language is a creative process, but because it is necessary to communicate socially . . . Adult communication, response, and tracking of the child’s meaning are therefore important, but the child is in control-making decisions about what works and what must be discarded. (p. 438)

Therefore, the exchange of rich dialogue among students and teachers in early childhood classrooms is a necessary component for the language acquisition of very young children.

Integrating Technology With Early Childhood Literacy Instruction

Using technology to support literacy instruction is best accomplished when an integrated approach is taken (Labbo, 2000). Shanahan (1997) reminded us that
integrating reading and writing during literacy instruction has proven to be effective. Shanahan supported his thinking by noting “the developmental lines of reading and writing are sufficiently similar that they can be combined successfully, though in different ways, throughout literacy education” (p. 14).

A review of research on this critical topic was conducted by Kamil and Lane (1998) and it has been documented that only 12 articles published on this topic out of a sampling of over 300 have appeared in mainstream literacy journals. Clearly, there is a need for more research in this important area of early literacy instruction.

Reitsma (1988) conducted a study in order to determine the best way to practice reading for beginners which included guided reading, reading while listening, and independent reading, when computer-generated speech feedback was available. Reitsma studied 72 first graders in three experimental conditions and found that reading efficiency increased when children were given large amounts of independent reading time. Reitsma suggested, “If such independent activity is included, computer-aided practice with speech feedback seems promising as a means of improving reading skills in beginners” (p. 219). Reitsma reported the results from two additional pilot studies focused on computer-assisted learning to read and spell. Several key findings were shared which included that kindergarten readers learned in 16 hours of computer practice what would normally have been attained in the first 3 months of formal reading instruction in the classroom. Further, increased levels of motivation were noted as well as “the amount of non-task directed behavior of those who had practiced with the computer significantly decreased during both computer sessions and classroom sessions” (p. 181).
Labbo, Sprague, Montero, and Font (2000) have strongly supported the use of computers as learning stations in many kindergarten classrooms. Again, the “talk” that has been reported from observing children as they interact with another in computer-based learning centers is encouraging. In addition, Labbo and her colleagues have noted that young children are capable of comprehending various forms of media not limited to print based technologies. Labbo et al. has coined the term “screenland” and suggested that when children interact and live in screenland, they are not only gaining critical literacy skills, but their imaginations are being stretched to new heights.

Carroll (2001) conducted a study where she observed and interviewed a teacher in a primary grade classroom for a number of weeks. Carroll’s study had many findings but the most critical point was that this particular teacher viewed technology as “one more tool” in support of the development of the literacy of the children with whom she was working. This teacher strongly believed that the technology had to be seamlessly integrated into the natural happenings in the classroom for the experience to be truly meaningful.

J. M. Casey (2000b) has also conducted work that has positively impacted the nature of literacy and the integration of technology in primary grade classrooms. Casey’s focus has not solely been on early reading development but has also emphasized early writing in young children. Casey supported the notion of using computers to support writing instruction and composition for young children. Casey strongly believed that asking young children to compose only with the tools of a piece of paper and a pencil can be detrimental for some. Casey’s thinking is grounded in developmentally appropriate practice with regard to fine motor skills that young children may or may not possess.
Some of our young learners may not have the fine motor control to clearly represent their thoughts and feelings on paper, and this may simply add to their stress of composing ideas to share with others. Casey has conducted work extensively focused on using computers in writing centers in primary grade classrooms and has noted that when some children are asked to compose using a computer, the block of their physical capacity to "create" letters and words on paper is gone. Casey believed strongly that the use of this mechanism allows children’s ideas to be freed without the bottleneck of using paper and pencil when they may not have the fine motor skills to do so effectively. With computer technology, their ability to compose written messages becomes easier.

Phenix and Hannan (1984) concurred with Casey (2000b) in support of using computer-assisted instruction to facilitate writing development in young children. Phenix and Hannan observed children for a 6-week period while working with the computer to develop writing skills. They noticed several significant effects on the writing behavior and performance of the children. These effects included developing a better understanding of the writing process, gaining confidence in their writing, and improved transcription skills.

Barrerra, Rule, and Diemart (2001) also conducted a study involving the effect of writing with computers compared to traditional handwriting composition. The research project used 18 first graders as their participants and involved the analysis of over 750 writing samples. Barrerra et al. found that “students consistently wrote more when using the computer despite equitable amounts of time engaged in writing in both conditions” (p. 226).
Blok, Oostdam, Otter, and Overmaat (2002) found that computer assisted instruction in support of beginning reading instruction generally tend to be effective. J. M. Casey (2000b) also recognized that similar research has been conducted focusing on special education populations and the use of adaptive technologies in support of learning, noting similar outcomes. Mioduser, Tur-Kaspa, and Leitner (2000) examined the contribution that computer-based instruction offered when looking at specific features of computer technology on early reading skill performance. They studied 46 preschool children at high risk for learning disabilities. Mioduser et al. found “the contribution of computer-based learning materials to the acquisition of early reading skills of at-risk children . . . is very promising” (p. 62).

Lally (2001) reported that technology can give teachers exciting new ways to individualize instruction for children to acquire the skills necessary to become phonemically aware and literate. Lally suggested that in using appropriate technologies, children are given opportunities to see, hear, and feel the concepts of reading and writing. In addition, children are highly motivated as they manipulate letters and words as they interact in a multi sensory environment. Lally explained

Technology enables students to simultaneously hear and match sounds (phonemes) to letters and words. When students can hear individual phonemes and then match them to individual spellings, they are on their way to reading and spelling success. (p. 2)

The use of voice chip technology allows for children who need a high level of practice in phonemic awareness, to become aware of letter sound connections and phonemic distinctions. Lally (2001) further explained, “Voice chip technology is also beneficial for English Language Learners because it can incorporate all the sounds in the English language” (p. 3). Lally concluded that using technology with reading instruction provides
for a variety of opportunities to practice and make learning to read both fun and engaging.

Kelly and Schorger (2001) investigated 25 preschool children and their use of expressive language while engaged at a classroom computer center during free play and learning centers activities. The researchers observed the children for a period of 6 months while collecting multiple samples from their work at the computer and other centers in the classroom. Their results indicated that using the computer, as a self-selected activity in the classroom, could in fact be as enriching for the language development of children when compared to other traditional learning centers. Kelly and Schorger summarized their study by stating, “the use of computers in early childhood settings is not a barrier to expressive language development and continues to be appropriate when used as a self-selected learning center” (p. 136).

Turbill (2001) conducted a year-long investigation on the use of technology in the kindergarten literacy curriculum. The researcher employed qualitative methodologies and worked in five kindergarten and five first grade classrooms. The research question guiding this study was, “How are teachers of young children incorporating technology into their daily literacy programs?” The study found that technology could potentially play a greater role if critical pieces were in place. The researcher suggested that an increase in available computers, technical support, adult helpers, and planning time for teachers would allow for the technology to play a greater role in the classroom.

Work by Rivera, Galarza, Entz, and Tharp (2002) as well as Davis and Shade (1999) found a very high level of literacy for real purposes involved with the integration of technology and literacy instruction in primary grade classrooms. These researchers
have noted that levels of social interaction increase when computers and technology are integrated with literacy instruction. Students are engaged in talking, reading, writing, and listening in meaningful and interesting ways. In addition, using meaningful computer based literacy resources can support levels of cognition.

Marsh (2004) surveyed 44 children between the ages of 2.4 and 4 years. The study sought to discover the techno literacy practices of these young children. The findings reported that,

Young children were also engaged in accessing information as they read teletext and computer game covers. Literacy as a means of pleasure and self-expression was strongly evident throughout children’s engagement with television, computer games, and mobile phones and this pleasure was recognized. Literacy as skills development was embedded within children’s techno literacy practices, whether that related to learning grapheme/phoneme relationships from watching television or reading text on the screens of computer games. (pp. 62-63)

Finally, one of the major goals of Marsh’s study was to challenge the common conception of “emergent literacy” as it relates solely to print-based literacy. The research findings further supported that emergent literacy should encompass a range of multimodal practices.

Segers and Verhoeven (2002) developed a child-friendly computer software program designed to enhance early literacy skills in kindergarten children in the Netherlands. They conducted studies focusing on the use of the story and vocabulary portions of the software with children. In both follow-up studies, the researchers found that “computer support had a positive effect on the vocabulary development of kindergarten children” (p. 219).
Teacher Beliefs

The definition and explanation of teacher beliefs has been a topic that has continually been researched for decades. Simply stated, teacher beliefs can be defined as what teachers believe about the nature of many aspects of their jobs as teachers.

The term “teacher belief” can be equated with teaching philosophies or ideas of what should be done in classrooms and how those ideas play out in actual classroom practice. Teacher belief has been associated with “teacher efficacy” which encompasses the idea of teachers believing they can be efficacious or effective with regard to their teaching practice and what characteristics they possess which may ultimately lead to that goal. Soodak and Podell (1996) explored dimension of teacher efficacy. They analyzed responses from 310 teachers using the Gibson and Dembo (1984) scale. Their analyzed results yielded three factors including personal efficacy, outcome efficacy, and teaching efficacy.

Teacher belief has also been associated with attitudes and perceptions. Pajares (1992) suggested that the nature of belief is a very complex construct that needs some attention and clarification. Pajares offered insight into the nature of how research may need to be conducted in this critical area. Pajares specifically stated that numbers only cannot even begin to describe the nature of the beliefs that teachers hold and that other ways of defining and exploring this construct need to be addressed in an attempt to broaden the concept of teacher beliefs.

The work of Pajares (1992) is most notable with regard to the topic of teacher beliefs. He commented on the differentiation between knowledge and belief and suggested that knowledge is the objective piece, the facts upon which teachers rely for
decision making in their classroom. Pajares offered the notion that beliefs are more subjective and that the belief system is value laden, acting as a filter through which decisions in the context of the classroom materialize.

Many of the research studies conducted up to this point, specifically those focusing on teacher beliefs, have used primarily a self-reporting mechanism like a survey tool to gather findings on teacher beliefs (Bawden et al., 1979; Becker, 1991; Gove, 1983; Olson & Singer 1994; Karchmer, 2001; O’Connor, 2002; Tsitouridou & Vryzas, 2003).

Ross (1994) conducted a survey of teachers and their beliefs. He concluded along with Wheatley (2005) that teacher belief is not a free floating construct; it is definitely context-specific and the particular characteristics of the nature of the workplace can have significant impacts on what teachers believe about teaching. Ross (1994) reported that teachers typically had positive beliefs under the following conditions: female teachers had more positive beliefs about teaching, elementary level teachers had positive beliefs about teaching, teachers teaching in a “low stress” environment had more positive beliefs, teachers teaching children with minimal behavioral issues had more positive beliefs, and teachers teaching children who were motivated and who had fairly high levels of achievement typically had more positive beliefs. Although this list is not conclusive of all findings from Ross’s work, the connection can clearly be made between the nature of the context in which teachers work and their positive beliefs toward teaching.

Fang (1996) conducted a review of research on the nature of teacher beliefs and analyzed 88 studies relating to the topic of teacher beliefs and their practice. In this work, Fang noted that the literacy community conducted the most extensive set of research in
the area of teaching and teacher beliefs. He identified the work of Harste and Burke (1977) and their conclusion that teacher beliefs about literacy directly impact the nature of how they teach and in turn, affect the nature of how their students view literacy. Fang (1996) strongly believed that the nature of research on teachers and teacher beliefs must be context based, as the environment in which teachers are operating will have a direct effect on their value systems of the nature of their work.

Teacher Beliefs About Literacy Instruction

Harste and Burke (1977) have conducted work specifically in the area of teacher beliefs and literacy instruction and have concluded that what teachers believe about reading and literacy directly affects what happens in their classrooms and in turn, has a direct impact on shaping the beliefs of their students with regard to reading and literacy development.

Research conducted by Gove (1983) focused on the development of a teacher attitude or belief scale that could be used to assist teachers in determining where their beliefs lie with regard to their literacy instruction. Gove developed a scale that had two basic levels aligning with the inside out and outside in perspective as suggested by Whitehurst and Lonigan (2002). The scale that Gove (1983) developed helped teachers determine whether or not they fell into more of a top-down, bottom-up, or interactive method of how they valued and believed in the teaching of reading. For each type of method, attitude scales were developed that would allow teachers to indicate what statements or beliefs aligned most closely with their own. If a teacher believed in a top-down approach, they were definitely more holistic in their teaching methods rather than being completely focused on the directive teaching of skills. If a teacher believed in a
bottom-up approach to teaching, then systematic and direct instruction of sets of skills would occur regularly and almost exclusively in the classroom of that teachers. The interactive approach would welcome aspects of each previously mentioned top-down or bottom-up approaches. The work of Gove underscores the notion of a pattern that can be seen in the research literature on “teacher beliefs” emphasizing the idea that teacher beliefs are not clear-cut and are often “messy.” Teachers oftentimes do not fall to one side of a continuum; rather, they can easily find comfort in the middle ground.

In 1991, Richardson, Anders, Tidwell, and Lloyd conducted a study to determine the relationship between teachers’ beliefs about teaching of reading and the practices they employed in the classroom. Their study involved participants who were teachers of grades four, five, and six. The researchers conducted 39 teacher interviews. The findings suggest that beliefs relate to classroom practice in teaching reading comprehension. An important detail from their data indicated that one teacher was actually in the process of clarifying her beliefs, but the beliefs were changing at a faster pace than the practices.

Olson and Singer (1994) examined teacher beliefs and reflective change in the teaching of reading. The purpose of their study was to explore teacher beliefs and to create teacher profiles that would promote reflective teaching. The participants in their study completed self-report inventories. The inventories focused on the teachers’ theoretical orientations, conceptual frameworks, belief systems, and their teaching of reading. Several of the participants recorded their experiences as learners and teachers. The classrooms were observed at least three times during a 2-month period. The students were also asked to complete an inventory of their perceptions of the teaching they had received. The key finding of Olson and Singer’s study discovered that encouraging
teachers to clarify their beliefs might force them to reexamine what they do and why they make those instructional choices.

Westwood, Knight, and Redden (1997) developed an instrument to measure change in teachers’ beliefs. Specifically, the instrument sought to determine teacher beliefs on how children acquire early literacy skills and how these particular skills should be taught. The instrument was developed within an Australian context; however, the researchers asserted that it would be appropriate for use in other countries conducting research on teacher beliefs and practices. During the development phases of this questionnaire, findings concluded that the classroom practices of teachers were strongly influenced by their beliefs regarding teaching and learning. Further, the researchers proposed that change in teacher practice would not occur through involvement in professional development opportunities in isolation, rather a combination of the change in basic beliefs and values will allow the skills gained from professional development to take shape in the classroom context.

Commeyras and DeGroff (1998) investigated the perspectives of literacy professionals relating to current trends in literacy teaching and learning. The study involved the use of a questionnaire for data collection. The instrument was mailed to a random sample of K-12 teachers. These teachers had a variety of titles including reading specialists, administrators, library media specialists, and teacher educators. The results of the study were based on the responses of 1,519 participants. The results found that the participants believed that teacher preparation should be a collective effort among student teacher, supervisor, and mentor teacher. The participants valued intrinsic indicators of student motivation for literacy over extrinsic indicators. The participants also valued
book clubs for instruction and portfolio assessment as a means for documenting growth to further inform instruction.

Poulson, Avramidis, Fox, Medwell, and Wray (2001) conducted an exploratory study to identify the theoretical beliefs of primary grade teachers. The sample for this research included 225 British primary school teachers who had been identified as successful literacy teachers. The goal of the study was to examine the characteristics of these teachers with a specific focus in looking at their backgrounds, experiences, professional development, knowledge, beliefs, and classroom practices. The instrument that was developed was described by the researchers as “an extensive questionnaire survey covering a range of personal and situational variables . . . we included a section which probed teachers’ theoretical beliefs about literacy teaching and learning” (p. 275). The findings confirmed the researchers’ claims that there is a relationship between beliefs and observed classroom practices. They recommended the exploration of teachers’ practices in future studies based on the analysis of lesson observations and interviews. Further, Poulson et al. concurred with Fang (1996) that attention in research must be given to how teachers apply their beliefs in the context of classroom life.

O’Connor (2002) conducted a survey of teachers with regard to literacy instruction. The focus of the survey was finding out what reading teachers think and what they actually do. A 12-item survey of 182 teachers in 4 states in the U.S was completed. The development of the survey was constructed using as its framework the five habits of highly effective reading teachers, which included choice, individual conferencing, teaching for continuous progress, curriculum integration, and child-centered activities. The results of the survey indicated that teachers favored a more balanced approach to
teaching and that a goal of instruction was to produce independent and motivated readers. Suggestions for future research studies were offered to include triangulating data by analyzing data from classroom observations, reviewing documents, and conducting interviews when conducting studies relating to literacy teachers habits and beliefs.

Squires and Bliss (2004) conducted a research study that involved the observation of two teachers through the use of videotapes. Their research findings built upon those of Olson and Singer (1994) who found teachers are more likely to clarify their beliefs about literacy learning when provided with inspiration and encouragement. Squires and Bliss (2004) found that “explicit visions” might help to bring to life teachers’ deeply held beliefs about teaching and learning.

Teacher Beliefs About Integrating Technology With Instruction

Honey and Moeller (1990) conducted a study focusing on teacher beliefs and technology integration. The goal of their study was to explore the thinking of teachers with regard to whether they use information technologies in their classrooms and why or why not. They interviewed veteran teachers whose average years of teaching were 18. They selected participants from one urban and one suburban district. Analysis of the data included looking for themes that emerged from interviews with the teachers. The researchers strived to uncover similarities and differences between these teachers in two different settings. Their findings suggested that from the interview responses, there was a relationship between the educational goals of the teachers and the teachers’ objectives for utilizing technologies in their classroom practices. An additional finding indicated that, “Highly motivated teachers who wish to continually learn . . . and who also embrace a
student-centered approach to teaching are those that are most successful in the integration of information technologies with their everyday classroom teaching” (p. 6).

Dwyer, Ringstaff, and Sandholtz (1991) conducted a study focusing on changes in teacher beliefs and practices in technology-rich classrooms. They found that instructional change could only proceed with a corresponding change in beliefs about instruction and learning. They believed that when teachers were deeply involved in taking risks and changing their practices, the best modifications of teacher beliefs would occur. In order for a teacher to adopt the change, they must be assured that their struggles and effort are worthwhile.

A national survey administered by Becker and Anderson (1998) involved over 4,000 classroom teachers, from both elementary and secondary classrooms across the nation. The goal of the study was to investigate teacher beliefs about the use of technology to support classroom instruction. The results found that there is a strong relationship between teacher philosophy and good teaching practices when incorporating the use of technology into instruction. A significant finding highlighted that “teachers with the most constructivist teaching philosophies are stronger users of computers” (p. 11).

Hall and Higgins (2002) reported on the findings from a major research project investigating the effective use of computers for math and language teaching. The UK government funded the research project. An investigation of 75 teachers was conducted and data were collected in the form of questionnaire responses. One key finding from the research study indicates that it is likely that early years professionals have views about using computers and these views reflect their beliefs about teaching and learning in more
general ways. Hall and Higgins suggested that, “Taking teachers’ beliefs and educational
goals into account and identifying developmentally appropriate activities using
computers can support them in adopting new teaching approaches using computers” (p. 317). They concluded that change is only likely to take place when micro-level issues
such as teacher beliefs about the integration of technology are taken into account.

Sheridan and Samuelsson (2003) investigated the learning that takes place
through the use of Information Communication Technology (ICT) in Swedish early
childhood settings. Their research was focused on looking at quality instruction through a
pedagogical lens. Sheridan and Samuelsson found that the pedagogical beliefs of teachers
and the importance of using ICT were grounded in their own views about what was
appropriate. Sommer (1997) also noted that early childhood teachers value their own
childhood experiences and often model their instruction to align with these experiences.
A key finding from Sommer’s work confirmed that educational practice and values for
learning are unable to be separated and that these continually shape the ways in which
ICT are used in the educational setting, especially in the early years.

Tsitouridou and Vryzas (2003) conducted a study focusing on the attitudes of
early childhood teachers towards computer information technology. Their study
examined whether attitudes are differentiated by a series of factors. The subjects of the
survey were 107 in-service female early childhood teachers. The results showed that
early childhood educators have limited access and positive but temperate attitudes to the
world of computers. Teachers’ attitudes appear to be influenced significantly by
computer use at home and experience with computers and in-service training. Teachers
who view the prospect of using computer technology with enthusiasm tend to be those
who have received in-service training. In-service training appears to influence the beliefs of teachers. Teachers who view the introduction of computers into early childhood education as a matter of priority and who are enthusiastic about using computers in their classrooms generally have more positive attitudes to computers and information technology. One obstacle is the lack of adequate teacher training. Tsitouridou and Vryzas emphasized that the question of teacher attitude toward computers and information technology is complex. Tsitouridou and Vryzas recommended that the exploration of teacher attitudes in this light continue to be a subject of ongoing research.

Teacher Beliefs About Integrating Technology With Literacy Instruction

A search of the literature found one study on teacher beliefs about integrating technology with literacy instruction. Karchmer (2001) conducted a study focusing on how the Internet influences literacy instruction in K-12 classroom. The purpose of the study was to explore 13 K-12 teachers’ reports of how the Internet influenced literacy and literacy instruction in their classrooms. The teachers were selected for the study on the basis of being considered exemplary by their colleagues for a variety of characteristics including using technology and describing how the Internet changed the way they viewed reading and writing in their classrooms. Data collection was conducted for 3 months by way of email exchanges between the researcher and participants. Additional data included for the study were reflective journals and teaching artifacts. Several key findings resulted from this research project. The skills these teachers required of their students were extensions of what they taught students while reading print based texts. Teaching students to use electronic textual aids was neither easier nor more difficult than teaching print-based textual aids. It is important to teach students about the accuracy of material
available on the Internet. There was a change in students’ motivation to write and their motivation increased when they published their work on the Internet. Elementary teachers were concerned with reading level on the Internet. Elementary teachers noticed an increase in their students’ interest in writing when their work was published on the Internet. Finally, Karchmer (2001) supported Becker and Anderson’s (1998) suggestion that studies of how new technologies affect teacher practice are needed.

A review of the literature of teacher beliefs about literacy, especially early literacy, a paucity of work in this area exists. There is a clear need to get very specific in terms of what “types” of beliefs on which we focus our research effort. In the past, researchers have taken a more generalist approach, which has offered useful insights. As teaching continues to become more content specific with the implementation of content standards into every discipline, the expectation now is that teachers become experts in their grade levels. It is accurate then to assume that our research efforts must be explicit as well if we hope to offer guidance to practicing classroom teachers. From the review of literature and overview of this topic, one can surmise that there is a definite need for more work highlighting teacher beliefs and the integration of technology with literacy instruction. Essential investigations have been conducted on the topics of teacher beliefs about literacy instruction and teacher beliefs about integrating technology. However, a concerted effort is needed to merge the topics of teacher beliefs and literacy instruction with the use of technology as a supportive tool. Additionally, this work should be contextualized in authentic classroom settings. Kamil and Lane (1998) supported this idea as they stated, “There is an urgent need for such research in conventional
educational settings where traditional conceptions of literacy seem to overwhelm the new, emerging conceptions of literacy” (p. 339).

Summary

This study of effective early childhood teachers’ beliefs and practices with regard to integrating technology into daily literacy instruction was influenced by the following areas of research including the evolving definition of what it means to literate, effective teaching and developmentally appropriate practices, effective literacy teaching and effective early literacy teaching, how children make sense of language, integrating technology with literacy instruction, especially in the early childhood setting, and teacher beliefs. What it means to be literate is continually changing as new technologies are being developed and their envisionments are shaping the nature of teaching, most notably in literacy.

Effective teaching is one of the key ingredients to integrating technology successfully. The research literature has shown that effective teachers possess invaluable qualities, which include and are not limited to a caring, compassionate disposition and the desire to succeed in their teaching efforts. One aspect of effective teaching that is crucial to the success of early childhood teachers is their use of developmentally appropriate practices which include being well versed in the content of their pedagogy as well as taking into consideration the spectrum of developmental needs of the children they teach.

The research literature highlights that effective literacy teaching in all settings, including the early childhood setting, calls for a balance of instruction focusing on the five essential components of literacy instruction. This balance includes the teaching of phonemic awareness, phonics, fluency, vocabulary, and comprehension.
Since a goal of this study is to determine whether teacher beliefs affect practice in the classroom, a review of literature on teacher beliefs as it relates to the integration of technology and literacy instruction has been conducted. To summarize, the aspects of teacher belief is a complex construct and measuring teacher beliefs calls for a more fine-grained analysis in the classroom. Also important to note from the literature on teacher beliefs is that those teachers who most strongly believe in using technology to support literacy instruction are typically proficient technology users both personally and professionally. Research on teacher beliefs and integrating technology with literacy instruction in early childhood settings is an area greatly in need of more investigation. This critical topic lacks sufficient evidence in the research literature.

Finally, a review of the literature did not find studies illuminating the specific ways to help teachers use technology in various contexts. The types of development opportunities and suggestions for planning effective staff development sessions relating to technology integration are what seem to be relevant in the literature. It is also important to note that there was only one study found that related to professional development opportunities designed to help early childhood teachers infuse technology into their teaching.
CHAPTER III
METHODOLOGY

Introduction

This chapter offers a discussion of the research methods employed in this investigation. The research design is discussed as well as the timeline for this study. The two teacher informants in this study are described as well as how they were selected to participate in the study. Data collection, analysis, and how the researcher built credibility and trustworthiness for this study are also discussed.

The following research questions guided this study:

1. What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?

2. What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?

3. What experiences helped form these beliefs and practices?

A theme that continues to emerge in the related literature is one that honors the notion of teacher belief affecting teacher practice. Kagan (1992) offered validation in the importance of studying teacher beliefs by suggesting,

Teacher belief appears to arise out of exigencies inherent in classroom teaching, it may be the clearest measure of a teacher’s professional growth . . . we are likely to come a great deal closer to understanding how good teachers are made. (p. 85)

Generally speaking, teacher belief can be thought of as the filter by which an instructional decision is based. Isenberg (1990) confirmed that “teachers’ thinking may
be guided by a personally held system of beliefs, values, and principles or by a broad
knowledge base of content and teaching strategies that inform their teaching practice and
go largely unarticulated” (p. 324).

If we are to encourage teachers to utilize technology to support early literacy
instruction, the discovery of teacher belief systems regarding this critical area remains
essential. Research suggests that teacher beliefs do affect classroom practice; researchers
need to determine the factors impacting teacher beliefs and how ultimately embraced,
these beliefs unfold into classroom practice.

Many of the research studies conducted up to this point focusing on teacher
beliefs have used primarily self-reporting mechanisms like survey tools to gather
findings. This study adds to the research literature through the use of classroom
observations, teacher interviews, and the analysis of relevant artifacts were conducted in
an effort to discover what was actually happening in classrooms. In addition, this
research project focused on the integration of technology with literacy instruction and
adds to the limited research on teacher beliefs which has been reported that focuses on
specific content areas.

Labbo (2000) suggested that research of both the quantitative and qualitative
nature is needed. Labbo also recommended that questions of inquiry should focus on how
teachers are effectively integrating computer-related technologies into their classroom
indispensable in classroom research of teacher practice, student semiotic and verbal
interactions around the screen, online teaching, [and] curriculum integration of ICT’s” (p.
401). Currently, there is a neglected component in exploring the potentials and reality of
computer-based literacy learning. Lessons can be learned from studying closely watched classrooms where both the classroom and school cultures are considered (Miller & Olson, 1998). Miller and Olson advocated the employment of case study methodology when studying teachers and their use of technology to support daily instruction. Miller and Olson suggested,

> The value of case studies in literacy education has been recognized because of the insights this type of research renders. (e.g., Bissex, 1980; Dyson, 1989; Graves, 1975). Case studies have been a part of the literature on technology since its inception, but even this type of research tended to be influenced heavily by advocates who saw value in computer-based learning. (p. 348)

Miller and Olson reminded us that in past research endeavors related to studying technology based teaching and learning, specific methods for data collection have taken different forms. Schofield (1995) conducted a 2-year long study where she employed the methods of recording field notes and conducted repeated semi-structured interviews with teachers and students. Cochran-Smith, Paris, and Kahn (1990) studied the interactions of beginning writers with word processing and used some of the same methods as Schofield (1995) but also involved themselves as participant observers.

Reinking and Watkins (1995) conducted a formative experimental design where they designed the pedagogy, assisted with the implementation, and then observed the teachers as they made it come to life in their classrooms. Miller and Olson (1998) suggested the notion that “computers are part of a larger social system, and that one must consider the relation between the classroom and technology as mutually influential rather than unidimensional” (p. 349). Miller and Olson recommended making

> No attempt to intervene in children’s and teachers’ use of computers, although, as with the Cochran-Smith et al. (1991) study, the realities of the classroom often require more participation than originally planned, especially in terms of serving as technical advisors. (p. 349)
Miller and Olson (1998) also pointed out that,

Fine-grained analysis of how computers live in schools may add to our knowledge in several domains . . . [including] how classroom environments influence computer use [and] how teachers’ espoused theories of computer use are tempered by the realities of the classroom. (p. 357)

They recommended that intensive case studies may help to fully demonstrate the nature of these collaborative experiences. Shulman (as cited in Isenberg, 1990) previously indicated carefully designed research studies of how teachers’ thinking and beliefs guide practice can “improve the basic design of education” (p. 325). Such studies record and organize the reasoning and actions of gifted teachers into cases of established standards of practice for particular areas of teaching.

Qualitative methods were appropriate for this study as the richness of the data collected was illuminated in the findings. Qualitative researchers are interested in finding meaning for how people make sense of their worlds. As a qualitative researcher, one is concerned with the experience as it is lived, felt, or undergone (Sherman & Webb, 1988). Patton (2002) reminded us that,

Qualitative research is an effort to understand situations in their uniqueness as part of a particular context and the interactions there . . . and in the analysis, to be able to communicate that faithfully to others who are interested in that setting . . . the analysis strives for depth of understanding. (p. 1)

There are various types of qualitative methodologies to utilize when conducting research. These may include Generic Qualitative Studies, Ethnographic Studies, Phenomenology, Grounded Theory, and Case Studies (Merriam, 1998).

This research project employed the use of Multi Case Study (Merriam, 1998) and Comparative Case Study methodology (Bogdan & Biklin, 2003), as two unique cases were richly described, compared, and contrasted.
Case studies are characteristic of providing intensive descriptions and analysis of a single unit or bounded system (Merriam, 1998). Bogdan and Biklin (2003) defined Multi-Case Studies,

When researchers study two or more subjects, settings, or depositories of data they are usually doing what we call multi-case studies. Multi-case studies take a variety of forms. Some start as a single case only to have the original work serve as the first in a series of studies or as the pilot for a multi-case study. Other studies are primarily single case studies but include less intense, less extensive observation at other sites for the purpose of addressing the question of generalizability. Other researchers do comparative studies. Two or more case studies are done and then compared and contrasted. (p. 63)

Case studies are usually framed by theories, concepts, or models from various disciplines some of which include Sociology, Psychology, Anthropology, and History (Merriam, 1998). Works by Dewey (1900, 1915), Vygotsky (1978) and the theory of constructivism (Brooks & Brooks, 1993) provided a theoretical framework for this multi case research study. Dewey (1900) stated, “What the best and wisest parent wants for his own child, must the community want for all of its children. Any other ideal for our schools is narrow and unlovely; acted upon, it destroys our democracy” (p. 3).

In constructing an environment supportive of the technologies that children will encounter in their futures, teachers must carefully consider accepting a decidedly different role in the classroom (Hannafin & Savenye, 1993). Vygotsky’s (1978) view of human development as “socio-cultural” also had primary relevance with regard to this multi case study project. Although Vygotsky stressed an active role for children as they develop, he further believed that the social development of children was the result of their “collective actions” and that these actions transpire within society. Constructivism is the final theory that offered a foundation for this research study. Constructivist thinking is grounded in the belief that learners will construct their own meaning from the
experiences they encounter (Brooks & Brooks, 1993). Miller and Olson (1998) contended that “lessons learned by observing the interaction among teachers, children, and technology in the classroom culture may offer signposts to other educators” (p. 357).

According to Merriam (1998) case studies can further be defined and characterized as being particularistic, descriptive, and heuristic. Case studies are particularistic due to their nature of focusing on a particular situation, event, program, or phenomenon. They are descriptive in nature as the end product is a rich “thick” description of the phenomenon under study. “Thick” means that the description will be complete and literal. Heuristic identifies that the case study will illuminate relationships and the reader’s understanding by discovery of new information, extension of the reader’s experiences, or confirmation of what is known.

Research Design

This study provided two in-depth case studies of two effective primary grade literacy teachers as they integrated technology regularly with instruction. This study attempted to describe the beliefs and practices that support effective literacy instruction with the integration of technology.

Timeline for the Study

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov/Dec 2005</td>
<td>Initial contact with potential teacher participants</td>
</tr>
<tr>
<td>Jan/Feb 2006</td>
<td>Writing of dissertation proposal</td>
</tr>
<tr>
<td>Feb 2006</td>
<td>The Human Subjects Research Review submitted to the University of Akron Institutional Review Board</td>
</tr>
<tr>
<td>Feb 2006</td>
<td>Proposal Presentation</td>
</tr>
<tr>
<td>Feb/Mar 2006</td>
<td>Initial screening measures through observation and interview conducted with potential research participant</td>
</tr>
</tbody>
</table>
March 2006  IRB Approvals for University and local school districts
Mar – May 2006  Data collection (classroom visits and teacher interviews)
Mar – May 2006  Ongoing data analysis
June 2006  Write up of Chapters 4 & 5
July 2006  Dissertation Defense
August 2006  Graduation / Conferring of Doctoral Degree (8/26/06)

Teacher Selection

Selection for participants in this research employed purposive sampling.

Purposive sampling as defined by Bogdan and Biklin (2003) is, “Choosing subjects, places, and other dimensions of a research site to include in your research to enlarge your analysis or to test particular emerging themes and working hypotheses” (p. 261).

The researcher identified two participants based on personal informal observations and conversations in the field. Recommendation for these participants was also given from experts in the field, which included University faculty members. In addition, school district administrators at the central office and building levels also provided a rationale for why these candidates were appropriate in meeting the goals of this research study.

As Merriam (1998) suggested, “you must first determine what selection criteria are essential in choosing the people or sites to be studied” (p. 61). LeCompte and Preissle (1993) have labeled this type of purposive sampling as criterion-based sampling. Their recommendation is to “create a list of the attributes essential” to the study and then “proceed to find or locate a unit matching the list” (p. 70).
Participant Selection Criteria

The selection process was confirmed by informal classrooms observations and teacher interviews conducted by the researcher before the final participant selections were determined. The researcher used the following criteria as a guide during the informal observations and interviews.

The list of criteria used for selecting participants in the study included essential characteristics for effective literacy and technology as suggested by the International Reading Association (IRA) and the International Society for Technology in Education (ISTE) respectively (see Table 1).

The initial teacher interviews were conducted in the form of semi-structured teacher interviews. Bogdan and Biklin (2003) defined semi-structured interviews as, “Interviews in which the same general questions or topics are brought up to each of the subjects involved” (p. 261). Merriam (1998) also defined the semi-structured interview as an interview where,

Either all of the questions are more flexibly worded, or the interview is a mix of more and less structured questions. Usually, specific information desired from all the respondents, in which case there is a highly structured section to the interview. But the largest part of the interview is guided by list of questions or issues to be explored, and neither the exact wording nor the order of the questions is determined ahead of time. This format allows researcher to respond to the situation at hand, to the emerging worldview of the respondent, and to new ideas on the topic. (p. 74)

The rationale for conducting initial interviews with potential participants was so that the researcher would be able to determine whether the potential participants possessed the foundational beliefs with regard to integrating technology that this research study supported.
Table 1

**Selection Criteria for Participants**

<table>
<thead>
<tr>
<th>IRA Standards for Reading Professionals</th>
<th>(ISTE) NETS - T</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 – Knowledge of foundations of reading and writing processes and instruction.</td>
<td>#1 – Technology Operations and Concepts</td>
</tr>
<tr>
<td>#2 – Candidates use a wide range of instructional practices, approaches, methods, and curriculum materials to support reading and writing instruction.</td>
<td>#3 – Teaching, Learning, and the Curriculum</td>
</tr>
<tr>
<td>#3 – Candidates use a variety of assessment tools to plan and evaluate effective reading instruction.</td>
<td>#4 – Assessment and Evaluation</td>
</tr>
<tr>
<td>#4 – Candidates create a literate environment that fosters reading and writing.</td>
<td>#2 – Planning and designing learning environments and experiences</td>
</tr>
<tr>
<td>#5 – Candidates view professional development as a career – long effort and responsibility.</td>
<td>#5 – Productivity and Professional Practice</td>
</tr>
<tr>
<td></td>
<td>#6 – Social, Ethical, Legal, and Human Issues</td>
</tr>
</tbody>
</table>

The researcher used a set of questions or topics that guided the initial semi-structured interview process. The information gleaned from probing with the use of these avenues for discussion added to the thick descriptive data that this qualitative research produced. (See Appendices E, F, G, and H).

Following the initial on-site interviews, the researcher carried out initial classroom observations with each potential participant in an effort to confirm or negate the information gleaned from the initial teacher interviews. The initial classroom observations occurred on the same day as the initial interviews. The scheduling of the initial classroom observations was determined by the potential participants and respected their scheduling needs.
The researcher gathered data in the form of hand-written descriptive field notes and audio taped recordings of those observations. The notes from the observations as well as from the initial interviews were used to help make the decision about which participants were included in the study. The researcher compared what had been talked about and observed with the potential participants to Standards for Reading Professionals and the International Society for Technology in Education Standards for Teachers.

The researcher initially identified five potential participants for this research study. Two of the five were eliminated as one did not meet the selection criteria and the other did not appear interested in participating in the study. The researcher collected data on three participant candidates and then eliminated one participant after the data collection was complete. After the data was collected, the researcher carefully examined the data. It became evident that the third teacher did not fully meet the selection criteria which included evidence of meeting a majority of the professional standards for the International Reading Association (IRA) and the International Society for Technology in Education (ISTE). Therefore, the research conducted for this study described two exemplary teachers who met all of the selection criteria as a pre-requisite for inclusion in the write-up of this research.

Participants

The participants in this study were two effective primary grade teachers who consistently integrated technology into daily literacy instruction. The teachers in this study were from two very different school settings, one urban and the other rural. In addition, they taught different grade levels with one who taught first grade and the other who taught second grade. This form of representation from the teachers illustrated
Bogdan and Biklin’s (2003) suggestion of “picking additional sites that will illustrate [a] range of settings” (p. 63).

Mr. Mathison was a first grade teacher in a high poverty urban school district in a Midwestern city. The State Board of Education designated Mr. Mathison’s school as being on Continuous Improvement. His school met 1 out of 9 indicators of success. Mr. Mathison had taught school for 240 years and had been assigned to several different buildings within the same urban district during the course of his teaching career. He had experience teaching kindergarten, first, and fourth grades. Mr. Mathison earned a Master’s degree in administration but had no intention of becoming an administrator.

Ms. Glass was a second grade teacher in a rural school district with moderate to high median incomes near a Midwestern city. The State Board of Education designated Ms. Glass’s school as being Effective. Her school met 11 out of 14 indicators of success. She taught school for 29 years during the course of her teaching career. She only had experience teaching second grade. Ms. Glass earned a Master’s degree in *The Art of Teaching*. She was involved in a number of committees at her school including the Right to Read Committee and she helped out with Grandparent’s Day. She also served as her building representative for the teacher’s union in her school district.

Data Collection

The qualitative data collection methods that were used in this study involved non-participant observations, individual teacher interviews, and the collection of relevant teacher and student-generated artifacts at three unique sites.

Bogdan and Biklin (2003) suggested that the researcher conduct intensive case study research individually at each site and believed that,
When they do multi-case studies, most qualitative researchers do not do field work at more than one site at a time. They do their fieldwork for one case and then move to the next . . . The reason for this is mainly that doing more than one site at a time can get confusing. There are too many names to remember, too much diverse data to manage. After you finish your first case, you will find that in multi-case studies subsequent cases are easier; they take less time than the first. Not only have you improved your technique, but also the first case study will have provided a focus to define the parameters of the others. (p. 63)

The researcher selected one site to focus on for each chunk of time during the 3-month data collection time frame. The researcher conducted 16 hours of classroom observations and 16 hours of interviews for a total of 32 hours of data collection. Merriam (1998) suggested, “The overall time spent on the site, the number of visits, and the number of observations made per visit cannot be precisely determined ahead of time” (p. 100). Merriam also recommended, “Long-term observation at the research site or repeated observations of the same phenomenon-gathering data over a period of time in order to increase the validity of the findings” (p. 204).

This research study employed a comparable amount of observational time for data collection as can be found in case study research conducted by Al-Arfaj (2001) and Honaker (2004) with a total of 34 and 16 observations respectively.

The following was the calendar used for collecting data:

Initial Teacher Interviews and Classroom Observations

March 2006

Data Collection at Site #1 (8 visits)

March 2006
April 2006

Data Collection at Site #2 (9 visits)

May 2006
June 2006
Gall, Gall, and Borg (2003) referred to non-participant observation techniques as assuming the role of “complete observer.” Gall et al. defined the complete observer as “the observer’s maintenance of a posture of detachment while collecting research data in a field setting” (p. 620).

The researcher conducted ongoing face-to-face semi structured interviews with the teacher participants in the study. Gall et al. (2003) defined semi structured interviews as, “a type of interview in which the interviewer asks a series of structured questions and then probes more deeply with open ended questions to obtain additional information” (p. 636). The researcher conducted interviews for approximately one hour in length with each research participant following scheduled observations during the data collection phase of the study. The researcher plans to conduct interviews with each participant after every third or fourth classroom observation. Argyris and Schon (1975) validated using the interview technique as a form of data collection in the research study combined with classroom observations, “Because much practical knowledge is implicit, teachers’ reasons for selecting certain strategies may not be clearly understood until teachers try explaining their actions” (p. 324, as cited in Isenberg, 1990).

Research Plan

Table 2 outlines the research plan employed in this study.

Data Collection Procedures

Data for this research study was managed both electronically and in hard copy using filing systems. The researcher collected data in the form of field notes from classroom observations, transcriptions from interviews, and the compilation of relevant artifacts. Patton (as cited in Merriam, 1998) pointed out,
<table>
<thead>
<tr>
<th>Questions</th>
<th>Purpose</th>
<th>Assumptions</th>
<th>Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?</td>
<td>To discover what teachers believe to be important when teaching early literacy skills while integrating technology.</td>
<td>The two teachers will be able to articulate their beliefs about integrating technology with literacy instruction.</td>
<td>Data from participant interviews, classroom observations, and analysis of relevant artifacts.</td>
</tr>
<tr>
<td>What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?</td>
<td>To describe literacy events and activities that effective early childhood literacy teachers integrate with technology.</td>
<td>The two teachers will demonstrate the integration of technology with daily literacy instruction in authentic and meaningful ways.</td>
<td>Data from classroom observations, analysis of relevant artifacts, and interviews.</td>
</tr>
</tbody>
</table>
Table 2 (continued)

*Research Plan*

<table>
<thead>
<tr>
<th>Questions</th>
<th>Purpose</th>
<th>Assumptions</th>
<th>Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>What experiences helped form these beliefs and practices?</td>
<td>To discover what shaped and continues to nurture these beliefs.</td>
<td>The two teachers will be able to articulate their beliefs about integrating technology with literacy instruction.</td>
<td>Data from participant interviews and analysis of relevant artifacts.</td>
</tr>
<tr>
<td></td>
<td>To discover what factors influence their teaching of literacy and integrating technology</td>
<td>The teachers will be able to generate authentic and meaningful artifacts and demonstrate authentic interactions with colleagues and others that will support the richness of data collection and analysis for the purposes of this research.</td>
<td>Data from participant interviews, analysis of relevant artifacts, and classroom observations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The teachers will be able to generate authentic and meaningful artifacts and demonstrate authentic interactions with colleagues and others that will support the richness of data collection and analysis for the purposes of this research.</td>
<td></td>
</tr>
</tbody>
</table>

Multiple sources of information are sought and used because no single source of information can be trusted to provide a comprehensive perspective. By using a combination of observations, interviewing, and document analysis, the fieldworker is able to use different data sources to validate and cross-check findings. (p. 244)

The researcher engaged in compiling field notes, which included: jotted notes, descriptive field notes, personal diary notes, and coded analytical notes. The compilation
of various forms of field notes added to the thick descriptions this research provided. The researcher employed the use of jotted notes by handwriting them in a field journal. The researcher compiled jotted notes and took a written account of the events that transpired for the entire length of observational time.

Following the formal observation, the researcher compiled the initial jotted notes into a more descriptive format. As Merriam (1998) suggested,

For the actual writing of [descriptive field notes] may take as long or longer than did the observation! Indeed, a reasonable rule of thumb here is to expect and plan to spend as much time writing notes as one spent observing . . . All the fun of actually being out and about monkeying around in some setting must also be met by cloistered rigor in committing to paper—and therefore to future usefulness—what has taken place. (p. 105)

Once the jotted observational notes were transformed into descriptive field notes, the researcher employed coding techniques to further transform the descriptive field notes into analytic notes.

The researcher digitally recorded interviews as well as observation, which were transcribed and the data was coded and indexed as necessary. The coding and indexing used by the researcher allowed for the rich data gathered from the field observations and interviews to be easily accessed throughout the study.

An ongoing form of field notes the researcher compiled were personal diary notes and were documented in the field journal as Observer Comments “OC” as suggested by Merriam (1998). She also recommended the following procedure for compiling Observer’s Comments:

An important component of field notes is observer commentary; comments can include the researcher’s feelings, reactions, hunches, initial interpretations, and working hypotheses. These comments are over and above factual descriptions of what is going on; they are comments on and thoughts about what is observed or speculating as to what it all means, the researcher is actually engaging in some
preliminary data analysis. The joint collection and analysis of data is essential in qualitative research. (p. 106)

The researcher generated observer comments as personal diary notes by hand during actual observations and then soon after the formal observations, transcribed the handwritten diary notes into digital word documents that were archived in a computer file labeled as “personal diary notes.”

Data Analysis

Once the data collection began, the researcher began coding field notes into appropriate themes as they emerged. Patton (2002) reminded us, “Developing a manageable classification or coding scheme is the first step of analysis” (p. 463).

Merriam (1998) defined coding as,

Nothing more than assigning some sort of short hand designation to various aspects of your data so that you can easily retrieve specific pieces of the data. The designations can be single words, letters, numbers, phrases, or combinations of these. Coding occurs at two levels—identifying information about the data and interpretive constructs related to analysis. The coding scheme can be quite simple, as in identifying a theme that can be illustrated with numerous incidents, quotes, and so on. Or it can be quite complex, with multilevels of coding for each incident. (Strauss, 1987; Strauss & Corbin, 1990; as cited in Merriam, p. 164)

As data was collected during each individual case, also known as within case analysis (Merriam, 1998), the researcher used an initial coding system of employing a series of color schemes. After the descriptive field notes and personal diary notes were digitally generated, the researcher initially reviewed the notes, making a first list of obvious themes that emerged. Using this initial themed list, the researcher then assigned a color-coding scheme to the initial themes. The researcher proceeded to read carefully through the notes and electronically highlighted the chunks of data with the appropriate color that identified themes for each data set.
The researcher employed the constant comparative method during the within case analysis (Merriam, 1998) phase. Following Merriam’s recommendations, the researcher’s plans to “begin with a particular incident from an interview, field notes, or document and compare it with another incident in the same set of data or in another set” (p. 150). By using the constant comparative method as described by Merriam, the researcher employed more complex coding schemes as necessary in the ongoing analysis of the data during the within case analysis phase of the study. As each case ended and a new one began, the researcher modified (added or deleted) various themes that became relevant or irrelevant.

Once the data collection process was complete for each separate case, the researcher employed a second phase of analysis that involved conducting a cross case analysis of the data collected. Merriam (1998) identified,

The level of analysis can result in little more than a unified description across cases, it can lead to categories, themes, or typologies that conceptualize the data from all the cases; or it can result in building substantive theory offering an integral framework covering multiple cases. (p. 195)

Following the cross case analysis phase, the researcher engaged in a third level of analysis and constructed a grounded theory that was derived from the data (Glaser & Strauss, 1967). Borg et al. (2003) defined grounded theory as, “An approach to theory development that involves deriving constructs and laws directly from the immediate data that the researcher has collected rather than drawing on an existing theory” (p. 626). Merriam (1998) summarized,

Data analysis is a process of making sense out of data. It can be limited to determining how best to arrange the material into a narrative account of the findings. More commonly, researchers extend analysis to developing categories, themes, or other taxonomic classes that interpret the meaning of the data. The categories become the findings of the study. When categories and their properties
are reduced and refined and then linked together by tentative hypotheses, the analysis is moving toward the development of a theory to explain the data’s meaning. This third level of analysis transcends the formation of categories, for a theory seeks to explain a large number of phenomena and tell how they are related. (p. 192)

Displaying the data took the form of “stacking comparable cases” as suggested by Miles and Huberman (1994). Individual cases were displayed using visuals and then a cross case analysis was conducted. Miles and Huberman recommended,

You write up each of a series of cases, using a more or less standard set of variables (with leeway for uniqueness as it emerges). Then you use the matrices and other displays to analyze each case in depth. After each case is well understood (the cross-cutting variables may evolve and change during this process), you “stack” the case-level displays in a “meta-matrix,” which is then further condensed, permitting a systematic comparison. (p. 176)

The researcher in this study utilized this process during all phases of the study and used it ultimately as a vehicle for displaying the data. The displays used were similar in form to the example below:

<table>
<thead>
<tr>
<th></th>
<th>Themes</th>
<th>Themes</th>
<th>Themes</th>
<th>Themes</th>
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<tbody>
<tr>
<td><strong>Case Study #1</strong></td>
<td>xxxxxxxxxxxx</td>
<td>xxxxxxxxxxxx</td>
<td>xxxxxxxxxxxx</td>
<td>xxxxxxxxxxxx</td>
</tr>
<tr>
<td><strong>Case Study #2</strong></td>
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<td>xxxxxxxxxxxx</td>
</tr>
</tbody>
</table>

Building Credibility and Trustworthiness

The researcher honored the importance of the data collected to be valid, reliable, and trusted. Triangulation of data as defined by Borg et al. (2003) is “the use of multiple data-collection methods, data sources, analysts, or theories as corroborative evidence for the validity of qualitative research finding” (p. 640).

The researcher ensured triangulation of data by means of multiple data collection including data collection in the forms of interview transcriptions, observation notes, and
the analysis of relevant artifacts. In addition, the use of free lists and pile sorts (Borgatti, 1999) during the initial and subsequent interview process added yet another dimension of reliability. Borgatti recommended,

Free lists are obtained as part of a semi-structured interview, not an informal conversation. With literate informants, it is easiest to ask the respondents to write down all the items they can think of, one item per line, on a piece of paper. The exact same question is asked of the entire sample of respondents. We then count the number of times each item is mentioned and sort in order of decreasing frequency. (p. 1)

As a follow up to the free listing activity, Borgatti recommended the use of pile-sorts, which involved the use of 3x5 index cards. The participant was given a stack of index cards, asked to make a list of words related to the topic, with one word on each card, and finally asked to pile them into meaningful categories. This technique offered insights as the researcher followed up with subsequent interviews and observations. In addition, since the data was being collected in multiple formats and at various times, triangulation of data was increased.

The researcher employed member checking with each participant in an effort to confirm the accuracy of the data collected throughout the study. Member checks as explained by Merriam (1998) is “taking data and tentative interpretations back to the people from whom they were derived and asking them if the results are plausible” (p. 204). The researcher conducted member checks at the end of data collection phases with each of the two participants. This aligns with Merriam’s recommendation of “doing this continuously throughout the study” (p. 204).

Long-term observations at research sites were also used in this research study. Merriam (1998) suggested “gathering data over a period of time in order to increase the validity of the findings” (p. 204). The researcher in this study collected data during a 3-
month period and engaged in a total of 16 actual classroom observations and 16 one-hour interviews.

The researcher controlled for researcher bias by keeping diary notes in the form of observer comments. The use of diary notes or observer comments helped to control for researcher bias as she was a former first grade teacher who integrated technology with her teaching on a regular basis.

Observer comments defined by Bogdan and Biklin (2003) were,

Sections of field notes where the researcher steps back from the description of what he or she is observing to reflect on what he or she is learning. Observer’s comments also contain comments about methodological problems and other aspects of the study at hand. (p. 260)

These diary notes were integrated throughout the data collection and analysis phases, and referred to frequently as they guided further inquiry throughout the study. Merriam (1998) pointed out that, “clarifying the researchers’ assumptions, worldview, and theoretical orientations” (p. 205).

The researcher employed the use of inter-raters at two junctures during this study. Initially, the use of an inter-rater was employed as the researcher prepared to conduct the initial teacher observation. In collaboration with an expert, the researcher developed an observation template that was used to gather data during the observations in this study. The observation template can be found in this document in Appendix T. After constructing the template, the researcher and the expert conducted one initial observation together, to confirm that the observation tool was functional and provided a vehicle for recording accurate information. Collectively, they observed with 90% accuracy which deemed the tool as valid.
The second instance for use of two additional inter-raters was employed during the final data analysis phase. After careful analysis of the data, the researcher provided the inter-raters with a sampling of 50% of the interview data and 50% of the observation data. The researcher directed the inter-raters in what to look for by providing 12 predetermined categories. The results of the inter-rater exercise revealed that, collectively, the inter-raters found 11 of the 12 categories represented in the data, which was a match of 92%. For the observation or teacher practice data, there was a match of 83% as 5 out of the 6 categories were found. For the interview or teacher belief data, there was a match of 100% as 6 out of the 6 categories were found.

The researcher used pseudonyms throughout the narrative of the study to assure that no identifying information would be able to be traced back to actual participants.

Delimitations

This study was conducted in one urban and one rural school district in a Midwestern city. The participants for this study were chosen based upon purposive sampling and did not include representation from other urban or rural districts in the United States. The study focused solely on primary grade teachers of first and second grade students.

Limitations

This study was limited by the use of case study methodology and a small sampling size, as its findings were not generalized to the greater population of primary grade teachers in the United States. The validity of the case study design was limiting in that it is valid only to those readers who are able to identify in some way with the content of this study and its participants.
Summary

This chapter highlighted the relevancy of multi-case studies as an appropriate research methodology for this investigation. A detailed description of the research design, which includes participant selection and a timeline for the study, was offered. In addition, the ways in which the researcher collected, managed, analyzed, and ensured accuracy of data throughout the study were presented. The researcher provided methods for building the credibility and trustworthiness of this study. A statement of the goal of the study was also offered. Finally, Connelly, Clandinin, and He (1997) validated the rationale for this study as they confirmed that,

Teachers’ knowledge is an essential component in improving educational practice. Those concerned with improving education need to be concerned not only with what it is they wish to happen in learning but also with teachers’ knowledge and the professional knowledge landscapes in which teachers work. (p. 674)

The following research questions guided this study:

1. What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?

2. What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?

3. What experiences helped form these beliefs and practices?

Case study methodology was employed in this study. The researcher conducted observations and interviews with two teacher informants. Classroom observations were approximately one hour in length and the time spent with each teacher during the interview process was also approximately one hour in length. The data collection for this study was conducted over a 3-month period and the researcher focused on one teacher
informant at a time, which segmented the data collection into two separate phases, one for each teacher.

The researcher managed the data in both print and electronic files and engaged in ongoing analysis during the data collection process. The Constant Comparative (Merriam, 1998) method of data analysis was employed as categories emerged and were further refined through the multiple phases of analysis. During the final data analysis segment, a grounded theory emerged which was derived from the data.

The researcher in this study employed many ways to ensure credibility and trustworthiness for this study. The use of inter-raters was employed during two phases of the study. Member checking was also conducted with the two teacher informants to ensure the accuracy of their words. In addition, the use of pseudonyms throughout the narrative helped to support the anonymity of the teacher participants.
CHAPTER IV
RESULTS OF THE STUDY

The purpose of this study was to investigate the beliefs and instructional practices of two exemplary primary grade teachers as they integrated technology into daily literacy instruction. In addition, this study sought to expand the knowledge base for integrating technology with literacy instruction in the primary grades and to provide exemplary models for those teachers wishing to effectively integrate language arts with technology into their own daily practice. The results of this study are drawn from data regarding the research questions that guided this study:

1. What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?
2. What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?
3. What experiences helped form these beliefs and practices?

Data collection procedures for this study included classroom observations, in-person teacher interviews, and the collection of various artifacts generated by the teachers for their instructional purposes. Analysis of the data identified common themes across all data sources that reflected these teachers’ practices and beliefs about integrating technology into their daily literacy instruction (Miles & Huberman, 1994). For each research question, a descriptive case study of each teacher is presented with examples drawn from the data, followed by a cross-case comparison of the two teachers.
Overview of Mr. Mathison’s Classroom

Mr. Mathison was a first grade teacher in an urban school district in a Midwestern city. Mr. Mathison had taught school for 24 years and had been assigned to several different buildings within the same urban district during the course of his teaching career. He had experience teaching kindergarten, first, and fourth grades. Mr. Mathison earned a Master’s degree in administration but had no intention of becoming an administrator. He stated that he was completely content in his current position as can be evidenced in his statement, “I like where I am. I like being at ground level. I like being able to work with students. There may come a time sometime, but I don’t see it in my future” (Interview, 5/26/06).

Mr. Mathison’s classroom was rich with vocabulary. Words as well as images were displayed all around the room, and there were many choices for reading books. The room was very inviting and pleasant to look at in terms of the amount of literature available in the classroom. A lot of reading was going on and the children were very engaged in the reading process. When the children had free time, they did not waste it; instead, they engaged themselves with literature. The children were drawn to literature and were often seen discussing something related to a book they read. The technology in the classroom was also prevalent and consisted of one computer at each of the five student worktables. In addition, the teacher had a main computer from which he taught that connected to a Smart Board projection screen. Most importantly, the technology worked, was regularly turned on, and was utilized for meaningful activities on a daily basis (Interview, 5/12/06).
Data collection in Mr. Mathison’s classroom consisted of eight hours of classroom observation and nine face-to-face interviews. During the course of the data collection period, his students were involved in a culminating project focused on learning about birds, which integrated technology with science and literacy. The project was named “The Museum Project.” The children worked with a variety of media and were the curators for a museum piece about birds. Throughout a 3- to 4-week period, the first graders created the entire museum piece and became the docents for their piece. When visitors came to the bird museum the children took turns and shared everything they knew about their particular bird. Mr. Mathison chose birds as the focus of this project because the students could watch birds in their own neighborhoods. Mr. Mathison assigned a bird to each group on which to focus. The children were responsible for reading books to learn everything they could about their group’s bird. Each student became a specialist in a target area, which included eggs, nest, young, and food for their particular bird. At the completion of the project, each group member presented information about his or her assigned bird. The informational resources used to construct the project included nonfiction books and web sites, which were chosen by Mr. Mathison. The students were given a link to a web page with all the web sites they needed to access for this project. When the children visited these sites, they listened to the sounds of the birds, watched movies about the birds, and looked at pictures of their birds. They searched for information on the web sites and helped each other read the words on these sites, even though 99% of the web sites were not geared to a first-grade level. After gathering the necessary information, the groups designed and created their own bird’s nests, which were also displayed at the museum presentations. The children first searched
for all of their pictures in the trade books that they would use in their presentations. Then, Mr. Mathison scanned the pictures in the books for each group. The children also found pictures from websites and then filed them in folders on their desktops. They also decided upon the sequence for the pictures they had gathered and pulled them into iMovie, as they made their group slide presentation for the museum piece. Mr. Mathison found voices for each bird so that during the slideshow presentations the bird voices played. As a result, the room was filled with bird sounds.

For the presentation, the children transformed their computer terminals into kiosks. Mr. Mathison used tag board and cut out a hole for each computer monitor to show through. The children also created designs to decorate the outside edge of the tag board to display the important information they had gathered about their group’s bird. They told Mr. Mathison the words they wanted to use for their tag board displays and he cut the letters with a die cut machine for each group. The children then assembled the letters into words and glued them onto their tag board computer displays. The children also drew pictures illustrating everything that was important for their bird onto the tag board displays. The final preparation for the museum project involved the students practicing their speeches for the final museum presentations. With much anticipation, the bird museum was opened for visitors. Throughout the day, children from other classrooms and visitors came to learn about the featured birds (Interview, 5/6/06).

Overview of Ms. Glass’s Classroom

Ms. Glass was a second grade teacher in a rural school district near a Midwestern city. She taught school for 29 years during the course of her teaching career. She only had experience teaching second grade. Ms. Glass earned a Master’s degree in The Art of
Teaching. She was involved in a number of committees at her school including the Right to Read Committee and she helped out with Grandparent’s Day. She also served as her building representative for the teacher’s union in her school district.

Ms. Glass’s classroom was rich with print. Print could be seen abounding on many wall spaces in her room. Her teacher desk was located in a corner of the room, and placed in that location, to make more space for the children’s desks. Ms. Glass felt strongly about establishing a family-like community in her classroom and arranged the seats in table groups instead of traditional rows. She felt that if the children could see and talk with each other as they worked throughout the day, then barriers would be broken and a true sense of cooperation might be established in the classroom. Ms. Glass’s classroom was filled with print resources as well as technological resources. She had a computer, printer, and scanner at her desk as well as four computer workstations for the children. The focal point of instruction was the ACTIV Board, an interactive white board, which was also connected to her personal computer. The ACTIV Board was located in a prominent place in the front of the classroom and provided the backdrop for the integrated learning experiences that took place in her classroom.

Data collection in Ms. Glass’s classroom consisted of eight hours of classroom observations and seven face-to-face interviews. During the course of the data collection time period, Ms. Glass involved her students in a variety of technology-related literacy activities that required the use of an ACTIV Board as well as personal laptops for each student in her classroom. Ms. Glass used the ACTIV Board almost like a chalkboard as she displayed the daily activity sheets and chart papers in electronic formats rather than in traditional hard copy for instruction. She encouraged lively and engaging discussions.
around this virtual chalkboard while also allowing the children to physically interact with the ACTIV Board as she continually called them up to participate in various tasks at the white board. In addition, Ms. Glass focused on engaging the children in meaningful dialogue and encouraged communication skills by allowing the children to speak into a microphone that was passed from student to student during whole group instruction.

Ms. Glass integrated the ACTIV Board into daily literacy teaching by planning activities that allowed for the children to learn and practice important literacy skills. Ms. Glass used the ACTIV board to encourage story sequencing, brainstorming for writing, handwriting practice, and written composition. In addition, she utilized the ACTIV Board for math and science-related activities, which also fostered rich dialogue amongst her students and her.

Ms. Glass was an effective teacher of literacy as she displayed many appropriate characteristics related to the standards for literacy professionals. She was more teacher-centered in her approach to encourage language development in her classroom as she directing the children in many discussions throughout each day. She was able to articulate the major components of reading as suggested by the IRA standards which include, phonemic awareness, word identification and phonics, vocabulary and background knowledge, fluency, comprehension strategies, and motivation. She believed that all components needed to work together so that children could move closer to becoming fluent readers. Ms. Glass used instructional grouping strategies that consisted mostly of whole group work; however, she did work with small groups and individuals as she felt necessary in support of their literacy needs. She used a wide range of instructional practices which included the use of technology-based literacy practices. She used her
students’ backgrounds to facilitate learning experiences within her classroom and was an enthusiastic model of lifelong reading and writing for her students.

Research Question 1

What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?

The purpose of this question was to examine the practices in which the two teacher informants engaged when integrating technology into their daily literacy instruction. Data included observational field notes as well as relevant teacher-generated artifacts.

Analysis of the data collected revealed three major themes that characterized how the teachers integrated technology into their daily literacy practices: engagement with technology, collaboration/team building, and technology-centered discussions. In addition to these major themes, 11 categories were also established in an effort to further define the nature of each theme as evidenced in each case. The 11 categories included: motivation/enthusiasm, creativity, constructivist/facilitator, active learning, involving parents through technology, respect for students, individualized instruction, students working together, teachers working with colleagues, building schema, and oral communication skills.

The three major themes were evident in both teachers’ practices; however, they were not performed in the same ways. The arrangement of these themes and categories does not represent their importance; rather their sequence helps to tell the story of each teacher’s integration of technology into daily literacy instruction.
Table 3 summarizes the emergent themes and categories for both teacher informants in relation to Research Question #1.

Table 3

*Summary Chart for Research Question #1*

<table>
<thead>
<tr>
<th>Research Question #1</th>
<th>Mr. Mathison</th>
<th>Ms. Glass</th>
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<tbody>
<tr>
<td>Themes</td>
<td>Categories</td>
<td>Categories</td>
</tr>
<tr>
<td>Engage. Technology</td>
<td>Motivation / Enthusiasm</td>
<td>Motivation / Enthusiasm</td>
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<td></td>
<td>Active Learning</td>
<td>Active Learning</td>
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<tr>
<td>Collaboration / Team Building</td>
<td>Involving parents through technology</td>
<td>Involving parents through technology</td>
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<td></td>
<td>Respect for students</td>
<td>Respect for students</td>
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<td></td>
<td>Students working together</td>
<td>Individualized Instruction</td>
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<td></td>
<td>Students working together</td>
<td>Students working together</td>
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<tr>
<td>Technology-Centered Discussions</td>
<td>Oral Communication Skills</td>
<td>Building Schema</td>
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<tr>
<td></td>
<td></td>
<td>Oral Communication Skills</td>
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</tbody>
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*Mr. Mathison*

*Engagement With Technology*

For Mr. Mathison, the two categories that emerged for engaging with technology were motivation/enthusiasm and active learning. Mr. Mathison employed motivation and enthusiasm when both he and his students engaged with technology. In addition, he provided many opportunities for his students to be actively engaged with technology, both physically and cognitively.
Mr. Mathison was extremely enthusiastic about his teaching and his work with the children in his classroom. This excitement was evident on a number of levels and two-fold in that Mr. Mathison’s passion was conveyed to and accepted by the children in his classroom. Although Mr. Mathison felt a true sense of devotion to the use of digital media in his life and in his teaching, print-based literature was also held with high regard in his classroom. Mr. Mathison was a realist in that he knew utilizing technology in predetermined ways could at times be daunting. There were several instances where he had planned experiences for the children in which they would be using technology to gather information in digital form to prepare for their museum projects and the plans did not work out as he had hoped. One such instance occurred when Mr. Mathison asked the children to go to their seats and practice dragging some pictures into files on their desktop computers. As they worked on this task, Mr. Mathison circulated around the classroom to assist the children as necessary. He continued to help the children at their seats and noticed there were some technical issues he had not anticipated. At that time, he announced that he had to make the next things for them and that it might take a few minutes. As he worked on this issue, he soon realized that he needed to install some new software in order for what he had planned to actually work. He gave the children a paper/pencil task to work on instead, while he installed the necessary software. Mr. Mathison circulated around the classroom, as he worked at each computer and reminded the children to ask their team members for assistance if needed during the paper/pencil task. As the children finished their paper/pencil task, they began to read leveled-books independently. As they read, Mr. Mathison realized that he did not have all of the software available that needed to be installed. Mr. Mathison resigned himself to the fact
that this changed everything and the big exciting plan for the day was just not going to happen (Field notes, 5/17/06). After this discovery, he commented that, “At least they are trained to get their books . . . so literacy is happening in spite of technology . . . so, it just goes to show you can’t put all your eggs in this basket” and “With that much excitement about reading, I’m not stopping them” (Field notes, 5/17/06).

Despite a few technical glitches like the example described above, Mr. Mathison’s excitement continued to permeate through his interactions with the children as they both utilized technology directly during instruction and prepared for its use. During one observation, the children prepared to locate pictures from print-based resources that they would eventually include in their digital slide shows. In preparation for this activity, Mr. Mathison visited the local library to gather a large collection of non-fiction bird-related resources. Five distinct birds were chosen as the focus for this project, which included the red-winged black bird, the blue heron, the mallard duck, the bald eagle, and the American robin. The children were instructed to find pictures of nests, young, food, and beaks for their assigned birds. Each student was assigned a particular task. One person was made responsible for finding nest pictures; one person was made responsible for finding egg pictures, and so on. As the children searched throughout the print-based resources, they were seated at their worktables, and Mr. Mathison was seated at the horseshoe-shaped table near the scanner in his classroom. As the children found their appropriate pictures, they approached the table for Mr. Mathison to scan their pictures. Mr. Mathison scanned each picture individually and manipulated the scanner program as necessary. The scanning of pictures continued for about a 30-minute time period. During the scanning, Mr. Mathison helped individual children locate appropriate
pictures if they needed assistance. In addition, as the children continued to bring pictures up to the horseshoe table for scanning, Mr. Mathison re-directed the children that already had gotten their images scanned and suggested that they read a library book or some other text in the classroom. During the course of these interactions, Mr. Mathison commented and showed his enthusiasm for the children’s work by stating, “Oh . . . excellent nest, I love it, that’s a good one. I think you’ll like having this one” (Field notes, 5/15/06). Mr. Mathison also displayed to the children that he was truly interested in their work by asking, “Which is yours? Nest . . . is that nest? That’s good and that is a great blue heron, I love it!” (Field notes, 5/15/06). Mr. Mathison clearly revealed his motivation for finding just the right images and for his persistence with the scanning process as he commented to one student that, “I know what this one is . . . young. It’s a good young. In fact, it’s such a good one that we can’t use the whole page, but we’re going to try. Watch . . . somebody’s got great photography” (Field notes, 5/15/06).

After all of the images from the print-bound resources were scanned, Mr. Mathison compiled the images into a generic slide show presentation. He shared this preliminary slide show with the children and displayed all of the pictures that recently had been scanned. Mr. Mathison paused at a picture of bird eggs and in doing so, stopped to take a picture of one student pointing to his egg picture. He was so intent on taking the students through this entire process that he gave explicit instructions to this student while the children watched. Mr. Mathison directed the student in this way,

The next step is . . . let’s take Derrick’s egg . . . Derrick has to pretend that he is advertising his egg. So he’s going to have to stand and let me take a picture of him advertising his egg. So Derrick, would you please stand up there by the screen, and just kind of point to the egg if you were showing or demonstrating where the egg is in the picture . . . it will make sense. (Field notes, 5/15/06)
Mr. Mathison continued to guide the student’s position and eventually took a
digital photo of the child. He cropped the picture to perfection and what resulted was that
the child was superimposed into the original egg picture. Mr. Mathison directed the
student to pose in such a way that it looked like the child was directly pointing to the egg
while also being part of the picture. With great anticipation, Mr. Mathison unveiled the
final picture that would be used in some way for the museum project. As the picture was
displayed, Mr. Mathison exclaimed, “There he is! He’s in the nest, look, he’s in the nest . . .
the student is right there in the nest!!” (Field notes, 5/15/06). His excitement was
contagious and the children anxiously waited for the day their own images would be
personalized in this way. Mr. Mathison’s persistence and motivation for this task was
evident and he confirmed to the children that they too would have the opportunity to pose
for their own images. He stated, “Ladies and gentlemen, I’ll be doing each one of you
pointing to whatever it is . . . your egg, your nest—you’ll be there!” (Field notes,
5/15/06).

Mr. Mathison was also intent on getting the children actively engaged with using
the computer technology in their classroom. In Mr. Mathison’s classroom, actively
engaged with using computer technology took two major forms. One form involved the
children having multiple opportunities to be active physically while they manipulated the
computer technology in various ways. The other form of active learning in this classroom
was not physical, but rather a mental engagement with the technology either directly or
indirectly. Much like the physical activity, this cognitive engagement occurred in many
different ways. Both types of active involvement are illustrated in the passages that
follow.
As part of the bird museum project, Mr. Mathison charged each of the five table groups with the task of locating pictures for their slide shows from both print and Internet sources. The task for this particular activity was for the children to take turns dragging a collection of their pictures into the I PHOTO program. By engaging in this particular task, the children were preparing to sequence their photos into a meaningful presentation that would ultimately be integrated into the iMovie program on their desktops. Once in iMovie, the photos were played as a running slide show, not as the individual pictures they had each chosen. Through this process, Mr. Mathison gave explicit instructions to each student and their respective groups, as he talked them through this task. Certainly, it would have been very easy for Mr. Mathison to insert the pictures for all of the groups in a few short clicks of the mouse, but he was determined to have the children take ownership of the project. Thus, they were responsible for manipulating the graphics in such a way that they would eventually create their iMovie. Therefore, this task required skillful direction from Mr. Mathison. A few of the specific directions Mr. Mathison gave were as follows:

In a moment, what you are going to be doing is you have to go the bottom of the screen and turn on the one called “I PHOTO”’ the one called I PHOTO that has the palm tree and the camera . . . you would click it and it would start. This one has pictures that I put on mine . . . but I can’t see the edge over here . . . this totally blocks the whole screen . . . so I have to go down in the corner and click and drag it over . . . there’s all my stuff. (Field notes, 5/17/06)

Mr. Mathison also made an effort to include all of the group members in this process. Each student was assigned a letter, which for the table group collectively spelled, “I CAN.” In this way, Mr. Mathison carefully included all students in the active engagement of manipulating the computer program in some way for their group during each activity. Mr. Mathison stated,
“A” would you please go back to your seat and would you get your computer to look like this . . . you have to turn on “I PHOTO” and then drag the corner of I PHOTO over so that it doesn’t take up the whole place. (Field notes, 5/17/06)

As mentioned previously, Mr. Mathison wanted the children to get the full experience of manipulating the computer program by looking carefully at all of the signs on the screen that would prompt them for their next move. Mr. Mathison explicitly told them what to look for and the procedure for completing the task. He then allowed them to go and find their pictures on their own as he stated,

Now, if you take one of these and drag it over, see how you get that little plus sign? Then you let go of it . . . and there it goes, there’s one. So you could do the next one, drag it over . . . oh this one says I already have this because I already did this before . . . and you keep dragging until you get all of those and pull them over . . . go until you get them all. (Field notes, 5/17/06)

Mr. Mathison involved the children actively as he prompted them to think very carefully about their own specific pictures and positions. He remarked, “And what you will need to be thinking about is when it’s your turn to pose, how will you point to your subject?” (Field notes, 5/16/06). Mr. Mathison shared a variety of examples from students pointing to their pictures in previous years, to offer plenty of examples for them to draw from. While this sharing took place, even though the children may have just been watching other photos and positions at the time and not actively doing anything, he strongly encouraged them to be thinking about their own turn. He reminded them of this by encouraging the children to continually think of their own image.

When Tony points to his picture, he has to be standing in the picture. So Tony which way would you be pointing? How do you think? Ok you’re saying, you’re just going to kind of point to the side over to where the picture is. . . . This one is the beak one . . . Antea . . . she’s going to have to point which way? Probably up and to the side. Rashad, what are you doing, nest? Is yours nest? Ok, so you’re going to kind of point up to the nest. (Field notes, 5/16/06)
In this way, even though the children were not physically active in the task at hand, they were cognitively involved. By focusing on images rather than solely on text, Mr. Mathison also fostered in his students an appreciation for visual imagery, which proved evident in the final products for the museum projects.

Active learning was evident as the children searched for their pictures and manipulated print and electronic resources. Once the children found a seemingly appropriate picture, they conferred with Mr. Mathison to make certain they had made a good choice. During the conferral process, Mr. Mathison required the children to be absolutely sure they had made the perfect choice. He prompted them through questioning and certainly helped them out when needed. The following exchange illustrates the nature of his questioning techniques,

Do you have your mallard picture ready? May I see it please? That is a nice picture of a nest . . . is that the one you’d like to use. Something is not right, we should see . . . there should be a whole section on mallard . . . mallard, mallard, mallard . . . 13, 24, let’s go to 28, 29, 30, but no babies, that’s mallard, next, 32, there’s 31, there’s 32, no babies, 86, there’s a mallard but not a baby, 13, there, right there! That’s babies . . . got it! That’s not a great blue heron . . . that’s the wrong type of heron. You have to do blue heron that’s a white heron . . . Keep looking in another book for another nest, that’s not the right kind of nest. Is it? Well you better look . . . Green tail toe heed? Great babies, they are right, it’s not the right bird . . . all that work! There are robin babies in yours . . . finch, woodpecker, oh look at that! Perfect nest picture for your team but you already have one. (Field notes, 5/15/06)

By questioning the children and encouraging them to truly think about the characteristics of their assigned bird, Mr. Mathison laid the foundation for critical literacy. As one can glean from the responses given to the children, just any picture would not suffice. The children had to carefully think about their choices and because of this, a unique form of active learning took place.
Collaboration / Team Building

For Mr. Mathison, the categories that emerged for collaboration/team building were students working together, involving parents through technology, and respect for students. In his teaching practices, Mr. Mathison encouraged many opportunities for the children to work together for authentic purposes. Mr. Mathison strived to increase the involvement of parents through technology related activities. In every classroom encounter, Mr. Mathison showed his students individual respect when interacting with them.

For instructional purposes, Mr. Mathison encouraged collaboration on a variety of levels. He encouraged the children in his classroom to work together on most tasks in which they were involved. He found a sense of collaboration toward the children as he made a concerted effort to respect them as individuals. Although as a rule, parent involvement was minimal in his school setting, he made every attempt to reach out and bridge what was going on in the classroom to the home environments of the children with which he worked daily.

One task that the children were asked to complete involved constructing a bird’s nest for the bird their group was studying. This real-life bird’s nest was displayed during the bird museum, which added authenticity to the presentations. During one observation, Mr. Mathison asked the children to listen carefully for the next two tasks. Mr. Mathison explained that the first task required the children to discuss what was needed to build their nests. The second task that was explained was that the children were to write a letter to their parents reminding them of the items needed for making the nests. Mr. Mathison stated,
You are going to have to talk as a team and decide what it is you need to bring in .
. . and then you are going to have to write a letter . . . and I’ll put the stuff on here
(The Smart Board) . . . and then you’ll have to get a piece of paper to write the
letter on. (Field notes, 5/16/06)

Mr. Mathison then sent the children back to their table groups to look for the items they
needed to build these nests. Continually, Mr. Mathison encouraged the children to talk
with their team members, as various children approached him with questions. He said,
“Talk to your team first to make sure you all know because you have to decide what the
feathers are” (Field notes, 5/16/06). If children were having trouble, he encouraged them
to ask one of their teammates for assistance. He gently reminded them, “Please return to
your seat and work with your team and find out what kind of nest you would need” (Field
notes, 5/16/06).

The children were clearly excited about all that they were learning about their
birds and often approached Mr. Mathison for approval. They also approached him just to
share what they had found. In the spirit of encouraging the children to work together with
their peers, he re-directed individual students as he stated, “Thank you Tony . . . now use
this book with your team, that may have other good pictures you could use” (Field notes,
5/15/06). Camaraderie between students was openly supported as Mr. Mathison
continually reminded the children to check with their teammates or share new found
information with them. He often reminded them to, “Keep looking and get your team to
help you” (Field notes, 5/15/06).

As the children engaged in the activity of locating their “just right” pictures that
were eventually integrated into the slide show presentations for their museum projects,
Mr. Mathison interacted with individual children in such a way that clearly demonstrated
his devotion and respect for them as people. He instinctively knew when particular
children needed extra time spent with them and in a non-demeaning way, invited the
children to work with him individually in locating their picture. In one instance, he called
a student over by asking, “Dante . . . did you get your picture scanned yet? Find me the
robin book and bring it over, we can find them, they are easy” (Field notes, 5/15/06).
With a different student, he approached the same type of circumstance in a similar way
by actually directing the child to come over and work with him. His words were,
“Adonis, come on over . . . let’s try to do yours . . . let’s just see if we can find yours
online” (Field notes, 5/15/06). Mr. Mathison’s words were directive yet non-threatening
and the children knew he truly wanted to help them. Mr. Mathison followed through with
every task that he began as he worked with the children and wanted more than anything,
for the children to have a voice in their own learning. If Mr. Mathison were helping a
child to find that “just right” picture, in the end, the ultimate decision was left to the
child. He wanted to make absolutely certain that the children were happy with their final
products. At the end of each interaction, he mentioned something like this, “You need a
blue heron picture, and there’s one, how about that one for the beaks, that’s a good shot?
Is that okay?” (Field notes, 5/15/06). By asking if it was okay with the children, Mr.
Mathison gave them control of their work and ultimately respected their wishes.

Collaboration was also extended beyond Mr. Mathison’s classroom. As
mentioned previously, the families with which Mr. Mathison worked were seldom
available to be involved at school. This was true due to a variety of circumstances.
However, the most prevalent reason was because many of these parents and family
members were overextended due to the need to hold down two and three jobs, just to
provide their families with basic necessities. Mr. Mathison held deep compassion for the
children and families with whom he worked and tried numerous ways to involve the families in classroom activities.

A big impetus for his desire to integrate technology into his teaching was so that working parents and family members, who were unavailable during regular school hours, could at least tune in to classroom activities by visiting their classroom website. Mr. Mathison developed a classroom website that was used for a variety of purposes. In one way, the website provided a location where electronic teaching activities could be easily accessed by the children. In another way, the classroom website provided a virtual bulletin board where family members checked in at times that were convenient for them. A variety of news-oriented links were posted to keep family members abreast of what was happening in the classroom. One item included on the website took the form of an interactive blog site, where the children posted digital photos of classroom happenings with narratives that site visitors to respond to. Non-graded student work, usually in the form of stories written by the children, were also posted on the website, and family members enjoyed the latest stories written by their children. A large amount of space on the website was devoted to housing interactive literacy games that the children accessed while in the classroom, as well as at home with their families. Interactive games like hangman, cloze procedures, word searches, and concentration games were available. In this way, Mr. Mathison provided a vehicle of communication where family members could engage in activities with their children as well as learn about the activities happening in their classroom.

Mr. Mathison encouraged the use of technology as an impetus for parent involvement in more indirect ways as well. As part of the bird museum project that was
technology infused, the children were asked to collect supplies to build their bird’s nests. One of the tasks the children were charged with was first writing a letter to their parents asking for assistance in collecting the needed items. Mr. Mathison reminded the children, “You have to write the letter to let mom and dad know the things you need to collect” (Field notes, 5/16/06). In this way, the family was connected to the project in an indirect way. To encourage family involvement after the children were home, Mr. Mathison encouraged the children by reminding them:

Tonight and tomorrow night you’ll be going home and collecting the stuff to make your own nest for your own bird . . . now that may mean going to the back yard, the side yard, asking mom and dad if they can help you or maybe you can get permission to go to a neighbor’s so you can get whatever you need for your bird. (Field notes, 5/16/06)

As described in these ways, the involvement of the family in Mr. Mathison’s classroom centered around the direct and indirect use of technology by all stakeholders.

Technology-Centered Discussions

For Mr. Mathison, the category of oral communication emerged in the theme of technology-centered discussions. In Mr. Mathison’s teaching practices, he fostered an environment in his classroom where children’s oral communication skills were developed. He provided many opportunities for the children to interact, which required them to speak and listen for a variety of purposes.

The nature of Mr. Mathison’s classroom infrastructure lent itself greatly to increased communication skills by the students who worked in this environment. The classroom was arranged in such a way that supported open dialogue between and amongst the children and their teacher. The focal point of the classroom was the carpeted area where children gathered for classroom discussions, viewing of presentations, and
miscellaneous commentary. The children were seated at table groups with four to five group members. At each table group, a computer was stationary and was what provided the stimulus for interaction and dialogue among students. Although the technology abounding in this classroom spurred its own level of discussions and interactions, it was Mr. Mathison who orchestrated this environment, where rich dialogue thrived.

On a daily basis, the children were active in learning by doing and talking around these computer centers for a variety of activities. During the observation period for this research study, the children were motivated by their desire to present their bird information in the museum setting. The children engaged in rich discussions while they prepared their materials for the museum. They were also expected to communicate the information they learned to a much larger audience during the museum, which included fellow students, teachers, and parents from their school community. In order for the children to do well in their presentations, they had to really own and know the information for which they were responsible. They engaged in note taking and rehearsing for the museum and arrived at the point where they effortlessly and with great ease talked about their birds. Mr. Mathison encouraged a polished performance and reminded the children, “We’ll work on it next week and then we have to practice what we’ve learned . . . we will practice a number of times before bringing anybody in . . . so we don’t choke on our words” (Field notes, 5/17/06). During the actual presentation, it was also noted that several children questioned the visitors of the museum in an effort to make sure their guests were engaged in the experience.
Summary of Mr. Mathison

Three themes emerged for Mr. Mathison’s instructional practices when integrating technology with literacy instruction, which included engagement with technology, collaboration/team building, and technology-centered discussions. The data also provided evidence for the following categories: motivation/enthusiasm, active learning, students working together, involving parents through technology, respect for students, and oral communication skills.

Mr. Mathison was excited about using technology to support literacy in his classroom, and his motivation encouraged him to continually implement new projects that involved authentic technology use for his first grade students. Mr. Mathison involved the children in projects that required them to be active in both physical and cognitive ways. He encouraged children to collaborate for meaningful purposes. He strived to include parents in the learning process by way of communication through technology and also through their indirect involvement in technology-infused projects. While teaching, Mr. Mathison showed respect for his students and honored their thoughts and ideas. He established a learning community where oral communication skills developed naturally.

Ms. Glass

Engagement With Technology

For Ms. Glass, the two categories that emerged for engaging with technology were motivation/enthusiasm and active learning.

Ms. Glass modeled enthusiasm for using technology in her teaching both as she planned technology-related literacy experiences for her children as well as in the ways in which she carried out these activities in her classroom. Her enthusiasm was evident in
how she orchestrated her classroom arrangement. Her room was arranged so that the children were seated in table groups. The children’s desks faced the focal point of classroom discussions, the ACTIV Board, which was in a sense the classroom’s virtual chalkboard. In reflecting on her acquisition of and how she learned to use this novel piece of technology, Ms. Glass claimed that the ACTIV Board brought her teaching back to life at a time when she was feeling overwhelmed and disinterested in teaching. In addition to the ACTIV board, Ms. Glass was excited about a mobile computer lab that she often used with her students for research projects. She attributed this renewed enthusiasm for teaching and learning to the possibilities that the ACTIV Board and other technologies provided to herself as well as to her students.

Ms. Glass planned literacy-related experiences in her classroom that focused on utilizing the ACTIV Board technology on a regular basis. One such instance occurred during a classroom observation. The children were involved in reading a chapter book and Ms. Glass planned an activity that enhanced sequencing and comprehension skills. Ms. Glass took several sentences from the chapter book and displayed them on the ACTIV Board. After a brief discussion of the chapter that was to be read on this particular day, Ms. Glass explained to the children that they would be manipulating the sentences on the ACTIV Board and placing them in correct sequence according to the activities that transpired in the chapter book. Individual students were chosen to come to the ACTIV Board and move the text to the correct order using the ACTIV Board pencil. During this entire sequence of activity, Ms. Glass complimented the children. She said things like, “Excellent . . . thank you very much” (Field notes, 3/29/06) and reassured the children that she was enjoying the activity just as much as they were.
On other occasions, Ms. Glass integrated the use of the ACTIV Board with handwriting instruction regularly. Children took out their white boards and socks and spent a few minutes practicing cursive H’s and M’s. As the children worked, Ms. Glass asked individual table groups to approach the ACTIV Board and each make a cursive H and M. As the children engaged in this activity, she monitored the children working at their tables. As the table groups worked on forming the letters on the ACTIV Board, Ms. Glass helped and assisted the children as needed. In addition to assisting them with handwriting instruction, she continually complimented their work with the ACTIV Board as she said, “Excellent, I can read that perfectly, you did a great job!” (Field notes, 3/30/06).

The ACTIV Board also was used as a brainstorming tool much like a chart paper and easel in more traditional settings. However, instead of actually writing on the ACTIV Board with the writing utensil, Ms. Glass composed their brainstorming on the computer in a word processing program, which was then projected onto the ACTIV Board screen. As the children offered responses to the writing prompt, Ms. Glass responded in various ways that supported her excitement for the activity. Her excitement was revived by this interactive technology. Ms. Glass said, “That’s what you said . . . Growing beautiful flowers . . . good job!” or “Oh that’s so good!” (Field notes, 3/30/06).

Ms. Glass was excited about providing opportunities for her students to research and find information on various topics. One such instance occurred while the children were using individual laptops. The children had been instructed to go to a search engine like “Google” and start finding information about a particular bird. Then, after locating information, the children were asked to take notes on a note sheet that was provided to
them by Ms. Glass. As the children began this activity, one student asked, “Can we start taking our notes?” and Ms. Glass responded by saying, “I hope you are . . . note take away!” (Field notes, 4/26/06). It was the excitement in Ms. Glass’s voice that inspired the children to get motivated about their task as well.

During this entire experience, Ms. Glass circulated throughout the classroom as the children used the laptops. Ms. Glass reminded the children that if they found an interesting picture of their bird, they could flip their data sheets over and draw a quick sketch of their bird. Ms. Glass continued to monitor and facilitate the activity as the children worked on researching facts for their reports. At the end of the experience, Ms. Glass announced, “This is where it’s at!!!” (As she referred to the children researching using their individual laptops; Field notes, 4/26/06).

Ms. Glass not only integrated the use of the ACTIV Board with daily literacy activities but also incorporated its use into science and math related learning experiences. During one observation, Ms. Glass led the children in an inquiry lesson about fingerprints. Each student was to find out if their individual fingerprints were whirls, arches, or loops. To aid in their determination, Ms. Glass displayed each fingerprint type on the ACTIV Board so they would be visible to all of the children. With this as a backdrop for the activity, a rich discussion ensued as the children worked individually and collaboratively on the task. During the course of the experiment, Ms. Glass asked, “Does anybody have a question about your pinky? I can’t believe that everyone of them is an arch . . . that’s amazing . . . very good!” (Field notes, 4/7/06).

There were also occasions during various activities where the ACTIV Board may have needed some minor adjustment. Instead of viewing this as a negative experience,
Ms. Glass casually stated, “Oh . . . we have a technical difficulty . . . sometimes we have to reset the board . . . it’s no problem . . .” (Field notes, 4/26/06). Ms. Glass handled other technical glitches with ease as well. She insisted that having a back-up plan was a necessity in teaching with technology. On one occasion, she planned a specific lesson where she needed to use her scanner. As she reflected on that experience, she noted, “This morning I had this lovely lesson and my scanner isn’t working . . . so the downside of technology is to always have a PLAN B” (Field notes, 3/30/06). Having alternative plans when hoping to use technology required Ms. Glass to think of unique and different ways to engage the children with content, so that learning opportunities would not be missed.

Ms. Glass encouraged active learning in her classroom in two ways with physical engagement as well as with cognitive engagement. She consistently called the children up to the ACTIV Board to manipulate text or information in physical ways. She also encouraged children to engage mentally in activities.

During the course of observations in Ms. Glass’s classroom, children were continually encouraged to physically get out of their seats to interact with the technology during handwriting instruction. Ms. Glass often said, “Ok . . . Darian’s table go on up [to the ACTIV Board] . . . you may choose which one you want . . . an M, N, or an H” (Field notes, 3/30/06). She also encouraged them to pay attention to their formation as she reminded the children, “Remember, when you make the H, be sure to touch that top line . . . and you can choose which one you want to do” (Field notes, 3/30/06).

Ms. Glass used the ACTIV Board to encourage story sequencing of selections they were read. Ms. Glass displayed selected sentences from the text onto the ACTIV
Board and required the children to organize them according to the actual story events. She often said,

I need everybody to look closely at these sentences . . . can you tell they are not in the right order of our story so far? . . . I want you to read them over and think about which one happened first in the story . . . if you need to open your book, that would be great . . . kind of thumb through it and see how the story started . . . so open up your book . . . how did the story start? (Field notes, 3/29/06)

Even though the children may not have been physically interacting with the text at the ACTIV Board, she encouraged them to engage mentally with the content. She reminded them, “You should all be thinking about what would happen next, so let’s all turn to the ACTIV Board and read together” (Field notes, 3/29/06).

There were times during the course of selected activities where Ms. Glass asked the children to physically involve themselves for the purpose of learning new content in other disciplines, which she displayed on the ACTIV Board. In one such instance, the children completed a page in their math workbook. The children worked independently in their books while seated. Students were called up to the ACTIV Board to share their work and record answers on the digital worksheet displayed on the ACTIV Board. As the children worked individually, Ms. Glass praised them and also confirmed the good work being done at the ACTIV Board. Ms. Glass continually circulated through the classroom as the children completed these tasks. As the children posted their answers on the ACTIV Board, Ms. Glass noticed when the group needed more focused guidance in completing a particular task. She might have said,

We are going to break you into three equal groups, so get ready to move, we’re going to count by 3’s . . . remember your number . . . All the 1’s go over by that window . . . All the 2’s come back here by Lauren . . . All the 3’s come up here . . . Now you guys take the information we used here and use it to answer the bottom question. (Field notes, 4/24/06)
While she physically moved to illustrate the problem to be solved, Ms. Glass engaged the children in dialogue, which also gave the children more information from which to draw as they tried to reach an answer. After the children arrived at the correct answer, Ms. Glass praised them by noting that, “It just took a little time . . . we had to work through it. On this one here, if we said 10 of these equal a meter, how many 10s are in 40? Go ahead up and use the marker” (Field notes, 4/24/06). As usual, Ms. Glass rounded off this particular activity and asked a volunteer to approach the ACTIV Board to record the group’s answer.

Although most of the instructional time in Ms. Glass’s classroom involved her acting as the facilitator for various activities where the ACTIV Board served as the backdrop for dialogue in her classroom, there were also occasions where the children were given hands-on experience with using technology for learning.

One such experience occurred as the children used individual laptop computers to research about a bird of their choice. Ms. Glass was explicit in her instructions and she wanted the children to have success in searching for facts about their bird. As she encouraged them to use the Google search engine tool to find websites that might have useful information, she gave specific instructions for how they could arrive at the search engine page. She stated,

If you are not on Google you are going to go the box here . . . see this box, when you hit the arrow, click on it, a little thing will pull down and you should be able to find Google . . . if you need help, what are you going to do? (Field notes, 4/26/06)

By giving the children the freedom to navigate and find the pages they needed, she was allowing the children to construct their own learning adventure and be truly active in their learning process. Not only were the children physically involved in actually manipulating
their computers and navigating through websites, they were also engaged mentally and stimulated by conversations. These interesting conversations occurred among their table members and with Ms. Glass, as she checked in with each student during the course of this activity.

Ms. Glass encouraged this active engagement in cognitive ways as she directed children to sketch birds and write jotted notes as they searched through their websites. She wanted them to do these sorts of things so they could begin to internalize in some small way the information they were finding. In addition, she wanted them to search critically and realize they may not find the specific information they were looking for. She reminded them that after searching through all of this information, they might need to do some thinking and inferring on their own. She stated,

You know we’ve been looking for different things . . . and I have heard many of you saying I can’t find what their predator is . . . maybe you are just not going to find out, or maybe you will find it out when you get books from the library, or maybe you’ll have to figure it out on your own. (Field notes, 4/26/06)

In these ways, Ms. Glass encouraged active engagement with technology both physically and cognitively.

**Collaboration / Team Building**

For Ms. Glass, four categories emerged for collaboration/team building and included involving parents through technology, respect for students, individualized instruction, and students working together.

Ms. Glass encouraged cooperation in her classroom on several levels. She felt strongly about encouraging parent involvement and welcomed parents into her classroom on a daily basis. She respected the children in her classroom and worked very hard to establish cooperative relationships with each of her students. The encouragement of
children working together on various learning tasks was also evident by Ms. Glass’s classroom room arrangement and the types of activities in which the children engaged.

Ms. Glass commented that parents came into her classroom just about every morning. She assigned them various tasks such as reading with children and working on learning activities with individual students or small groups of students. One of the highlights for parents was assisting as the children worked with the portable laptop computer lab. Ms. Glass commented that she made every attempt to allow the children to work with laptops on a regular basis and she would seek parents to help out regularly. As the children researched using the laptops, the children conferred not only with Ms. Glass but also with the one or two parent helpers who were there to assist the children as needed. In doing this, Ms. Glass opened the classroom door to parents and encouraged authentic involvement in the learning process. For the children, the process of researching on the computer was less stressful as they had more support for questions and troubleshooting from a few adults rather than just their teacher.

Another way in which Ms. Glass involved parents in the process of using the laptop lab for research was that she viewed the activity that was taking place in the classroom as only a starting point for the children’s research. She encouraged the children to use the work they accomplished while in the classroom, as a springboard for the work they would finish at home. Ms. Glass reminded the children,

Okay we have 5 minutes left . . . do you have to be done with your report in 5 minutes . . . no, but you have to be done enough so that when you take it home, you have a nice little start. (Field notes, 4/26/06)

Ms. Glass displayed great respect for the children in her classroom. She continually asked for their ideas and suggestions as they engaged in various
brainstorming activities. During one observation, Ms. Glass led the children in a brainstorming activity about spring. As was the case with most learning activities, the ACTIV Board was the backdrop for this experience, and was used as a place to record the discussion of potential ideas taking place. Ms. Glass began the lesson as she led the children in stating the months of the year. She thought doing this would help the children to focus for this next task. Ms. Glass began a brief discussion about spring. She asked the children to think of a phrase that began or had a word with a letter “S”. She wrote an “S” on the ACTIV Board and then went to her own computer and typed the phrase, “sun showing itself in the sky.” Ms. Glass continued to stay seated at her own computer terminal during this activity and she continued to type the text for the phrases the children generated. She encouraged the children to generate ideas for their brainstorming and praised them for their good thinking as can be noticed in the following comments made by Ms. Glass,

Cody do you have one? . . . So that is very true . . . very cool idea. The potholes from the winter . . . that’s great . . . What’s happening with nests . . . can I do made or built . . . ok I’ll use built because that was your word. (Field notes, 3/30/06)

Along with respecting the children in her classroom, Ms. Glass treated them as individuals and did everything she could to meet their needs. As she continually called upon children to approach the ACTIV Board many times throughout the day, she verified that everyone had equal opportunities of interacting with this technology. She commonly asked, “Is there anybody that didn’t get to come up to the ACTIV board?” (Field notes, 3/30/06). She also used the technology in such a way that by saving prior activities in electronic files, activities were re-visited for a variety of purposes. One way she took advantage of the technology to meet individual needs was that she made available the
day’s activities for those children who were absent or out of the classroom during the
time of the lesson. She directed children by saying, “Actually, go up to the ACTIV Board
and move to the I page if you need it . . . would you like to do that?” (Field notes,
3/30/06). She respected the ideas that her students offered. In cases where an idea may
have been lost or skipped over in the excitement of the brainstorm rush, she often re-
visited the topic by saying,

   Ok let’s talk about the fox, Rachel. Yes, it is a mammal . . . what do foxes do?
They kind of remind me of the Turkey Buzzards in some small way . . . but foxes
eat animals that are alive . . . they like the smaller animals . . . chickens,
absolutely . . . yes, rabbits and mice, that’s one of their favorites. (Field notes,
4/3/06)

In doing all of these things, Ms. Glass showed respect for the children in her classroom as
she used technology.

   From a quick observation in Ms. Glass’s classroom, one would glean that her
classroom operated from a traditional perspective. Ms. Glass regularly positioned herself
in front of the classroom as she directed specific learning activities. However, Ms. Glass
orchestrated her classroom to be an active and lively learning environment. The physical
activity was downplayed but mental engagement went on in a number of ways. The
children were continually reminded to interact and talk with their neighbors at their table
groups. Although as a rule, children were invited to get up from their seats, active
learning took place while they were seated and the ACTIV Board was the backdrop for
the activity. After brainstorming at the ACTIV Board, Ms. Glass might have said,

   You don’t have to use these verbs . . . you can come up with your own words . . .
it’s okay for you to brainstorm with your group . . . if you can’t think of words,
ask your neighbor. (Field notes, 4/3/06)
In this way, she encouraged active engagement through conversation. She realized that children could be involved in the learning by sitting just as well as by actively doing. She gave them many opportunities to talk and work together with their table groups, which allowed them to engage with the content or ideas they worked on.

Technology-Centered Discussions

For Ms. Glass, both categories for technology-centered discussion emerged which included building schema and oral communications skills. The thrust of Ms. Glass’s teaching was centered on discussions with the children. She was a master at asking questions and interjecting with information that helped the children acquire the background information needed to conceptualize the content for success.

During one observation, the children returned from an assembly given by the local nature center. A collection of wild animals and endangered species was brought to the school and a presentation was given about the creatures. Upon entering the classroom, Ms. Glass asked the children to take out their poetry notebooks. They began a brainstorming session that was the impetus for animal rhymes the children later composed. Ms. Glass asked the children to name one animal they remembered seeing at the assembly. She wrote the words *otter* and *turkey buzzard* on the ACTIV Board. As she wrote the words, she mentioned the terms *endangered* and *protected species*. Ms. Glass asked the children to record these words into their journal and reminded them that they would use these words for poem writing later in the day. With each word that was offered, Ms. Glass offered a brief discussion and encouraged the children to tell something they learned about the animals. The following examples help to illustrate the nature of the dialogue that took place,
Who can tell me one of the animals . . . and I need you to take your journals out . . . who can tell me one of the animals we saw in the assembly today . . . I don’t know if you heard . . . but we don’t have many otters in Ohio . . . it is one of our endangered animals . . . what does that mean? Otters pretty much live where . . . and some of our rivers are too polluted . . . they are in danger of becoming extinct in Ohio. . . . What’s another animal we still have in Ohio . . . ahh the Turkey Buzzard . . . if you kill a Turkey Buzzard in Ohio you will be fined up to 500$ in Ohio . . . Turkey Buzzards are protected because they are so good for us . . . without them eating all the dead animals, we could get very sick. . . . You can train pigeons too . . . you can train pigeons like back in England when the pigeons were trained to take messages to soldiers . . . notes would be tied to their legs and they would deliver them to the soldiers . . . those are called homing birds . . . they always go home. (Field notes, 4/3/06)

As can be seen in these examples, Ms. Glass took every opportunity to integrate content about the topics, which were discussed. Ms. Glass was intent on helping the children build background for future learning experiences, and conversation was the vehicle she used for this purpose.

The children in Ms. Glass’s classroom not only gained critical background information, but also developed important oral communication skills. They were given numerous opportunities to make their opinions and ideas known through oral sharing with their entire group.

Ms. Glass encouraged this oral communication as she posed questions to the children such as, “Who can tell me the season we just started right now . . . it just turned this season . . . what do we call that?” (Field notes, 3/30/06). She also encouraged them to expand on their answers to her questions and often discouraged the offering of a one-word response like in the following example.

Who can tell me a phrase or something and you need to put your white board in your desk . . . who can tell me a phrase or something that has to do with spring that starts with S . . . oh but I need a phrase . . . the sun isn’t a phrase it’s just a word . . . tell me about the sun . . . what’s it doing out there? (Field notes, 3/30/06)
Ms. Glass fostered a risk-free environment for the children to offer their responses as she said, “Tell me anything you know about ducks . . . oh say it again . . . what do they do?” (Field notes, 4/24/06). She encouraged them along the way if they were at a loss for words and supported them with questions such as,

   What did you make Daniel . . . talk into the microphone? Just make it up . . . perfect, and what’s going to come out of our insect box. Out of the cocoon . . . hopefully? (Field notes, 3/29/06)

Ms. Glass encouraged the children to not only generate good ideas but also to communicate those ideas clearly and with confidence. One small piece of technology that was regularly used in the classroom was a portable microphone. As Ms. Glass called upon children to answer questions or read passages or just talk, she reminded them to use the microphone by saying, “Darian, would you come up . . . use the microphone . . . and you can read the last one” (Field notes, 3/29/06). Ms. Glass made sure that all children had equal opportunities to practice speaking clearly into the microphone. She encouraged them to speak not only once during the day, but multiple times as she stated, “Let’s see . . . someone who hasn’t talked much today” (Field notes, 4/3/06).

**Summary of Ms. Glass**

Three themes emerged for Ms. Glass’s instructional practices when integrating technology with literacy instruction. The themes were: engagement with technology, collaboration/team building, and technology-centered discussions. The data also provided evidence for the following categories: motivation/enthusiasm, active learning, involving parents through technology, respect for students, individualized instruction, building schema, and oral communication skills.
Ms. Glass was motivated and excited about implementing technology-infused activities into her literacy classroom. Her enthusiasm prompted her to continually think of innovative ways to utilize the technology that was available. She assumed the role of a facilitator in her classroom as she led children in discovery through discussion as well as occasional hands on experiences. The children in her classroom were actively involved in her classroom, however, more so in cognitive ways rather than in a physical sense. She worked hard to encourage collaboration with parents and regularly invited them into her classroom as volunteers. She respected each and every student in her classroom and attended to his or her individual needs by carefully observing each as they interacted with the technology in the classroom. Ms. Glass encouraged students to work and think together regularly and her room arrangement allowed for this to happen with ease. Ms. Glass was a master at facilitating discussion in her classroom. Through authentic dialogue, the children in Ms. Glass's classroom not only gained background knowledge but were also given opportunities to practice critical oral communication skills.

Cross-Case Analysis of Instructional Practices

All three themes of engagement with technology, collaboration/team building, and technology-centered discussions were evident in the data supporting the instructional practices of both Mr. Mathison and Ms. Glass.

Both Mr. Mathison and Ms. Glass were motivated to be creative in using technology to support literacy instruction in their classrooms. They each continually sought instructional strategies that engaged the children with technology for authentic purposes. Mr. Mathison took initiative and possessed the gift for creatively adapting new
ideas for his own classroom. In contrast, Ms. Glass searched for ways to adapt traditional paper/pencil activities to digitally-based activities.

Mr. Mathison and Ms. Glass encouraged children to actively engage with technology, but in very different ways. Mr. Mathison co-constructed literacy-activities with his students as he invited them to help make decisions about their learning projects. He encouraged his children to take ownership of their work by manipulating the media for these projects every step of the way.

Ms. Glass believed in encouraging her students to actively engage with the technology; however, her classroom was more teacher-directed. She was more in control of the technology-related learning activities. She encouraged children to interact with the ACTIV Board regularly, but by invitation only. In addition, she directed her students to use personal laptops in the portable computer lab in her building.

Both Mr. Mathison and Ms. Glass encouraged involvement of parents for technology-related projects. Mr. Mathison invited parents to become involved in classroom activities and events through his classroom website which provided parents with classroom news, activities, and student work samples. Ms. Glass’s relationship with parents was different. She encouraged parents to volunteer in her classroom, especially when the children researched on the individual laptop computers. Each teacher was successful in involving parents in the curriculum, but in different ways. Also each of these teachers had respect for their students and provided them with many opportunities to work together.

Both Mr. Mathison and Ms. Glass facilitated the development of oral communication skills. Mr. Mathison had the children make presentations to wide
audiences. In contrast, Ms. Glass encouraged oral communication on a daily basis as part of routine instruction in her classroom.

Although Mr. Mathison and Ms. Glass had very different ways of integrating technology with literacy instruction, each was successful in his or her own right.

Research Question 2

What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?

The purpose of this question was to examine the beliefs of the two teacher informants about integrating technology into their daily literacy instruction. Data included observational field notes as well as relevant teacher-generated artifacts.

Analysis of the data collected revealed three major themes that characterized what the teachers believed about integrating technology into their daily literacy practices: engagement with technology, collaboration/team building, and technology-centered discussions. In addition to these major themes, 11 categories were also established in an effort to further define the nature of each theme as evidenced in each case. The 11 categories included: motivation/enthusiasm, creativity, constructivist/facilitator, active learning, involving parents through technology, respect for students, individualized instruction, students working together, teachers working with colleagues, building schema, and oral communication skills.

The three major themes were evident in both teachers’ beliefs; however, they were expressed differently. The arrangement of these themes and categories does not represent their importance; rather their sequence helps to tell the story of each teacher’s beliefs about integrating technology into daily literacy instruction.
Table 4 summarizes the emergent themes and categories for both teacher informants in relation to Research Question #2.

Table 4

*Summary Chart for Research Question #2*

<table>
<thead>
<tr>
<th>Research Question #2</th>
<th>Mr. Mathison</th>
<th>Ms. Glass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Themes</td>
<td>Categories</td>
<td>Categories</td>
</tr>
<tr>
<td>Engagement with Technology</td>
<td>Motivation / Enthusiasm</td>
<td>Motivation / Enthusiasm</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>Creativity</td>
</tr>
<tr>
<td></td>
<td>Constructivist / Facilitator</td>
<td>Active Learning</td>
</tr>
<tr>
<td></td>
<td>Active Learning</td>
<td></td>
</tr>
<tr>
<td>Collaboration / Team Building</td>
<td>Involving parents through technology</td>
<td>Respect for Students</td>
</tr>
<tr>
<td></td>
<td>Individualized Instruction</td>
<td>Individualized Instruction</td>
</tr>
<tr>
<td></td>
<td>Students working together</td>
<td>Students working together</td>
</tr>
<tr>
<td></td>
<td>Teachers working with colleagues</td>
<td>Teachers working with colleagues</td>
</tr>
<tr>
<td>Technology-Centered Discussions</td>
<td>Oral Communication Skills</td>
<td>Building Schema</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oral Communication Skills</td>
</tr>
</tbody>
</table>

*Mr. Mathison’s Beliefs*

Mr. Mathison believed that integrating technology was fun. He felt that technology integration had the potential of being child-centered and could easily be tailored to individual children in the classroom. He believed that technology could be manipulated for certain purposes and found the use of technology to be enjoyable. It was something he strived to instill in the children with whom he worked.
Other adjectives that Mr. Mathison used to describe technology included fluid and expanding. He commented that technology was more fluid than the tools of paper and pencil, describing technology as not static. He also believed that technology had the capability of expanding whatever topic in which one might be interested. He stated,

An example would be the fact that maybe they don’t have a clear understanding of a particular experiential base of something that’s in the story. With the technology you can expand on things instantly—now—with Google and stuff. (Teacher Interview, 6/5/06)

Mr. Mathison believed that technology was a vehicle for developing higher level thinking skills in children. As he reflected on the children as they sequenced the pictures for their bird slide shows, he commented,

To take what they’ve learned in the basic stuff and put it on the slide show . . . what’s your order? . . . Why did you choose that order? . . . What makes that order work for you guys where another team may put it in a completely different order? There it is. (Teacher Interview, 6/5/06)

Mr. Mathison also believed that technology allowed teachers to individualize instruction in meaningful and interesting ways. He described technology as,

Non-conforming—in that it’s individualized: So, one person can take a thread and go in one direction with the technology and somebody else can take the same thread and go in a completely different place. (Teacher Interview, 6/5/06)

Even though Mr. Mathison experienced first-hand technical glitches that forced him to go away from technology use on certain days, he believed that technology had the capability of being transparent if it worked correctly. He was a realist, however, and described technology as,

“Buggy” – like the day we were trying to do the iPhoto and it was not a transparent day. When it’s transparent, we just flip it on and you use it and it’s there . . . let’s go half-way around the world . . . Everybody see where that is? Look how far away it is . . . 8,521 miles – cool. (Teacher Interview, 6/5/06)
Ultimately, Mr. Mathison believed that technology worked because it acted as an anticipatory set, grabbing the students’ attention, pulling in the information, and helping to make sense of it. He believed that students were really engaged with technology because they lived with it all of the time. In preparing his students for life in the 21st century and beyond, Mr. Mathison felt strongly that technology was just another form of paper and pencil. Mr. Mathison believed that just as one could learn to use a paper and a pencil and write an answer, one could also use a piece of technology and digitally record their answer. He felt that the learner was still required to think through what was going on and make it work, no matter what tool they chose to use. He believed,

I’m expressing myself by using the technology to do the curriculum that I have to do to demonstrate an understanding of literacy—that I am a literate person—but I have to be—it’s what I have to use. (Teacher Interview, 6/5/06)

Engagement With Technology

For Mr. Mathison, all four categories emerged for engagement with technology and included motivation/enthusiasm, creativity, constructivist/facilitator, and active learning.

Mr. Mathison expressed his beliefs about using technology to support literacy instruction in a variety of ways, all of which stood behind his notions for being engaged with technology. First and foremost, Mr. Mathison was extremely motivated and enthused about using technology in his classroom. Mr. Mathison’s classroom was often referred to as “The Dream Factory.” When asked to explain the reason for this particular name, Mr. Mathison commented that, “Yeah, this is the dream factory. Dreams come true here” (Interview, 5/6/06).
He believed his motivation came from working with his colleagues who also shared in his passion for integrating technology regularly with instruction. Before teaching at his current building, Mr. Mathison believed that he was already very interested in technology; however, his interest and motivation were subdued. He believed at the time that he used minimal technology and could only do some things. He always felt it took cohorts and colleagues to work with and he needed somebody else to inspire him to use the technology in unique and interesting ways. He knew he was in the right place when he arrived at his new building, because they already had the technology available. There were teachers that were already using it and the mentality of the building was,

Kind of like, go ahead. I won't bother you. The principals, for the most part, let us kind of dream our own dreams, and it just started. I got with some people that were already dreaming dreams. Oh, you mean you can. I would like one of these. I would really like a 20-inch monitor, with enough power that I could get where I need to go and do what I need to do as a digital hub in the classroom. Okay. (Interview 5/6/06)

Regarding the availability of technology, Mr. Mathison strongly believed that teachers needed to have the equipment at their fingertips. His viewpoint was that to truly get excited and learn how to use and integrate with technology, teachers needed to have first-hand experience with the equipment on a regular basis. He commented:

If I would be the only person to have a Smart Board in my room, and you could come to my room and use it, it's not the same as having your own, and having ownership over the technology. (Interview 5/6/06)

Even though Mr. Mathison was highly skilled in manipulating technology and thinking of creative ways to utilize it in the classroom, his biggest challenge was to stay current with the latest developments in technology use. He feared becoming dull and overwhelmed by the day-to-day crises of teaching such as having a large number of
students. A large group might limit getting the children as actively engaged as he hoped. He felt strongly that teachers aspiring to teach in exciting ways needed to have a clear focus on their goals.

Mr. Mathison believed he was not up-to-date with the latest research and methods for integrating technology. He felt disconnected to technology leaders at the university level and wanted to become better connected with such a group. He reflected on a previous experience where he engaged in action research with a professor from the local university. He made reference to this experience as, “The time together was a Friday afternoon once a month. We all couldn't wait for the day” (Interview, 5/12/06).

Mr. Mathison not only felt passionately about his own motivation and excitement with technology but also understood the impact of technology on today’s children. He referred to the children in his classroom when he said,

Because of engagement, because they're born with a game boy in their hand now, they're in a car with digital playback, where they don't even have to think about let's make a game in the car, let's sing a song. Just kind of watch Beauty and the Beast for the 15th time. The media is bombarding them so much. To come into a room and not have any media will put them to sleep. Part of it is the challenge of engagement. How do you engage someone who could probably set my phone up better than I can and they're only 6 years old. Why don't you turn it this way and it's done. Can you program my phone? Oh, yeah. Give me a couple of minutes, and I can do it for you. There's a learning curve. It's in my blood. (Interview, 5/16/06)

Since children are practically born with technology in their hands, Mr. Mathison felt strongly that to invite children to come into a classroom where there was nothing but paper and pencil would not hold their attention for any length of time. He believed that teachers would not be able to engage children in the learning process unless certain technologies were available and being used regularly.
Mr. Mathison categorized himself as the gatekeeper for technology use in his classroom. He stated,

Gatekeepers have a lot to do with it. We're all gatekeepers. When you see them using the computers the way they use computers, even if it's a ten-minute engagement. They're like, if they could put their faces on the screen, they would have. That kind of engagement, where they're totally engaged and they're learning, they're working. We have to get out of the way. If I'm not comfortable, then I'm not going to bring it in and start it. We, as gatekeepers, have to work at letting go. (Interview 5/6/06)

Mr. Mathison also viewed himself as a life-long learner and that the children were learning just as much as he was. He knew that the more comfortable he became with the technology, the greater the opportunities there would be for the children to fully engage as well. He remarked,

They're learning. They will be touching. They're learning as well as I'm learning. Again, I'm the gatekeeper. That's the challenge, because if I don't allow them to, I'm going, here's where this is and here's where that is, you know. They'll be asleep in no time at all. So, it is the challenge of letting go and letting them take control. It's coming. (Interview, 5/8/06)

Although Mr. Mathison did not envision himself as a creative teacher, he did believe that in order to use technology effectively, teachers needed to think twice as hard to pull everything together to make it happen. He viewed technology as a great tool, which was also a lot of fun. He found technology to be a creative and challenging outlet for producing what he used in the classroom with his students. Being able to manipulate the various features of software tools allowed him to deliver lessons and engage children in meaningful learning activities. However, when asked if he believed he was creative, he responded in this way,

I don't see myself as the creator of the idea. I pick up an idea and run with it my way. Somebody will have a concept. . . . All of a sudden, I'm over here, but still, I'll scaffold off of it, and go my way. (Interview 5/6/06)
Mr. Mathison felt it was very important for teachers to become facilitators of the learning taking place in their classrooms. He noted that this was something he continually worked on and aspired to become. He commented that in his classroom,

This doesn't happen a lot of times because I like to be, instead of the guy on the side, I want to be the sage on the stage. That battle is always there. That's really what I've learned in twenty some years of teaching. The more I can step aside and be more of a helper or a guide, or just somebody that is a catalyst to what's going on, like bring the books, and okay guys. Go for it. Here's the information. You've got to learn about it. It's not what I teach about eggs and beaks and nests and feathers. It's what you guys learn about it. So, go. Start learning about it. Help those that need the technical assistance. That's really what it is more than not. Then, to provide the atmosphere where the learning does take place. I have my responsibilities but trying to get out of the limelight is a challenge. (Interview, 5/8/06)

Mr. Mathison believed strongly in active learning for students. He wanted to engage them in their experiences with technology as much as possible. Active learning took many different forms in Mr. Mathison’s classroom and the beliefs he held supported his choices for instruction.

Mr. Mathison believed children should physically manipulate the equipment. He allowed them to work with small groups on tasks which required them to think carefully about what they needed to do before actually doing it. One such task was when the children were asked to sequence their pictures for the bird presentations. Mr. Mathison described the process in the following way,

Manipulating text, the quality of production as a final product is much more polished, much finer. The ability to move into more complicated areas that take higher level thinking skills. It's one thing to do a story board on a white piece of paper, and we all talk about, and you're engaged only partially, as compared to, here's an iMovie that you're doing and you have your four clips. Which clip goes? In the case of what they're going to do, they're going to have 20-30 photos that they're going to pull off the web. They have to put them in an order, the order that they think is the right order to present the information they've learned. It's interesting to watch different groups manipulate different ways. Some will put all of the same type of things together, like all our nest pictures, all our egg pictures,
all our juvenile pictures, all the adult pictures. Others will do it because they like flying together, and ground together, or higher level thinking skills. How are you going to take your knowledge and present it so somebody else can learn? That's reading and writing and everything that's involved in oral communication, all that, in terms of literacy, is all there, but I have found that technology allows me to take it to higher level thinking skills, with more on task at the same time. (Interview, 5/8/06)

Mr. Mathison encouraged active involvement from the children not only in manipulating the technology in the classroom but also in expressing their ideas. He felt strongly that children needed to become active in learning by taking ownership of the topic they were investigating. Mr. Mathison reflected on an experience where he had encouraged a young boy in his classroom to compose a statement for their classroom’s website. Instead of telling the boy what needed to be said, Mr. Mathison encouraged the child to compose the words he wanted posted on the website. He described the experience as, “He had to tell me what to write. He had to decide what was important” (Interview, 5/6/06). In this way, he used technology to encourage active learning in a cognitive way.

Mr. Mathison felt that encouraging active engagement for standard classroom exercises was also very important. Mr. Mathison constructed basic fill-in-the blank activities for the children that could be completed online at their classroom website. He believed that a more fluid activity which focused on the same type of skill was more stimulating and intuitive for children, rather than its standard paper and pencil counterpart. He described his thinking in this way,

The same as them doing the sentences over there. They were doing sentences, fill in the blanks, the same as a piece of paper, but I had four people engaged, and they were all talking to each other and discussing, so they are even using those communicating skills which they wouldn't have used if they sat by themselves, going, what is this word, how do I figure it out? All I have to do is copy the other
person. It wasn't even, I'm going to copy your answers. It was, we're almost a team working together. (Interview 5/6/06)

Mr. Mathison envisioned his classroom of the future and hoped that one day he would have the opportunity to teach in a classroom where there were laptops for everybody. In this way, everyone would have direct access to technology. He felt that if all children had access to the Internet at the same time, but individual access, they would be so motivated that they would stay on task at the same time. He described that as being “dreamy.”

Collaboration / Team Building

For Mr. Mathison, four categories emerged for collaboration/team building and included involving parents through technology, individualized instruction, students working together, and teachers working together.

Mr. Mathison believed passionately in building teams and collegiality with colleagues, family members of his students, and community partners.

His most profound belief about collegiality and team building focused on parent involvement. His passion for building meaningful relationships with the parents of his students stemmed from the fact that all of his parents worked. Many of them were holding down one or two jobs just to pay the bills. He described these parents as,

Working parents. Almost all, if not all of my parents all work. Many work two jobs. Many are working entry-level jobs. They are not making large sums of money. They are all out working, so there's very little time to be connected to school. I have a few parents where it's a dueling when both husband and wife are there, and those are the parents that I might see in the classroom. Other than that, everybody works. A lot work second shift and a lot work even third shift. I don't see mom except on the weekends. I'm with granny or something like that. It's not a case of stay home and get welfare. These are working class people. They're out there working sometimes two, sometimes three jobs. (Interview, 5/17/06)
He felt a connection with these parents because just like them, he was working all day.

He commented,

They're working all day, just like me. I can never get to school and see my
daughter's work. I can never see her perform. I could never hear her read a great
story. None of that. This allows families to be able to have access, as I make
access available. (Interview, 5/12/06)

What he was referring to was the technology being used in the classroom that also
allowed families to have access. Most specifically, what he focused on was the classroom
website where student work and classroom news was posted on a daily basis. He felt that,

“IT opens the door, and keeps the door open 24/7” (Interview, 5/12/06).

Mr. Mathison respected the children as people. He often commented that,

I don't see them as being little people. They're humans. They're people. When
we're in the room together, I may be taller, but I don't feel that I'm taller. When I
see them in the store, it's like; you're a little kid. That's when we're out of the
realm of being in the Dream Factory or being in a classroom. They seem small.
They're just 6, 7, 8 years old. When we're here, it's no. This is a classroom and
here we are. My forte is probably compassion in that sense, and patience. That's
what I hear reflected back to me. You're so patient. That's what other people say. I
would say respect for them for who they are as people. (Interview, 5/16/06)

Along with that sense of respect for his students, Mr. Mathison naturally believed that
individualizing instruction to meet the needs of students was an absolute necessity in the
classroom. He reflected on parts of the day where he consciously tried to individualize
instruction. He believed that when individualizing instruction for his first graders as they
used technology, he needed to be cautiously aware and protect them from the dark sides
of using the Internet and technologies. He believed that,

In the sense that at a 1st grade level, I still protect them very much from this
freedom to be distracted by a variety of links. They're not at the point where they
can make good judgment calls. They know, don't hit the banners. Don't hit the
flashies. Stay on the spot. Using the Internet at my grade level right now is very
controlled, protected, for them. It's still linear in one sense. They may have five
choices to jump. They may get to KIA and have eight choices on KIA, not one
choice. I may say, you have three choices to work with. That could be like, here's three worksheets. Here's three pieces. That has to come with, I think some of that comes with, at the 1st grade level, with dialogue. Should we touch this button? Is he telling the truth because you see it? Is the truth just because it's on this blue screen it is THE truth? No. Not the truth. How do you know? You're really getting in much deeper things. When they get to the point that they're reading something, it's like, okay. Did you look to see? Is this something from a major site? Is it something that let's you know it's somebody else's personal folder, and it's not. It may be in the University, but it's a personal folder, the University's folder of information. I'll dabble with that a little bit, but that's still way above. They're still trying to read words, just trying to start to use. (Interview, 5/16/06)

Mr. Mathison had a strong commitment to having his students work together.

When walking into his classroom, one would definitely sense that children were very comfortable working together in a variety of ways. The way in which Mr. Mathison arranged the physical set-up of his classroom portrayed his beliefs about children working together surrounded by technology. At the base of each learning activity was a system for collaboration that was set in motion on day one of the school year. The technique was called “I CAN.” At each table, there was a sign posted with the “I CAN” logo, which Mr. Mathison developed. Each child sitting at the table was assigned either the letter “I,” “C,” “A,” or “N.” It was a technique that allowed Mr. Mathison to call on specific children in a systematic way throughout learning activities, while also encouraging teamwork. For various activities, Mr. Mathison might call on the A’s or the N’s and in a very short time; all of the children would have been engaged in a very non-threatening, supportive manner. During the course of the school year, children were shuffled to different tables and assigned new letters regularly, so that the strategy would not become static. Mr. Mathison reflected on this process and how it worked,

I didn't say, now please. Work together. I will say, take the turn, I CAN. Go around the table. That's why it says I CAN. Just a management technique. It's hard to get out of the way. If I can just get out of the way. I have to understand the technology to get out of the way because at least, the 1st grade level, I've got to
get the stuff up and there for them to use. It's out there. It can happen once we learn it together. It's how to get the fire in the belly of the individual to where they, then, can make it happen. (Interview 5/6/06)

For Mr. Mathison, this strategy served as a way to let collaborative learning happen in his classroom without continually getting in the way of the children.

Mr. Mathison’s classroom arrangement reflected his belief in teamwork and cooperation. In his classroom there were five computers. Mr. Mathison could have five teams working at the same time. By organizing this way, he believed that they could all be working on the same page, but still interacting in a smaller group. He believed that learning needed to have different dimensions and providing opportunities for large and small group interactions was the key for learning success with technology. He commented that,

Being able to use computers at tables, and having a pod, with people working around the pod helps. I like that better than just computers at tables and you just go use them for a while. A lot of times, we'll work together. They'll be working as a team when they build their museum pieces. That's involving them. (Interview 5/8/06)

Ultimately, he described his classroom as having a balance between large group and small group activities. There were times to work together and work individually and he felt that both types of experiences were necessary.

The final aspect of collegiality that was evident in Mr. Mathison’s belief system was his continued emphasis for working with his colleagues. He believed that,

For me, the most that's happened in terms of being a dream factory and that type of thing, and working with people of a similar mindset. I've grown the most, learned the most, and have done the most in the twelve or thirteen years that I've been there. (Interview, 5/6/06)
Technology-Centered Discussions

For Mr. Mathison the category that emerged for technology-centered discussion was building oral communication skills.

Oral communication emerged as a strong belief for Mr. Mathison due to the nature of the activities in which he involved his students. Communication skills were necessary in order to prepare for the bird museum as well as deliver the final product. He spoke of the project as,

There's so much involved in it. For us, it's more of a production. This gives everybody here a chance to have to work on oral communication skills, more than anything else. You have to work on oral communication. It's one thing to sit here with a teacher. We're back to that now. You're not only responsible to me, but there might be another 1st grade teacher over here that's going to grade you on your presentation. (Interview, 5/6/06)

Mr. Mathison believed that the ability to communicate involved being able to read, write, and speak effectively and that literacy was the ability to communicate, whether giving or receiving the communications. He believed that,

If you can't communicate, you're not going to make it in the real world out there. You have to be able to read, and you have to be able to write properly, and all of those things, so I see literacy really as being the ability to communicate, whether you're on the receiving end or whether you're giving it. When I'm talking to Tony or whoever, you have to write neatly to communicate. You have to know what these words are so that you can understand them, so that you can understand what somebody else is saying to you (Interview 5/6/06)

Summary of Mr. Mathison’s Beliefs

Three themes emerged for Mr. Mathison’s beliefs about integrating technology with literacy instruction, which included engagement with technology, collaboration/team building, and technology-centered discussions. The data also provided evidence for the following categories: motivation/enthusiasm, creativity, constructivist/facilitator, active
Mr. Mathison believed strongly in allowing parents to get involved through the vehicle of technology and he provided several opportunities for this to happen. He believed in collaborating with the students in his classroom and worked with each individually, while also allowing the children to collaborate with their peers. In addition, Mr. Mathison felt passionately about collaborating with his colleagues, and did so as part of his daily activity while at school.

Mr. Mathison believed in the importance of allowing oral communication skills to flourish in his classroom. He provided many ways for children to practice and perform, which helped to foster the development of oral communication skills.
Ms. Glass’s personal enthusiasm for using technology certainly carried into her classroom practices. There was a strong connection between her positive beliefs about using technology to support instruction in her classroom and the ways that she did this on a daily basis. She believed that technology was her lifeline and when it was not working, she immediately contacted the tech people to try and fix whatever problem she experienced. She truly believed that technology was taking over the world and its importance needed to be conveyed to the children. She noted that, “It’s [technology is] the most important thing in the world! If I’m not excited, they won’t be” (Interview, 4/24/06). She also believed that she herself was technologically-oriented and that helped to motivate and excite her about the tools technology offered for use in her classroom.

Engagement With Technology

For Ms. Glass, three categories emerged for engagement with technology, which included motivation/enthusiasm, creativity, and active learning.

A belief that continually motivated Ms. Glass was her enthusiasm for continual learning. She commented that,

You have to be flexible, always open to new ideas, always wanting to learn, put more out there for the kids to learn. An effective teacher also continues taking classes and stays aware of what’s out there to use. (Interview, 3/31/06)

When opportunities presented themselves, Ms. Glass wanted to share her enthusiasm for learning with the children in her classroom. When the children reported on topics of choice, Ms. Glass always pointed out the new things she learned from them. She believed that this made the children feel good about their work and encouraged them to keep learning more.
Ms. Glass believed that she was doing her best to stay active and on top of learning all that she could about integrating technology into her daily instruction. She always looked for new technology that supported literacy and for new things to try. She felt, “Everyone is a learner, as I am . . . so throughout life, if I can share a little bit of what I know with other people, I’m successful then” (Interview, 3/31/06).

Ms. Glass believed that in order to truly motivate children to work with technology they had to have opportunities to have first hand experiences in manipulating the technology directly. She commented,

That goes along with everyone having his or her own laptop. I’m really into using our laptop lab . . . They’re connected to their pencil, but I think they’re even more connected to their computer because everything is digital now . . . all their little games are digital. They just tune in better. (Interview 4/24/06)

She realized that children were growing up in a digital world and in order for classrooms to compete with daily life, technology had to be integrated in natural, yet exciting ways.

Ms. Glass believed that integrating technology with literacy instruction had positive effects on the literacy development of children.

She reflected on an activity where her students were involved in using the Internet to research facts about ducks. They were responsible for writing about what they learned. She believed that engaging the children in activities like this was so much more fun than having them go to the library to conduct research in print-bound resources, such as encyclopedias.

She felt that giving them opportunities to read online was not only interesting, but also a way to foster the development of critical literacy skills. When her students were involved in reporting on penguins, she commented on how excited the children were when they hit an active link.
Ms. Glass admitted that part of her enthusiasm for using technology for meaningful purposes stemmed from her comfort with using computers as she actively engaged with technology both at school and in her home. She believed that teachers needed to be offered more opportunities to use technology both at school and at home, so that they too might feel more comfortable using it for daily classroom instruction.

Ms. Glass believed that teaching with technology helped broaden her view of literacy learning. She felt that technology offered more opportunities for children and brought them closer to information than ever before. She believed that technology puts information closer to children and offered more flexibility in learning. She especially believed that technology had a dynamic impact on literacy learning. She commented that,

“Originally, we just read through the textbooks and didn’t go out and look for more information as we do now. Internet has just made everything expand. Yes, my whole outlook is different because there is so much at our fingertips. (Interview, 3/31/06)

Because of the accessibility of information, she commented, that children are reading at a younger age and the doors to discovery are opening sooner. She believed that in the near future, virtual libraries would be second nature to children and she was excited about these types of opportunities.

Ms. Glass felt strongly about creativity for herself as well as for her students. When using technology, she often thought of ways to use it creatively for what she was doing in the classroom. However, she realized that technology was sometimes temperamental and also indicated that she always had a back-up plan, just in case. She also believed strongly that technology offered more creative ways for children to develop literacy skills. She commented,
It’s so much more fun for them to write and change and it opens more doors to creativity on the computer—as opposed to linear (writing in a journal or writing a composition). The reason I have them type their poems is for them to get the use of the keyboard. Now they want to change the color, change the size and see what else they can do . . . so you can go more places with the computer and typing. (Interview, 4/7/06)

This permission for creativity stemmed from her evolving definition of literacy. She felt that in the beginning of her teaching career, literacy was just reading, particularly reading and answering questions. Now, in almost her last year of teaching, she came to view literacy as reading and responding and then creating something from what was read.

Ms. Glass believed in operating in a fairly structured environment. Although at first glance, one would think she held a very traditional philosophy of teaching. However, in reality, she was actually a facilitator. She designed her classroom in such a way that even though she was the heartbeat of the conversations taking place in the classroom, she posed the discussions and activities in such a way that children were encouraged to continually be both physically and cognitively involved in their own learning. She modeled effective questioning techniques and discussion generators in the hope that children would eventually take initiative for beginning meaningful dialogue in the classroom. She commented that, “Really, you’re supposed to be the facilitator. But at this point they need to be spoken to and given a lot of direction” (Interview, 3/30/06). She stated that,

Absolutely, I like to be the facilitator instead of the person who says “do this” and be asking questions all the time, I like for the children to ask the questions and get the answers . . . to participate more. (Interview, 3/15/06)

She believed her purpose was to facilitate in this way, so that each one of her students would have the opportunity to reach his or her potential.
Ms. Glass believed that her students needed to be given multiple opportunities to physically manipulate technology through the course of their year in her classroom. She began the year with getting help from sixth grade buddies in the school. She enlisted the help of these student volunteers so that her own students would begin to feel comfortable with using technology early in the school year. In the beginning of second grade she believed that “kids aren’t yet that good with the computer. They don’t know how to maneuver yet. From day one, that’s what we start to work on” (Interview, 3/31/06). She believed that children needed these technological skills because of all they were expected to do,

Yes, they need to know how to manipulate to get around . . . doing the typing and the arrowing and the saving . . . they need technology skills. With reading, they’re looking at the words, then turning the page. Maybe with the technology for the Internet they’re learning how to find and save information important to answer their questions, so they really have to sift through the information and know what the topic or the main idea is. (Interview, 4/7/06)

Ms. Glass believed that active learning with technology involved not only being able to manipulate the equipment, but also encouraging inquiry learning by using technology as one tool for generating findings. These beliefs were evident in the following statements,

They must know how to manipulate the information that they have. As for literacy in the 2nd grade, getting them to read is one thing, but getting them to use what they read is really important, for 3rd grade. (Interview, 4/7/06)

They’re looking at the text on the computer, for facts that are important that relate. They will come up with questions that they need to look for. By them coming up with questions that are important, they’ll know what to look for on-line . . . they’ll come up with the ideas and be able to pinpoint when they’re looking through, finding paragraphs, the title of the paragraphs and if it is important . . . (Interview, 4/24/06)
Ms. Glass believed that the technology she used in her classroom helped her children become more active in their learning, both physically and cognitively. She reflected on one function of the ACTIV Board in her class and stated that,

It took the place of me having to write on the chalkboard and kids always watching me—I can do my lessons ahead-of-time on the Active Board and can even save them. I don’t spend as much time preparing in front of the kids, so they can go ahead and take charge as a teacher and also as a leader. (Interview, 3/15/06)

In using the ACTIV Board, Ms. Glass felt that interaction in the classroom was definitely increased. The children had opportunities to manipulate vocabulary and practice word functions such as nouns, verbs, and adjectives by writing on the interactive white board and moving the words around as needed. In addition, the ACTIV board was also used as a tool for generating ideas for daily poetry and other student-authored work.

Ms. Glass believed strongly that her ultimate classroom would provide laptops on a daily basis for each student from day one of the school year. She felt challenged that her current classroom had only four functioning computers that often did not work. In addition, the portable computer lab was becoming more and more in demand, thus limiting the amount of times it was used regularly by her students. She believed that her school and district needed to continually update and upgrade the technology available for teaching and learning.

By allowing the children to engage with technology in active ways, Ms. Glass believed that she was helping to prepare her second graders for the skills they would eventually need as adults. She thought,

There are really intelligent people graduating from college, and being put into jobs but the HR people are telling us these people are really smart, they can do everything, but they don’t know how to do it . . . there’s no application of what they know. (Interview, 4/7/06)
Collaboration / Team Building

For Ms. Glass, four categories emerged for collaboration/team building and included respect for students, individualized instruction, students working together, and teachers working together.

Ms. Glass believed in the importance of fostering teamwork and collaboration both in her classroom with the children she taught as well as in her school setting with her colleagues. She believed in respecting students for who they were and strived to individualize instruction as much as possible.

Ms. Glass had tremendous respect for her children, which connected to her own experience as a student. She reflected,

You know, I didn’t have positives, I don’t think, all along the way, and I’ve taught with some teachers that aren’t positive and I try to be a really good example . . . if I am positive and up about it I think they are . . . Even if it’s your worst day . . . you have to act like you care. (Interview, 4/26/06)

In addition, she thought about her own children, especially her disabled son and she often brought her compassion for him into the classroom by keeping an open mind that all children have the potential to learn. She stated, “no matter how disabled a child may be, everyone can learn and live to their fullest potential” (Interview, 3/31/06). She believed that it was her duty to nurture each child, so that they would be encouraged to achieve all that they could.

Ms. Glass showed respect for children by carefully making sure that they were given many opportunities to approach the ACTIV Board during various activities throughout the day. She believed that in allowing students to work alongside her at the ACTIV Board, she was able to observe them as they worked, allowing her to tailor
subsequent activities to meet their individual needs. She described the procedure for

using the ACTIV Board as,

Every day—each child goes up—probably twice—especially for math, I put the
page up there, then everybody works on their own on their journal page and then
we pull the page up on our math and then I’ll flip cards and say “Suzie” you get to
come up and choose any problem and do it. She does it, and everyone checks their
work then. Then she flips a card and the next person comes up, and we go through
the whole class. If we do a couple different lessons for math, then everyone has
been up there. A fast process generally. For reading they go up . . . for (whatever
we do). (Interview, 4/7/06)

Ms. Glass also believed that having the children in close proximity was another

way she focused on individual students. She had the children’s desks arranged in table
groups rather than rows because,

I have kids sitting in groups because I can get to them easier. If they’re in rows,
you have to go down and back and forth, which removes from the family feeling,
which is what I told them on day one: that in this classroom, we’re a family.
(Interview, 3/31/06)

Ms. Glass believed in the way that she physically structured her classroom, even

though she taught mostly to the whole group. She felt her room arrangement encouraged
interaction and collaboration amongst the children. She described her teaching style as,

I do more whole group teaching. I feel that the kids that aren’t as good of readers
will feel better about themselves, will be more interested, and won’t be put on the
spot as much, plus I believe they also learn from each other. We have a lot of
paired groups—kids with each other. (Interview, 3/31/06)

Ms. Glass enjoyed working with her colleagues and valued the experiences she

had, especially completing her Master’s degree program. She stated,

The whole thing was great . . . because there were 12 of us and it was a hoot . . .
we just had a great time working together, planning together, and that made us
more willing to open up doors and share things. (Interview, 4/26/06)
Technology-Centered Discussions

For Ms. Glass, both categories emerged for technology-centered discussions, which included building schema and oral communications skills.

Ms. Glass encouraged dialogue in her classroom as she believed in providing the crucial background information necessary for her students to have greater success in learning. In addition, she believed strongly in providing opportunities for her students to build invaluable communication skills.

In building background knowledge, Ms. Glass viewed her role as providing the tools to, “Connect all the dots—that’s what we’re supposed to do” (Interview, 3/30/06). She also felt that providing background knowledge was fun and certainly helped motivate children for the learning task at hand.

Ms. Glass held the ability to communicate orally as an important skill that needed to be developed with the children in her classroom. She felt that providing an environment for rich dialogue helped the children to expand their vocabulary. She stated, “I think vocabulary is really important because without that to build on, they won’t go further” (Interview, 4/7/06).

She believed that allowing children to interact with vocabulary was critical to developing a healthy repertoire of words to use when communicating orally. She provided opportunities for children to report orally on several occasions such as, “We’ve taken it to our reports and they have to finalize their report. The end product is orally giving their report. They will take everything they have learned from the Internet and give verbalization of it’” (Interview, 4/24/06).
Summary of Ms. Glass’s Beliefs

Three themes emerged for Ms. Glass’s beliefs about integrating technology with literacy instruction, which included engagement with technology, collaboration/team building, and technology-centered discussions. The data also provided evidence for the following categories: motivation/enthusiasm, creativity, active learning, respect for students, individualized instruction, students working together, teachers working with colleagues, building schema, and oral communication skills.

Ms. Glass believed that she was truly motivated to use technology, and it provided her with the enthusiasm to continue teaching when she was near retirement. She believed that because of the technological world in which her students were living, she owed it to them to provide opportunities to learn with technology, since it had become a natural part of their daily lives outside of school. Ms. Glass believed that technology had the power to allow both her and her students to develop creativity skills as technology offered so many different ways to construct text and images. She believed strongly in allowing children to construct their own knowledge as much as they could and she engaged them actively through dialogue as well as through physical manipulation of the technology.

Ms. Glass believed that she respected her students as individuals. She commented once that it was her duty to give every day her best effort, as she owed this to her children. She believed in providing positive role models for her students, and this was her goal for each day. She believed in the importance of allowing the children to work together on a daily basis as she arranged her classroom to encourage this type of interaction. She also felt that her own collaboration with the teachers and colleagues with

166
whom she worked was the impetus for her continued interest in using technology in meaningful ways for instruction.

Ms. Glass believed that she was supposed to help the children build background in every activity they encountered, and she purposely made this a goal of her daily dialogue with the children as a whole. She valued the development of oral communication skills and encouraged the children with many opportunities to speak in front of the class each day.

*Cross-Case Analysis of Beliefs*

All three themes of engagement with technology, collaboration/team building, and technology-centered discussions were evident in the data supporting the beliefs of both Mr. Mathison and Ms. Glass.

Both teachers believed they were highly motivated to integrate technology with literacy instruction and this was revealed in the enthusiasm each had for their work. Both teachers also believed that to keep the attention of the children in their classrooms, they had a duty to integrate technology so that children would stay eager and motivated to engage in their own learning. Both Mr. Mathison and Ms. Glass attributed this need to motivate the children as being a result of the technology-infused world the children experienced outside of their classrooms. Mr. Mathison and Ms. Glass both believed in creating active learning experiences where children had opportunities to construct their own knowledge and take ownership. Mr. Mathison believed he needed to work on letting go even more. Where Ms. Glass was pleased with her role as facilitator, but she also commented that she felt the students still needed her in some instances. Of the two
teachers, Mr. Mathison shared that he was in favor of letting the children take more control of their learning compared to what Ms. Glass thought was appropriate.

Both teachers believed in individualizing their instruction to meet the needs of their students. In addition, each felt that allowing the children to work collaboratively was also important and they engaged in this type of collaboration with the children as well as with the colleagues with whom they worked. Mr. Mathison strongly believed in collaborating with parents. He did not have the luxury of the opportunities that Ms. Glass experienced, with parents helping out in her classroom on a regular basis. He believed that the technology offered a vehicle of communication for his parents, where Ms. Glass believed that the technology offered a way to allow parents to volunteer in her classroom.

Both teachers believed that technology allowed for the natural development of oral communications skills as children interacted with the technology in their classrooms. In addition, they believed that technology was a tool for building background. Mr. Mathison believed that the Internet had the potential to offer experiences that his students otherwise would not have. Ms. Glass felt that she had the ability to offer more schema-building for the children as she directed the children through technology-related literacy lessons.

Research Question 3

What experiences helped form these beliefs and practices?

The purpose of this question was to examine what experiences helped form the beliefs and practices of the two teacher informants for integrating technology into their daily literacy instruction. Data included observational field notes as well as relevant teacher-generated artifacts.
Analysis of the data collected revealed three major themes that characterized how the teachers integrated technology into their daily literacy practices: engagement with technology, collaboration/team building, and technology-centered discussions. In addition to these major themes, 11 categories were also established in an effort to further define the nature of each theme as evidenced in each case. The 11 categories included: motivation/enthusiasm, creativity, constructivist/facilitator, active learning, involving parents through technology, respect for students, individualized instruction, students working together, teachers working with colleagues, building schema, and oral communication skills.

Three major themes were evident for Mr. Mathison and two were evident for Ms. Glass. The arrangement of these themes and categories does not represent their importance; rather their sequence helps to tell the story of each teacher’s experiences.

Table 5 summarizes the emergent themes and categories for both teacher informants in relation to Research Question #3.

*Mr. Mathison’s Experiences*

*Engagement With Technology*

For Mr. Mathison, three categories emerged for engagement with technology, which included motivation/enthusiasm, creativity, and constructivist/facilitator.

Throughout his life and teaching career, Mr. Mathison reflected on a variety of experiences that helped him stay motivated and enthused about using technology in his classroom. He reported that many different factors played a part in his engagement with technology over the years and included working with his colleagues, personal
Table 5  

*Summary Chart for Research Question #3*

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<tr>
<th>Research Question #3</th>
<th>Mr. Mathison</th>
<th>Ms. Glass</th>
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<tbody>
<tr>
<td><strong>Themes</strong></td>
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<td><strong>Categories</strong></td>
</tr>
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<td>Engagement with Technology</td>
<td>Motivation / Enthusiasm</td>
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<td>Creativity</td>
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<td>Constructivist / Facilitator</td>
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<td>Collaboration / Team Building</td>
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<td>Building Schema</td>
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<td>Oral Communication Skills</td>
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experiences, his internal motivation, working with his students, the availability of technology, and being inspired by the ideas of others.

Mr. Mathison reflected on his personal experiences with technology, and his recollections took him back to his own childhood. He remembered particular television programs from that time and their integration of authentic literature. He remembered shows such as Barnaby and Captain Penny where literature passages were read on screen while the camera zoomed in and out across the pages of the story. He remembered the characters on those television shows reading books and held fond memories of those experiences. He described the experience as watching talking heads more than anything and that it was very different than all of the graphics now available. It was an experience
he clearly remembered because of his engagement with the technology of that time, the
television.

Mr. Mathison very much enjoyed graphic arts. He recalled being on campus in
college and going to the library where he thumbed through old magazines and
periodicals. He looked at graphic arts magazines because he appreciated their artistic
style, which involved putting two- and three-dimensional things together on a flat plane.
He always admired graphic art and relished being able to create on a page.

As he entered adulthood, he began to manipulate graphics. He described it as
great fun and cool. He felt that new technologies allowed him to do things that were not
the standard when he was in college. He talked about being able to design, crop, and print
images. He noted that it was not until he began working at his current school that things
really started to happen.

Mr. Mathison owed his continued enthusiasm for integrating technology to the
colleagues with whom he worked. He described the group as persistent and stated,

We don't give up. This group has been really good about not giving up when
we've hit a wall. We've hit some serious walls with some things we've wanted to
do. We're not giving up. It may slow us down. (Interview, 5/6/06)

Mr. Mathison stayed motivated about incorporating technology for use in his own
classroom and also worked hard at figuring out ways to develop ideas for his colleagues
to use as well. He described an experience where he planned to attend a seminar not for
himself, but on behalf of his colleagues:

I'm pumped. I'm trying to find somebody now. This summer, I'm part of a team
that's going to a national conference. They put on a 200-teacher conference, with
5 days of math and science for 3rd, 4th, and 5th grade. The 4th grade teacher
couldn't go, so I'm the substitute. I have to be a 4th grade teacher for a week and
talk and do all 4th grade stuff. I'm hoping to glean from that and make these little
movies even at that level, and bring it back to school and house it, so any 3rd, 4th,
or 5th grade teacher in the district can start to use things like this in their own classroom. (Interview, 5/15/06)

Just as Mr. Mathison reached out to help his colleagues, he learned greatly from them as well. He fondly recalled an experience where he and a group of colleagues were involved in talking through some action research they each planned to conduct in their individual classrooms. It was a voluntary program and a research professor from the local university served as a facilitator for their discussions. He described the experience in the following way,

It was part of a grant that was funded to help make it all happen. We didn't get paid. It helped to pay her to be there, for her time involved. She was always available. You could email her stuff. She would read your stuff. We did one or two presentations as a group with her through an organization in which she was involved . . . She was the University person who could help us with the methodology of research, just helping us hone our thoughts and be able to construct past the verbalization of where we wanted to go with it, or what would make it work. She's so good at that. She's very good at that. She would just ask the right questions to get your thoughts going. Our heads were all twisted around, and we would leave mentally exhausted. (Interview, 5/15/06)

The ultimate goal for Mr. Mathison and his colleagues on participating in this type of research was,

Of course, the whole idea behind that is that if we can make change and make it happen, and then document that it does have a positive influence, or negative to what you're studying, we can move that up in through our school system, and make change. (Interview, 5/6/06)

The motivation that Mr. Mathison gained from being involved in a variety of projects with his colleagues helped provoke his personal motivation. When asked about finishing a project on which he was currently working, he stated, “When I'm done with this, I'm not done. I've got to find some grant” (Interview, 5/15/06).

His personal motivation then carried into the direct work with his students. When asked what inspired him to keep teaching, he responded and noted that,
One area is just the students, themselves. When I let go, and let them go, and I see them doing it, that's the impetus to keep doing it and keep letting go, keep sitting on my hands, keep letting them try to do it. That's part of it. The other part is, it's more like a hobby. I'm interested in it. I'm interested in technology. If it was solely on child response, I would lose out because there are times when you do everything you can and it doesn't happen, or you don't do anything at all. You're not involved and it happens in spite of you, which is great. I don't want to rely completely on this being my only source of joy because I see them fly. I mean, it is, but I don't bank on that because there will be times when it's just going to be, you're going to hit the bottom because it's not going to work the way you want it to work, or you thought it was going to go one way and it totally doesn't. Try another way. I enjoy the graphics. I enjoy getting excited about things. (Interview, 5/15/06)

Mr. Mathison attributed his motivation for developing technology-related activities to the technology equipment that was readily available to him. He also noted that most every piece of technology equipment that was placed in his classroom was due to grant-related funding that his colleagues and he worked to secure. He commented,

Having the technology allows me, in some ways, to expedite things, being able to create checklists for . . . like, using KIA as a way of coming at the same concept for rehearsal . . . in a different way. Not meaning rehearsal for them, but we’ve been talking about ending sounds . . . “ED and ING”. We can go to KIA and play a game, or an activity, or something that helps to reinforce it . . . that lets them rehearse or practice those concepts again. It could have been a paper/pencil task before, but now it’s on the screen here, it’s at the table there. It’s something more engaging that they are more ‘familiar’ with. They may not know KIA but they know GameBoy! . . . They know those technology pieces . . . and this is just an extension of that, in many ways, once you understand it. (Interview, 6/5/06)

Mr. Mathison’s creativity was evident as he developed activities and resources from examples of work by his colleagues. In addition, he relied on resources available on the Internet. However, he believed that he was not creative as he commented,

I don't have any original thoughts. Everything you see in here is all from an idea I would run with. I run with the ball very nicely. I don't think I've ever really learned to create the ball. I can see the ball. I can see a ball. I can see the idea. I can pick it up and make it work for me, my way, in my classroom. To sit here and go, I'm going to create the Internet. Not going to happen. I'm going to create blogging. Not going to happen. But, I can take a blog idea. I can go to somebody's web site. This front-page came from a second grade web site that had three or four
pictures with some jumps, just on the front. When I saw that, I went, that's exactly what I need. I took that idea. That page came from a design in print shop. I look for something that I find pleasing. I altered it completely, but it started out as the framework. Here's the scaffolding to work on this idea. Put all my own pictures in, rearrange, show the different colors, phased it differently so that it looked like it was dreamy. I did not come up with an idea of six pictures overlapping, with a circle in the middle, and the word Dream Factory. It was another idea, and I went, I can make this go my way. (Interview, 5/12/06)

He described the process for creating his classroom website as,

That whole idea for the front-page came from somebody’s website that said check out this 2nd grade website—that website had 3 or 4 pictures on the front with the jump-out words . . . (I’m thinking, “Yep, I know where I’m going with this . . .”) . . . So it’s like seeing a nugget or an idea and running with it. So I went back into print shop for the Macintosh and looked at what they had for their pages and saw that one had some pictures with an oval with words on it . . . so I put my own pictures in, re-arranged it, re-did the color to our blue color, added the words and then made that into a picture, (a jpeg), and then that page is in GoLive. In GoLive I can use maps, and draw boxes for the links off those spots, so I can have a picture and then draw a box that’s going to be over an area. It makes it live because the mouse is over that layer. So, since I like technology, this isn’t just the ‘average person’ who is using the technology . . . it’s someone who really finds pleasure in working with it and manipulating it and so now “What can I do to make it work in the class?” (Interview, 6/5/06)

Mr. Mathison explained how he found the content for his classroom website in the following way,

Somebody else said, “I saw this website . . .” and that’s all it is. I run with the ball, I’m the ball-runner. I very seldom will find it myself . . . almost everything on my website . . . is the result of I’ve gone (and gone), I’ve looked (and looked), “I liked that point;” or, “I’d like to know how they do that” or “Where did they figure that out” . . . so there is no set book that you can read on . . . well, there is one out now called Secrets of Video Blogging but I found out that I’d already figured out on my own about 2/3 of what was in the book - on the Mac side . . . I haven’t touched the Windows to learn that yet . . . but it was kind of spooky that they’d say “try this website” and I’d have “been there done that.” (Interview, 6/5/06)

One of Mr. Mathison’s current goals was to implement video blogging and have it posted to his existing website. He recounted the impetus for beginning the video blog project as,
It was a thing where this guy was putting together these video blogs of how to do things. I looked at that. I saw things he had on the side. I wanted it. I thought, video blogs, that's the direction we have to go, get our stuff out that way, and make the progression. It will take longer... I looked at his links. I took all the extra stuff off and went to the main link. He described this, and then, I played with it. (Interview, 5/12/06)

Mr. Mathison summarized the vision of his strategy for creating resources and staying motivated as, “I run with the ball. Somebody else was bouncing the ball” (Interview, 5/12/06).

Mr. Mathison had many experiences with surfing the Internet and he described this readily available vast information source as “a big, wide world” (Interview, 5/6/06). Mr. Mathison openly admitted that there were dangers in allowing children to work with the Internet. He believed it was his responsibility to create a safe environment in which children could still interact with Internet resources and be sheltered from the dark evil out there. He described in more detail his rationale for maintaining a highly structured online environment for his students,

Yes. If they are in the site, and they click someplace else, then we talk about big ads and everything else and how to control it. I have never allowed them to do Google searches, not in 1st grade. (Interview 5/6/06)

He described a situation that one of his teacher colleagues experienced while working with the current blog site they both subscribe to for their classrooms,

Supposedly, on this blog, Margaret has tried it, and she's gotten some dirty stuff. It's a wide-open blog, like next blog. I don't know what's going to come up next... you don't know what you're going to get in the blogs. So, we just stay here, and with everything that is on here... I have jumps that are here, web sites they go to like Star Fall. (Interview, 5/6/06)

Mr. Mathison enjoyed allowing his children investigate topics such as the birds, which gave them an opportunity for authentic research and discovery. He reflected on the experiences of allowing them to participate in this type of research project. He described
it as, “I’ve always enjoyed it because it fosters such high level thinking skills. The process of going through it, having it when you’re all done, it’s just awesome” (Interview, 5/6/06). Mr. Mathison found new ideas from the Internet on a regular basis. One of his new goals was to develop mini-video clips that would be used as instructional resources for his current students and future students. He described this form of video blogging that he was interested in implementing,

You will not sit there and just watch it and go okay it’s a science experiment. A science experiment is doing it. It gives you a jumping point. How does yours compare to the one we did. Ours didn't look like that at all. (Interview, 5/15/06)

He further commented about video instructional aids,

The thing with this is, you press space bar and it stops. When you're doing a science experiment, for instance, we do a science experiment, and we're looking at dispersion of color in cold water and hot water. You take an M&M. You drop it into cold and then drop it into hot. We do all the parts and pieces in video tape and do the whole thing and we're done. The next year or the next time or with another group, they may do their own experiment and compare theirs to ours. Was their water the same temperature? Was there as much water? They change variables. Did they use hot ginger ale and cold ginger ale? Did they use bubbly water or regular water? What were the variations on theirs? Then, you start looking at what can have an effect on something happening in your experiment. It's way cool. In conversations about what makes something happen or not happen, this magnet activity. How can you vary the magnet activity in your classroom, or with different teams? That's all part of just the thinking process, the thinking skills, so you're really tapping into it. On the little movie, which you can make bigger, you can spacebar and stop, and then do your experiment. You can come back and spacebar and see what happened there compared to what you did. You really control the medium completely and pace it to your own speed. (Interview, 5/15/06)

Collaboration / Team Building

For Mr. Mathison, three categories emerged for collaboration/team building and included involving parents through technology, students working together, and teachers working with colleagues.
Mr. Mathison attributed many of the experiences he provided for his students to his continued collaboration with his colleagues and him. Most notably, he and his colleagues had written numerous grants that allowed for additional technology to become available in their classrooms. Before any grants were written, the dream or the vision was created between the colleagues. The grants have been the ways in which the dreams have become realities. He described their reasons for engaging in grant writing,

We write grants to make it happen, like videoconferencing, or being able to do the blogging with a computer that will project onto a screen or a television. Those just aren't regular classroom items. We've written grants all along to be able to sustain the dreams that we have about helping children fly, or having them stretch beyond the regular textbook and overhead types of tools. (Interview, 5/16/07)

He believed their teamwork and collaboration were the reasons they were successful in grant writing. He stated,

That's why it's always been a team thing. That's why things have always happened, because we are not isolated in a classroom trying to do it all. If I was here trying to do a grant, and make it all work, all by myself, I don't think it's going to happen. I like working with other people, and having a team effort because where I'm strong, they might be weak, and where I'm weak, they might be strong. Between us, it builds better. That's what made the C5 project work because, there were things that I knew on the tech side that helped bring this part together, things she knew on other things in curriculum that brought that together. By working together on it, having a common goal that's exclusive. (Interview, 5/17/06) . . . Also working with a couple people specifically on grants or on ideas or concepts that opened up the doors for making wishes for things and just dreaming about, such as “If I could have keyboards, we could do keyboarding . . . or then I try this, or add that . . .” and C5 came out of that time period too, which was about getting computers to families so they had the technology at home to bridge the “digital divide” as they called it (which is still there, in a different kind of way, but they don’t call it digital divide anymore). (Interview, 6/5/06)

Mr. Mathison described the way the grants were located as,

Everybody goes and looks for grant possibilities, grant proposal ideas, like the State Grant, or whatever grant. Just try to look for it, or the Principal puts stuff on our desk. I just got this email for this one. We tried one that was a big Toshiba grant, $125,000, big stuff. Make it happen, after school. Get paid to do the work outside of class and everything. It was a $125,000 grant. That's grant writing. You
put all your time in. We've had as many fail as we get. I've got a 20 inch Mac right there in front of me that is going to last me for a couple of wonderful years because of our grant writing experience and that's good. (Interview, 5/17/06)

Mr. Mathison described the actual writing process for the grant as,

A lot of times we'll take sections. In the last grant, the grant from the State, one person kind of wrote the framework, the scaffolding. We all interjected. One person had more research background, because she just finished her doctorate. She was better at pulling together and having the resources at her fingertips. (Interview, 5/17/06)

Just as Mr. Mathison allowed opportunities for his children to discuss in authentic learning tasks, he and his colleague spent many hours talking through their thinking behind the writing they planned to work on. He commented,

Margaret and I will talk all the ideas, and talk it through and then she'll flush it out. We'll come up with the concept that makes it work, what's the hook. We'll go through it, and then think about what we can use as a theme for the write. She'll usually work on it first and then throw me a couple of ideas. I'll banter back and forth with her, and we'll like it or not like it or scrap it and try again. Then, we just dig in and do it. I'm better at proofing than creating. (Interview, 5/17/06)

He summarized the grant writing activities by stating that his colleagues were better at generating the ideas or the hooks to make it all happen, then actually sitting down to write as a group. He noted that it had always been a shared process of talking, then writing (Interview, 5/17/06).

Mr. Mathison believed strongly in encouraging parent involvement in his classroom although, he was realistic in what could be expected of his parent clientele. Due to the scarce interactions that he had with the parents and family members of his students while at school, his thinking of how they could be involved drastically changed. Instead of just allowing the parents and family members of his students to be involved while only on school premises, Mr. Mathison envisioned a way that they could still be
part of the classroom through the use of technology. He credited this new vision to his attendance at a speaker presentation,

He gave the example of how these people, these children who were in sparsely populated areas could connect with the school with computers at their convenience and still be connected to the school and the school could still collect the tax dollars they needed because these were students that were connected. In the reality, the students and the teachers and the students and all of that, were able to bond through the Internet, because they couldn't get together on a regular basis because they were just scattered so far, whether it was in Canada or Northwest United States or something like that. Wherever it was, oh my goodness, that's exactly what we needed. I have parents that can't get connected with my classroom and all those years of never seeing anybody because they all had to work. I have 20% show up for any kind of report card pick up. They're here, but just really low. How can I get them to see their kids work or share with them what's going on? They're not getting the phone calls. That just clicked. This thing fits. We can dream bigger dreams, make it happen. That's where that one started. (Interview, 5/17/06)

Mr. Mathison described his initial experience for discovering this new way to connect with his students and their families,

I was dragged to go hear Alan November with a bad cold. I didn't want to go. I had my box of Kleenex. I listened to him talk . . . and something clicked with what he was saying. I went back to school. Within a day or two, I was over talking to the local cable company. I knew the guy that was in that particular department. I said, “I have a dream. I can't explain but this is what I'd like to do.” I was in the right place at the right time, and asking the right question. He said, “I'll be your wedge. We'll put the cable in the home but you've got to go find somebody else to supply the money for the computers.” I came back to school, thought about it for the day, and then went over and told Margaret, and said, “Listen, I want to do this but not by myself. I'm going to go back and ask him if we can both have two classes because it would work better.” Margaret said, “Great, let's do it.” I went back to him and asked, “Can we do two classes” and he said, “Yeah, that's not a problem.” (Interview, 5/17/06)

Just as Mr. Mathison’s colleague encouraged him to attend the presentation he initially was not interested in, he reciprocated the support and asked for a cable connection for her classroom as well. This allowed both to collaborate on the newfound project. The interest
in that initial presentation spurred on and eventually the speaker was invited back to Mr. Mathison and Margaret’s building,

He, eventually, was invited back and he did a presentation in our building about what was going on and how we were using the technology, because we were ahead of the curve. We used his book. At that time, when we were doing it, our angle was the disparity between haves and have-nots. The have-nots can't even get close to the computer. At that time, it was $1200-$1400, plus Internet access. It's not there anymore. It's not like now which is dirt cheap. At that time, we were way ahead of the curve on trying to alleviate that disparity. He was very interesting. He came here a couple of times. (Interview, 5/17/06)

By working with the local Cable Company and local benefactors, Mr. Mathison and Margaret supported the narrowing of this gap which Mr. Mathison described as the C5 project,

Historically speaking, probably the biggest one has been the C5 project, which is children connecting classrooms and community with curriculum. We were able to get the cable company to offer for families, Internet access, free for a year, kind of a scholarship type thing. We used that as a wedge then, to be able to go to organizations or to grantors to be able to say, we have this piece. We need your piece. At that time, computers were $1200-$1400. We wanted to do Mac because we wanted to stay as transparent as possible at that time. That was probably eight or nine years ago, probably that long now. Margaret and I were able to get the cable company on board. We wrote grants and really part of that was because we had a couple of guardian angels that were very helpful. Of course, we didn’t know how to do cold calls. We tried cold calls. We got a listing of who's in the neighborhood and tried cold calls, and sent out fliers and everything in the beginning, until we had a couple of guardian angels that kind of came to our aid and helped us understand how to do grant writing, for this type of a grant. Margaret had already written grants. She had already gotten them for the school, with the help of other teachers, an Apple Crossroads Grant and second tier of that same grant, which had stuff in the building before I even came in. We were already technology minded before I walked in the building. (Interview 5/6/06)

Mr. Mathison approached his colleague, Margaret,

I said, Margaret, let's do this together. We'll be able to support each other. We both have strengths and weaknesses, so we'll end up with the best of both worlds. That worked. After doing it a couple of years, we incorporated more teachers in the building. We were able to get funding. Up to that time, we didn't put any money into us. It was just, any money that came in went for the family. We would approach a person and say, would you like to help support a family? If you would
support with $50.00 or $100.00, that goes purely, 100% towards the family. They're going to have to pay for half of the computer. The granting would pay for the other half. In the beginning, we did get a number of people who liked the concept, and wrote checks out of their pockets, wrote checks for $50.00 or $100.00 to help for a family to get a computer in their home. It's a window to the world, opens doors. (Interview 5/6/06)

Mr. Mathison commented that the C5 project opened doors in a variety of ways. He and his colleagues used technology in such a way that they helped families get technology in their homes. The school doors were open 24 hours, seven days a week. The parents and family members had access to a web site they could visit. They could see children’s work and pictures of students. The website became what was in the hallway; that they normally would have walked down to see their children’s work, it became the virtual bulletin board.

Not only did Mr. Mathison and his colleagues work together to gain equipment to use in their classrooms and make better connections with their school community, they were also interested in refining their practices through research. A group of them were involved in conducting action research in their classrooms and supporting each other through the process, “We were all working on research projects. It was getting into, listening to each other's steps along the way of action research” (Interview, 5/12/06). Mr. Mathison and his colleagues thoroughly enjoyed working with a professor from the local university and reflected,

We had a good time with her. We were trying to set up a program to do action research. We used her as a research person, a college person. We met monthly. She was always there with us for those. Friday, after school, for at least two hours, and just sat and talked through the process. It was the most refreshing couple of hours for all four or five of us. (Interview, 5/6/06)

He personally noted, “Yes. I loved it. It was the best 2 1/2 hours on a Friday afternoon once a month. It was just good stuff” (Interview, 5/12/06). Mr. Mathison felt that the
successes he had experienced were directly associated with the opportunities of working with his colleagues as a cohort group. He relished in working with people and being involved in the sharing of ideas. He stated, “It really is colleague experience, colleague intertwining, putting all of that together. That makes it all happen” (Interview, 5/17/06).

Mr. Mathison considered his passion for life-long learning to be nurtured in the environment in which he worked. The passion he and his colleagues shared was evident in his comment,

There's just so much otherwise that we're doing and wanting to do. Part of that is, too, because there are people here that are challenging each other. We're already working in that direction. Now, we have to go and do these in-services. It's like, I need time to do this. We need time to do that. We've got to set time aside to write this grant so we can do this thing for next year. (Interview 5/6/06)

He further described this passion as,

The heat is the fire in the belly of the teacher that's excited about using this stuff and comes to school and says . . . not that they have the answers . . . but how they learned to use this tool and that they are going to share. (Interview, 5/6/06)

He also stated,

But being in this school made everything happen. All of my dreams have come true, being here. All the places I’ve gone: Washington, Columbus, Seattle, Louisiana, St. Louis . . . all the places I’ve gone to all had something to do with technology and most had something to do with literacy and technology . . . but they all happened while being here. So this was really the impetus for me. (Interview, 6/5/06)

He described his building as “cooking with gas,”

It was one of the few buildings in the district that was wired, even though it was wired with the old phone lines. It still got you out. Just being interconnected to other computers. That was because of the grant stuff that was going on before I got here. I just kind of walked into what was already here. Then, the dreams started coming true. Being able to have this or have a computer that did that, or the power to do this, which I didn't have before. (Interview, 5/17/06)
Although Mr. Mathison shared this passion with a group of teachers in his building, there was one in particular who continually expanded his thinking. She challenged him in a non-threatening way to be more adventurous and try new things with technology. He described her as, “My mentor was always Margaret, she was already dreaming the dreams and stretching and trying the technology stuff. So, for me it was easy to come alongside” (Interview, 6/5/06). He also shared,

Just being in this building . . . this building with people. There was an Apple grant that came through before I got here. Four or five teachers got together and wrote the grant, and it provided computers in their classrooms and printers and the area of access, which wasn't too much, but access to the world. They went out and did things. They had cameras, and just seeing that and that being infused. When I got here, we became a magnet school, which brought computers to the classrooms, and started that whole ball rolling. It was just walking into a candy store. Wow! I can do this. Then, working with Margaret, probably with her more than anybody else. She was already doing grants with people that she was working with. That dovetailed the whole experience. She and I started doing stuff together and writing grants and doing projects together even at cross grade levels, to make things happen. Working with her and making that happen. We pretty much bonded in that we, for the most part, have always tried to whatever we do, we share it. The award that we talked about yesterday about being nominated for it, don't nominate me, however, nominate us. The stuff that we share with each other, we always try to watch out for each other that way. There are times when she gets invited or I may get invited. I'm the quiet one and she's the more outgoing person, in expressing and explaining. (Interview, 5/17/06)

Due to the desire to continually learn more, Mr. Mathison and his colleagues created their own professional development opportunities. He reflected on these experiences,

For me, for professional growth, my professional growth has really been being involved in this building. I have grown the most, worked the hardest, tried to accomplish the most goals, by working with cohorts, trying to dream the dreams, like to get the Smart Boards. Okay. Now, we've got the Smart Boards. How are we going to use them? Well, there's definitely a crash course in how to light the fire to make it work, and then get other people involved and do that. So most of everything that I've done, really since I've been here, has been more of a – “Let's try to write this grant and get this in, and the grant, of course, is going to be in a certain area, doing certain types of things, so then you've got to get into it, and
learn how to do that, and make that work”. In terms of taking course work, there has been none of that. Taking extra hours for this or that, no. Reading books, yes, related to whatever it is we’re trying to do in the classroom. I've done most of it that way. In a kind of a serendipitous way, doing it instead of taking a course on how to use the Smart Board, or a course on how to integrate this particular piece of technology in the classroom. (Interview 5/6/06)

Mr. Mathison also described the opportunity to present what he and his colleagues were doing at a number of conferences as another form of professional development. He commented,

We've presented at the State level, not just C5 in terms of how do you connect with families, but projects going on in the classroom related to that. We've done that. We've had the Governor right over there in the classroom. He's been here. State Representatives have been here to see our classroom, to see our building, Margaret’s room and a couple of others. We were invited, because of C5, to go to Washington D.C., and we took four or five students with us. They were doing a technology conference there for two days. We were invited by the Secretary of Education to come. We did a live presentation in terms of - we just took our things with us. While they were there, they had to create their iMovies and document their iMovies, and do all their research, and put it together and then, it would be presented at the very end, two days later, at a luncheon, for everybody to see. There were, I forget how many, countries represented, 27 countries maybe, represented . . . 500 people at the conference. It was exciting, because all the things that we had talked about and had worked with students on doing was shared at this event. (Interview 5/6/06)

During this conference, the children were engaged in a project focusing on character building. The students each chose a character count pillar such as honesty, courage, and so forth. While in Washington D.C., they visited different memorials and decided which character pillar would work for that memorial. The children photographed the memorials, and also found pictures as they conducted research on the Internet. They put it all together into a movie and had only two daytime hours to complete the task. The children took the pictures on a Sunday on their own time. Monday, during the day, they were part of the breakout session where conference participants came to watch them work. The children worked all day on Monday and Tuesday. Then, on Wednesday they
presented their work to a group of 500 adults. Mr. Mathison reflected on this memorable experience as, “It can happen. It wasn't, well we've been doing this all year long. No. It was live. You watched them create and talk to each other, just like coming into the room and seeing how to do the things” (Interview 5/6/06).

Part of Mr. Mathison’s reasoning for the strong sense of collaboration that was felt between his colleagues and him was due to the nature of the teachers’ personalities. He described the teachers as, “Caring. Warm. Productive. Child-centered. Eclectic. All of those. There are many different styles of teaching in this building, and we're all child-centered” (Interview, 5/17/06). He said what was most helpful was,

having coworkers that you can bounce ideas with and work with and share ideas and make things work. When you're trying to do it all by yourself, it's like you might find some stuff. You might not. When you can catalyst off each other, and just keep pop corning off each other, the way we have with the Smart Boards, bouncing ideas, it's just, everybody is on fire. So, I think, colleagues are important in making all that work too, in terms of technology. (Interview, 5/16/06)

He felt that the building became one-minded in many ways, and concluded, “It's a good team that's together” (Interview, 5/17/06).

Technology-Centered Discussions

For Mr. Mathison, both categories emerged for technology-centered discussions, which included building schema and oral communication skills.

Mr. Mathison reflected on direct experiences in his classroom with children. He credits these experiences as being influential in his current practices and beliefs about integrating technology with literacy instruction. He believed that teachers, himself included, needed to foster opportunities for children to make the necessary connections to learn information by using technology. He commented that what inspired him to keep
trying innovative techniques with technology was students with whom he worked lacked
necessary background experiences. He believed technology could help to bridge the gap,

When you can take something like that and pull up a bale of hay, or you're talking
about Madagascar and can see them right there, you've just expanded their
knowledge base. (Interview, 5/6/06)

His thinking was that if you give students valuable experiences with technology, and
enhance these experiences with interesting dialogue, meaningful learning would have a
greater chance of taking place.

Mr. Mathison felt strongly that if children had ownership of their learning
experiences, they would be able to connect those experiences in meaningful ways to
future learning experiences. He commented,

That's another piece to literacy, too, that I didn't mention that really makes sense.
Ownership of the knowledge. The more of their books, the more of their writing,
the more of their work. Some of that shows up on the web. It isn't just that it's
going to be here in the room, hard copy around the room. It may be today, Tyria
took pictures and we already put it on the web. A blurb of hers is there now. She
didn't write me a script and then I would type it for her. It was, let's talk about
what did you just see, what did you just experience? (Interview, 5/12/06)

Finally, Mr. Mathison concluded that it was both personal and professional
experiences which helped him form his beliefs and practices for integrating technology
with literacy instruction. He stated,

It’s all the same thing, because it’s being here in the building. It’s professional,
but it’s also very personal in that, for me, the technology is more of the edge; it’s
the creative part of how do you take that paper/pencil and move it past a
paper/pencil? What can you do with a museum? OK, so I’ve got this museum
concept (which someone else shared with me . . . it’s not my idea) but how can I
take it and use the technology that we (and they) are familiar with and bring it up
a notch or two for them and then have it become something that they own. When
you really look at it, it’s not my design . . . all I did was cut out the letters. That’s
it; everything else is theirs, pure and simple. I always tell them, “go back and look
for more, go back and look for more,” but other than having the links available for
them on the computer, where they could just click and go to it, everything else is
theirs. (Interview, 6/5/06)
Summary of Mr. Mathison’s Experiences

All three themes of engagement with technology, collaboration/team building, and technology-centered discussions were evident in the data supporting Mr. Mathison’s experiences. Eight categories also emerged and included: motivation/enthusiasm, creativity, constructivist/facilitator, involving parents through technology, students working together, teachers working with colleagues, building schema, and oral communication skills.

Mr. Mathison viewed the experiences that influenced his beliefs and practices as both personal and professional, and did not make a defined separation between the two. Mr. Mathison reflected on his motivation, and reported that he was always interested in visual images and technology. The assignment to his current school building was the impetus for his continued enthusiasm.

Mr. Mathison denied that he was creative and explained that his ideas came from others. He said that he adapted the ideas to fit his particular needs. He felt that his experiences of physically searching and adapting ideas allowed him to construct and take ownership of the projects he wished to implement in his classroom.

Ms. Glass’s Experiences

Ms. Glass recalled a combination of both personal and professional experiences that helped form her beliefs and practices for integrating technology with literacy instruction.

Engagement With Technology

For Ms. Glass, the categories that emerged for engagement with technology included motivation/enthusiasm and creativity.
Ms. Glass’s continued motivation and creativity with using technology in her teaching was prompted by both experiences in her home and also at school. She remembered that her interest in first using technology was sparked when she and her husband purchased the first computer for their home. She reflected,

It was definitely more job related, however, with my family at home helping my own kids use the computers, that also got me interested in using computers in my classroom. (Interview, 4/26/06)

She attributed most of the practices she had implemented for supporting literacy with technology as being the result of school-based initiatives. She commented that each year, she was responsible for verbalizing her teaching goals and that,

One of my goals this year—and we were supposed to tell our goals to the principal this year—my goal is technology! As my technology goal, I’m always working to be more proficient on the Active Board or using computers and computer lab. I’ve put that down every year. (Interview, 3/30/06)

She remembered first engaging with technology 15 years ago, while still teaching in her original school building. Recently, their old building had been torn down, and the district built a new state of the art building in which Ms. Glass currently taught. As part of the new technology initiative for the building, the technology team sought out teachers to try some new technologies, with one technology being the ACTIV Board. Ms. Glass recalled this wonderful opportunity,

Some of the rooms didn’t have Active Boards. Since I am the “senior teacher,” we were doing an experiment on whether we wanted Active Boards or Smart Boards, and I immediately said to get the Active Boards, which has been a good decision. (Interview 3/15/06)

Ms. Glass recalled that technology has kept her inspired to teach,

Every time we get new technology, I’m so turned on by “Whoa, I get to do this now!” Active Board last year . . . and also digital camera, it’s been wonderful. (Interview, 3/31/06)
Ms. Glass also believed that by using the ACTIV Board, the children were able to create and save things and just expanding. This had helped everyone to grow, including herself. Ms. Glass felt that, “By using what I have now, I’m a better teacher. The Active Board has been very helpful” (Interview, 3/31/06).

Ms. Glass talked more specifically about the experiences that she had with technology in her home. She remembered,

I had one in my home first. We had the old Apple computers at school, but they were new then. I had a Radio Shack computer that couldn’t do much—black with green writing. (Interview, 4/26/06)

Ms. Glass felt more comfortable using computers, since she had one in her home for quite a long time. She believed that if more teachers made technology available in their own homes, they too would feel more comfortable with computer usage. Her reason for making technology available in her home was not for herself initially, but rather for her own children,

With having 4 children, I wanted them to be on the top edge of things. We got our computer when they were young . . . I (personally) got going on the computer with my kids, so as soon as we were able to get computers in the classroom, I put my classroom to work on the computers and it’s been a “go” ever since . . . the focus being to involve everyone, since it’s a Computer Age. (Interview 3/15/06)

One of Ms. Glass’s son’s was also mentioned as being influential in helping her to see the benefits that technology offered with literacy development. She stated,

He was not reading until the 5th grade . . . he was so singled out that by 5th grade he was put into 1st grade . . . his disability made me a better teacher. Every time he left the classroom was when they did fun things. He would cry at night because he missed hearing his teacher read books, so I avidly read to him. (Interview, 4/7/06)

The connection to technology with her son’s literacy development was,

When we got the computer, is when he started to read. The computer seems to bring out the kids’ desire to read and to type. (Interview, 3/15/06)
In 5th grade, we got a computer, he started instant messaging with his friends and boom, he could read! (Interview, 3/31/06)

She found with her own children and with the children in her classroom, that in today’s technology-minded world, they need to be adept at using technology for everything. She noted, “Students are used to it and they are more motivated to read, write, and respond through the use of technology” (Interview, 6/15/06).

Ms. Glass constantly searched for new and exciting ways to integrate technology into her daily teaching. She regularly asked, “Are you seeing things out there I could be doing . . . If you see something phenomenal, could you email it to me?” (Interview, 4/3/06). Her quest for new knowledge was evident and she fondly recalled her Master’s program as a turning point in her career,

I did my Master’s through Mary Grove . . . It was a lot of work . . . there was unit on technology and that really got me going . . . that was pre-Active board but it really got me doing a lot of things on the computer with the kids . . . that helped a lot. (Interview, 4/26/06)

She also remembered that her Master’s program influenced her beliefs about using technology to support literacy instruction. She commented,

Professionally, I have taken some technology classes through my Master's work that have proven to me that technology enhances the learning experiences of literacy in the classroom. (Interview, 6/15/06)

Ms. Glass further reflected on her experience of setting technology goals for herself. She stated,

This year, my goal was to form E-portfolios. I’m trying to take digital pictures of the kids and what they do. For instance, we did an insect project; I photographed them holding their insect that they made and put that into a portfolio, which I opened for each student and labeled it “2nd Grade Portfolio” and I’m just dumping those things in, as we go. Looking ahead, I should have done it as a PowerPoint presentation in each of their folders so that we could open it and run it, and it could be viewed and wouldn’t have to open everything up then. Next year will do it as PowerPoint. My goal, coming down the road, is to have the kids add to their
own portfolios, whereas right now I’m doing it. It’s on an H-drive, which is the hard drive for the computer for the school system. You could go to the library, bring up my name, with my password, go to the H-drive and you could get everything I have on the library or anywhere in the school. (Interview, 3/30/06)

*Collaboration / Team Building*

For Ms. Glass, two categories emerged for collaboration/team building and included involving parents through technology and teachers working with colleagues.

Although Ms. Glass was herself instrumental in setting her goals for using technology, she regularly enlisted the support of the technology coordinator in her school building. She commented,

> I am guided by the availability of technology my school has provided for me to use and by my computer tech. leader in our building. There are other teachers in our facility that meet on a regular basis to discuss our ideas and what we are using in the classroom that works. We also teach each other new tricks for involving students through technology. (Interview, 6/15/06)

She often collaborated with the technology coordinator on projects such as the one described below,

> Last year, the kids did some writing and the computer tech came in and put their photograph onto the computer, tape recorded everything they wrote about winter and what they like about winter activities, and made a little video of each of the kids. A copy was then given to everyone. (Interview, 3/15/06)

Ms. Glass consistently found new projects to work on with the help of the technology coordinator like the E-portfolios previously mentioned,

> The E-portfolios is a new thing and was one of my goals for the year. Molly (our technology person) set up my portfolios on the computer . . . everything saved on disc or hard drive can be loaded onto kids’ portfolios and as they continue on through the school system, their future teachers can add to their portfolios. At the end of 12 years, this disc will make a very nice gift to parents. Or for parent-teacher conferences, the E-portfolios can be opened and used. I want eventually for each student to be able to open, build upon, and correct his/her own E-portfolio but I don’t yet have that capability (Interview, 3/15/06)
She also encouraged integrating technology in ways that supported children with special needs in her regular classroom. She was always thinking ahead for new ways to do this. She mentioned the following idea,

I haven’t talked to the tech people about how much space it would take up and whether we can do that. But it’s a good idea. Another thing: We have a couple of kids who are autistic; with my digital camera we took pictures of the different people that they work with in the classrooms in the school, in different places. Those kids can flip through those and (today, it’s music day) and these autistic kids can then find their teachers in their binder. On Daniel’s little box, we have laid out all the activities throughout the day, then he takes those off because he’s more of a person who has to know what happens next, so he takes his pictures off as we go. Digital cameras are nice! (Interview, 3/30/06)

She finally commended the technology support person in her building and described their working relationship as,

Molly is really good . . . because I’m interested in technology, she will email me things (i.e. a website for butterflies) and she sent me a lot of sites for putting together my portfolios. If she knows you need something, she will email it to you. But there are some teachers not interested. (Interview, 4/24/06)

One experience that Ms. Glass reflected on was her relationship with the parents of the students in her class. Ms. Glass was interested in providing many opportunities for parents to become involved with the aid of technology. She stated, “I think the parents influence me a lot in giving me the positive feedback that I get” (Interview, 4/26/06).

She provided regular opportunities for parents to be involved with technology such as when she continually asked for volunteers to help out with research projects through the year that involved using the laptop cart. She described the opportunity as,

I have volunteers come in and we did our research on the computers, etc. (Interview, 4/3/06)

I really pull parents in a lot. And normally when I have my computer lab here I send a note home and ask for helpers. The birdhouses . . . they all come in. If you involve the parents and the parents show their kids they are interested, then the kids are going to do better. (Interview, 4/26/06)
She also believed in using the technology as an alternative form of communication for the parents. This had been her ultimate goal in implementing the portfolio project she dreamed of following through with. She described it as,

The whole idea—I was going to email them all the portfolios. So if Suzie has a portfolio, I could just email it and then they can copy it and have it forever. Everything I have on their portfolios has already gone home either in a picture form—like their report—so they all have that kind of thing . . . this is just a collection. Maybe after 6th grade, we will burn the portfolios onto a CD and have that for their graduation. (Interview, 3/30/06)

Another future goal was to provide the parents with electronic communications on a weekly basis. When asked if she could foresee a time when she might send the newsletter electronically rather than in hard copy as she had always done, she replied,

I would love to do that, but the kind of clientele we have—maybe 6 or 10 kids—and I have 2 or 3 that email me back and forth but they email me at home. (Interview, 4/3/06)

Ms. Glass also reflected on the group of teachers with whom she worked. She felt, “I think we have a real positive group of people” (Interview, 4/26/06). She described their working relationship as, “We work together really well which inspires me to do more and help them to do more” (Interview, 4/26/06). She also stated, “We have a good team. The other two second grade teachers all work well together; we do the same kinds of things and can go to each other for support or help” (Interview, 3/15/06). She preferred learning new instructional practices in this way, rather than taking classes and engaging in formal professional development. She commented on one such experience as, “We had a lady that did some classes . . . pretty much I like to just work with my team and share ideas” (Interview, 4/26/06).
Ultimately, Ms. Glass attributed her beliefs and practices for integrating technology with literacy instruction to the daily interactions she had with her colleagues as well as the technology resources she was fortunate to have available. She commented, “I have a really good team of teachers to work with. That’s important; plus having a lot of materials at your fingertips” (Interview, 3/31/06).

Summary of Ms. Glass’s Experience

Two of the three major themes for this study appeared in the data collected highlighting Ms. Glass’s experiences. Those two themes were engagement with technology and collaboration/team building. From those themes, four categories emerged which were motivation/enthusiasm, creativity, involving parents through technology, and teachers working with colleagues.

Ms. Glass described both personal and professional experiences that had impacted her beliefs and instructional practices when utilizing technology for literacy-related activities. On a personal level, she attributed her motivation and excitement to an experience which involved her son using technology for authentic literacy experiences. Her son encountered great success for using technology as a support for literacy learning, and she used his experience as the inspiration for integrating technology into her daily teaching. Ms. Glass described her involvement in her Master’s program, which gave her many creative ideas for using technology. However, she constantly searched for more ways to use the technology available in her classroom.

Ms. Glass reflected on the experiences she had with involving parents in her classroom, and described them as helping her to stay motivated, due to the positive praise she often received. The most influential experiences she had were with the technology
coordinator in her building and working with her grade level team. She relied on the technology coordinator in her building for invaluable resources and was inspired by her team members to learn more for herself and then share with them.

**Cross-Case Analysis of Experiences**

Two of the three themes for this study were evident in the data supporting the experiences of both Mr. Mathison and Ms. Glass and those themes included engagement with technology and collaboration/team building. The theme of technology-centered discussions did emerge in the data supporting Mr. Mathison’s experiences, but was not present in the data for Ms. Glass.

Both teachers reflected on personal and professional experiences that continually motivated them with integrating technology into literacy instruction. Mr. Mathison discussed both professional and personal experiences that influenced him, and stated that it was difficult to differentiate between the two. In contrast, Ms. Glass carefully distinguished between her personal and professional experiences.

Both Mr. Mathison and Ms. Glass experienced collaboration among the teachers and colleagues with whom they worked but in very different ways. Mr. Mathison relied on the support of a mentor teacher with whom he worked very closely. They supported each by building on the strengths of each other in an effort to meet their mutual goals. In contrast, Ms. Glass relied on the support of the technology coordinator in her building; however, the relationship was not that of mentor and peer. Rather, since they were non-teaching colleagues, Ms. Glass used the technology coordinator as a one-way support mechanism to gather more ideas and tools to use in her class. Each teacher took
advantage of his or her available opportunities for collaboration and used them as a way to learn and grow in his or her own personal and professional development.

The data for Mr. Mathison also showed evidence for technology-centered discussions as one type of experience that was influential in his beliefs and practices for integrating technology. Mr. Mathison engaged in many authentic dialogues with his colleagues as they worked to secure grant funding, present at conferences, and brainstorm ways to use technology regularly while at school. Mr. Mathison was inspired by the work he engaged in with his colleagues. He had a very strong professional relationship with a fifth grade teacher in his building and often reported that her enthusiasm for technology kept him motivated to do even more. Mr. Mathison and his colleagues were enthusiastic and excited about new ideas and continually engaged in grant writing activities. They were driven to continually improve their practices and achieve as much as they could. They provided each other with a strong support system.

Ms. Glass had a collaborative relationship with her colleagues; however, the data did not report authentic dialogue between her colleagues for purposes above and beyond implementing technology into daily instruction. Ms. Glass lacked the very close collaborative and supportive relationships that Mr. Mathison and his teaching colleagues shared. Ms. Glass regularly relied on the technology support person in her building and was motivated by the projects on which they worked. However, their relationship was more of a support system for Ms. Glass rather than a sharing of ideas between colleagues.

For both teachers, it was evident that personal and professional experiences were influential in shaping their beliefs and practices. Additionally, these experiences were initiated by the teachers themselves, not mandated by their administration.
Summary of Chapter 4

In this chapter, the results of a case study of two exemplary primary grade teachers were presented. The purpose of this study was to investigate the beliefs and instructional practices of two exemplary primary grade teachers as they integrated technology into daily literacy instruction. In addition, this study sought to expand the knowledge base for integrating technology with literacy instruction in the primary grades and to provide exemplary models for those teachers wishing to effectively integrate language arts with technology into their own daily practice.

Data collection procedures for this study included classroom observations, in-person teacher interviews, and the collection of artifacts generated by the teachers for their instructional purposes. Data from classroom observations and teacher interviews were integrated into the major discussions of the findings. It was found that the artifacts supported the findings from the classroom observations of each teacher’s instructional practices. For example, Mr. Mathison used a classroom management system that supported the children in working together in collaborative groups. The table display used for each group for this system is found in Appendix O. Ms. Glass supported her children in using the Internet to research on various topics such as birds. Appendix P provides an example of the note-taking sheet her students used when searching for information about birds. A final example can be found in Appendices L, M, and N. These artifacts are representative of the types of activities in which Mr. Mathison encouraged his children to engage when interacting with their classroom website. Additional artifacts are displayed in the appendices of this document as a reference to the reader in an effort to illustrate the findings from this study.
Analysis of the data identified common themes across all data sources that reflected these teachers’ practices and beliefs about integrating technology into their daily literacy instruction (Miles & Huberman, 1994). For each research question, a descriptive case study of each teacher was presented with examples drawn from the data, followed by a cross-case comparison of the two teachers. The teachers’ beliefs and practices were found to be similar, but with some important differences.

Table 6 summarizes the emergent themes and categories related to both teacher informants for all three research questions.

Research question one asked: What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms? All three themes of engagement with technology, collaboration/team building, and technology-centered discussions were evident in the data supporting the instructional practices of both Mr. Mathison and Ms. Glass. Both Mr. Mathison and Ms. Glass were completely motivated to be innovative in using technology to support literacy instruction in their classrooms. Mr. Mathison and Ms. Glass encouraged children to actively engage with technology, but in very different ways. Both Mr. Mathison and Ms. Glass encouraged involvement of the parents for technology-related projects. Each teacher had respect for the children in their classrooms and allowed children many opportunities for working together. They both facilitated the development of oral communication skills.

Research question two asked: What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction? All three themes of engagement with technology, collaboration/team building, and technology-centered discussions were evident in the data supporting the beliefs of both Mr. Mathison and Ms.
Table 6

Summary Chart for Research Questions 1, 2, and 3

<table>
<thead>
<tr>
<th>Themes</th>
<th>Mr. Mathison</th>
<th>Ms. Glass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement with Technology</td>
<td>Motivation / Enthusiasm</td>
<td>Motivation / Enthusiasm</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>Creativity</td>
</tr>
<tr>
<td></td>
<td>Constructivist / Facilitator</td>
<td>Active Learning</td>
</tr>
<tr>
<td></td>
<td>Active Learning</td>
<td></td>
</tr>
<tr>
<td>Collaboration / Team Building</td>
<td>Involving parents through technology</td>
<td>Involving parents through technology</td>
</tr>
<tr>
<td></td>
<td>Respect for students</td>
<td>Respect for students</td>
</tr>
<tr>
<td></td>
<td>Individualized instruction</td>
<td>Individualized instruction</td>
</tr>
<tr>
<td></td>
<td>Students working together</td>
<td>Students working together</td>
</tr>
<tr>
<td></td>
<td>Teachers working with colleagues</td>
<td>Teachers working with colleagues</td>
</tr>
<tr>
<td>Technology-Centered</td>
<td>Building Schema</td>
<td>Building Schema</td>
</tr>
<tr>
<td>Discussions</td>
<td>Oral Communication Skills</td>
<td>Oral Communication Skills</td>
</tr>
</tbody>
</table>

Glass. Both teachers believed they were highly motivated to integrate technology with literacy instruction and this was evident in their enthusiasm for their work. Both teachers also believed that to motivate and engage the children in their classrooms they had a duty to integrate technology with learning activities. Both teachers believed in individualizing their instruction to meet the needs of their students. In addition, they each felt that allowing the children to work collaboratively was also important and each teacher engaged in collaboration with the children as well as with the colleagues with whom they...
worked. Both teachers believed that technology allowed for the natural development of oral communications skills as children interacted with the technology in their classrooms. In addition, they both believed that technology was a tool for building background.

Research question three asked: What experiences helped form these beliefs and practices? Two of the three themes for this study were evident in the data supporting the experiences of both Mr. Mathison and Ms. Glass and those themes included engagement with technology and collaboration/team building. The theme of technology-centered discussions emerged in the data supporting Mr. Mathison’s experiences, but was not present in the data for Ms. Glass. Both teachers reflected on personal and professional experiences that continually motivated them with integrating technology into literacy instruction. Both Mr. Mathison and Ms. Glass experienced collaboration among the teachers and colleagues with whom they worked. They each took advantage of these opportunities and used them as a way to learn and grow personally and professionally. The data for Mr. Mathison also showed evidence of technology-centered discussions as one type of experience that was influential in his beliefs and practices for integrating technology.
CHAPTER V
CONCLUSIONS AND IMPLICATIONS

Introduction

There has been little research on the integration of technology with literacy, especially at the primary grades. Furthermore, there has been a lack of research on teacher beliefs about the integration of technology with literacy instruction. Investigations have been conducted on teacher beliefs in general (Fang, 1996; Pajares, 1992), on teacher beliefs about literacy (Bawden et al., 1979; Gove, 1983), and on teacher beliefs about technology (Becker, 1991; Honey & Moeller, 1990); however, little research has been conducted on teacher beliefs about the integration of technology with literacy instruction. Guha (2001) noted that, “Few studies have been done to investigate elementary teachers’ perception of computer usage in classroom instruction” (p. 280). A forward movement to illustrate what is actually happening in classrooms may an increased effort to conduct research in contextualized, authentic settings (Labbo, 1996).

Works by Dewey (1900, 1915), Vygotsky (1978), and the theory of constructivism (Brooks & Brooks, 1993) provided a theoretical framework for this study. The teachers in this study exemplified these theories as they implemented authentic learning activities that allowed the children to construct knowledge, become active learners, work collaboratively, and engage in meaningful discussions. The data from this study supports the research literature that aligns with this theoretical base. Mr. Mathison allowed the students in his classroom to engage in authentic literacy events that fostered
group cooperation, critical literacy, and oral language development. Moll (1990) confirmed,

Classroom process research questions and methods highlight groups of children engaged in authentic literacy events and lead to understandings about how these processes work. Given freedom to create, children reveal not only the highly complex nature of constructing meaning, but also the social and cultural factors that permeate literacy events and influence what is read/written, how it is read/written, and how children develop literacy. Studies in these lessons exemplify Moll’s interpretation of the zone of proximal development as a characteristic not solely of the child or of the teaching but of the child engaged in collaborative activity within specific social environments. (p. 11)

Ms. Glass encouraged dialogue and communication skills in her classroom. Her practices are confirmed in the work of Forman and Cazden (1994) as they reminded us that social discussion supports the Vygotskian perspective and that interactions in social contexts support cognitive growth in young children.

The purpose of this study was to investigate the beliefs and instructional practices of two exemplary primary grade teachers as they integrated technology into daily literacy instruction. In addition, this study sought to expand the knowledge base for integrating technology with literacy instruction in the primary grades and to provide exemplary models for those teachers wishing to effectively integrate language arts with technology into their own daily practice. The results of this study were drawn from data regarding the research questions that guided this study:

1. What practices do two exemplary primary grade teachers use when integrating technology with literacy instruction in their classrooms?
2. What do two exemplary primary grade teachers believe about the integration of technology with literacy instruction?
3. What experiences helped form these beliefs and practices?
Data collection procedures for this study included classroom observations, in-person teacher interviews, and the collection of various artifacts generated by the teachers for their instructional purposes. The constant comparative method of data analysis was employed by the researcher in this study (Merriam, 1998). The analysis phase identified common themes across data sources that reflected these teachers’ practices and beliefs about integrating technology into their daily literacy instruction (Miles & Huberman, 1994). For each research question, a descriptive case study of each teacher was presented with examples drawn from the data, followed by a cross-case comparison of the two teachers. Multiple sources of data were used to triangulate and ensure the accuracy of the results (Merriam, 1998). In addition, member checking and peer examination by experts in the field were procedures employed to further validate the results (Bogdan & Biklin, 2003). Finally, a grounded theory was derived from the data in this study (Merriam, 1998).

Discussion of Findings

*Question 1: Instructional Practices*

*Scaffolding With Developmentally Appropriate Instruction*

Both teachers in this study supported children while encouraging the use of technology for authentic literacy instruction. Although Mr. Mathison and Ms. Glass had unique teaching styles, both were successful.

Mr. Mathison operated his classroom as a learning community where individual interactions and group work were the staples of constructing learning activities. Mr. Mathison involved his students with hands-on experiences as they manipulated technology. He coached and assisted students individually with the use of technology on
a regular basis. He also modeled techniques for the whole class which provided an advanced organizer for what the children would be expected to do at their tables either with their groups or individually. Mr. Mathison’s scaffolding techniques are supported in the research literature on technology in early childhood settings. Rivera et al. (2002) suggested four criteria that positively drive the introduction of digital information technologies into early education classrooms. These criteria include: preparing children with competencies in using technology that will be required for their adult lives, developing positive attitudes about using technology rather than focusing on skill development, providing technology as one tool for teaching, and supporting the pedagogy established by NAEYC.

Mr. Mathison’s practices supported the notion of preparing his students for the types of experiences they would one day encounter as adults. His students used technology to solve problems and then his students communicated this information to a variety of audience participants. Mr. Mathison focused on helping children develop positive attitudes towards technology, rather than emphasizing the mastery of technical skills. He wanted them to enjoy their experiences and was confident that skills such as keyboarding would develop when appropriate. Mr. Mathison used the technology as a tool for learning and integrated it with print-based resources. In addition, he integrated the use of technology into the natural events in the classroom and did not view the technology projects as separate other learning taking place in the classroom.

Ms. Glass also individualized student instruction when incorporating technology into her daily literacy teaching. Although Ms. Glass conducted her classroom with more whole group experiences, she took every opportunity to focus on individual students as
they either approached the ACTIV Board or manipulated the individual lap-top computers. In addition, Ms. Glass modeled appropriate use of the technology while demonstrating the use of the ACTIV Board as well as getting children prepared to interact with the laptop computers. Ms. Glass often commented that the ACTIV Board had brought her teaching back to life. Ms. Glass’s practices are also supported in the research literature on using technology with young children. Lally (2001) stated,

Technology gives teachers exciting new ways to accommodate individual differences among students while motivating them to accomplish the difficult cognitive work involved in becoming phonemically aware and literate. Using appropriate technologies, children can see, hear and feel the concepts of reading and writing spring to life. Children are highly motivated as they learn to manipulate letters and words in an interactive, multisensory environment. (p. 1)

Integrating the Curriculum

Morrow, Tracey, Woo, and Pressley (1999) described classrooms characteristic of teachers who implement exemplary first grade literacy instruction. They suggested,

The children in these classrooms experienced literacy in a variety of forms. Shared reading and writing activities, independent reading and writing, social collaborative reading and writing, and guided reading and writing for skill development took place throughout the day. Children took part in oral and silent reading, writing, and mini-lessons modeled by teachers. Content area themes were integrated into the reading and writing experiences to bring meaning to skill development. Children had opportunities to perform or share reading and writing accomplishments. (p.474)

Both Mr. Mathison and Ms. Glass integrated literacy with content areas as well as incorporated technology on different levels.

Mr. Mathison fully integrated the content for learning about birds into daily literacy-related activities. In Mr. Mathison’s classroom, there was a seamless relationship between all that the children were learning about the birds and the authentic reading, writing, listening, and speaking activities in which they were engaged. Both teachers
continued use of print-based resources in conjunction with technology. They also had back-up plans for using technology in case of technical malfunctions. In addition, they each integrated technology into daily activities.

Even though Mr. Mathison and Ms. Glass integrated at different levels, each was successful in their own right and naturally integrated the sharing of ideas through reading, writing, orally communicating, and facilitating mini lessons when necessary.

Collaboration in Teaching

Mercer and Dawes (1998) suggested that, “computers can be used to stimulate collaborative learning and to direct it towards curriculum goals” (p. 199). Both Mr. Mathison and Ms. Glass engaged in collaboration on two levels. First, they collaborated with their colleagues to find new ways to integrate technology in meaningful ways in their classrooms. Second, they encouraged collaboration between and amongst themselves and their students as they planned for and implemented learning activities in their classrooms.

Rogers and Renard (1999) suggested six standards necessary to foster relationship-driven teaching which include the following: safe, valuable, successful, involving, caring, enabling. Just as students, the teachers needed to feel physically and emotionally safe in their own learning environments. Mr. Mathison and Ms. Glass sought out this safety in the collaboration they encouraged and engaged in with their colleagues while at school. By doing this, they each felt more secure in what they wanted to do in their classrooms, which ultimately helped them to follow through with their creative practices.
Witmer (2005) also suggested, “Teachers who can connect with their students are generally more engaging in the classroom and can make learning more meaningful for their students” (p. 224). Mr. Mathison and Ms. Glass each strived to build strong relationships with the children in their classrooms. They treated them as individuals and respected each for their unique contributions. In addition, Mr. Mathison and Ms. Glass worked hard to make the learning meaningful for their students and also allowed for regular collaboration with the teacher and with peers.

*Fostering Oral Communication Skills*

Wegerif (2004) found that learning does occur in the talk of children who work around computers. In addition, when reflecting on learning styles in technology-enhanced classrooms, Cohen (1997) suggested,

> The interaction between students and students, students and teachers, and teachers and teachers changed. Learning was seen as a much more natural process whereby conversation does not interfere with acquisition or application of knowledge. A looser, more casual social context that was supportive of exploration and exchange emerged. (p. 9)

Both Mr. Mathison and Ms. Glass encouraged oral communication during computer-related activities.

Mr. Mathison allowed the children to interact individually with their teacher and peers for a variety of purposes. In addition, Mr. Mathison facilitated the development of critical literacy skills, which he guided by conversation as he conferred with his students about images and texts for various projects. Mr. Mathison’s instructional practices support research conducted by Wegerif (1996). Wegerif concluded,

> These results support the socio-cultural view that intellectual development results from being drawn into cultural practices and communities of practice. This suggests that to educate children to think for themselves we should first teach them to think with others. Being able to reason together with others in order to
solve problems and build knowledge is a core practice in most areas of our collective life. (p. 59)

Ms. Glass also supported the development of oral communication skills as she fostered rich dialogue between and amongst herself and the students in her classroom. They engaged in dialogue for meaningful purposes and involved talking around the ACTIV Board and the individual laptop computers they regularly used. Ms. Glass supported vocabulary instruction, which she believed would aid in oral communications skills. Her practices align with research conducted by Pressley et al. (2001) who suggested vocabulary is taught explicitly; there is opportunistic teaching of vocabulary, as new words come up; and there is opportunistic reteaching of vocabulary, as previously encountered words are reexperienced. Gambrell (2004) also supported the role that Ms. Glass took as she facilitated oral communication with rich dialogue in her classroom. Gambrell reported,

> Regardless of whether teacher-led, peer-led, or computer-mediated discussions are being used in the classroom, or whether the classroom is rich in a combination of these models, the teacher will continue to play a significant role in providing a classroom climate that supports and nurtures student thinking about text. (p. 214)

**Question 2: Teacher Beliefs**

**Developing Critical Literacy Through Oral Communication and Schema**

Henry (2006) suggested,

> The impact that the Internet is having on society on education cannot be ignored. . . It is imperative that teachers of today understand the new literacies evolving in their classroom so that students are prepared for life in the 21st century; let’s not leave them trapped on the Internet searching for the answer. (p. 625)

Both Mr. Mathison and Ms. Glass believed that technology could be used for fostering critical literacy skills. They believed also that infusing the use of technology with authentic oral communication opportunities would support the development of critical
literacy as children talked and listened to their teacher and peers about what they were experiencing with technology.

Mr. Mathison and Ms. Glass believed that technology broadened literacy and could be used as a tool for expanding knowledge. This belief was found in their teaching practices as they each worked hard at building background for their students that would further support success in the learning experiences in which they engaged. In doing so, Mr. Mathison and Ms. Glass positively influenced the learning potential of their students. Their belief is supported in the work of Ruddell (1995) who stated,

The Influential Teachers are highly effective in taking an instructional stance that uses internal reader motivation and incorporates children’s prior knowledge, experiences, and beliefs in the meaning negotiation and construction process. (p. 461)

Facilitating Cognitive and Physical Engagements

Both Mr. Mathison and Ms. Glass believed that their role in the classroom should be that of a facilitator as they each held constructivist-teaching philosophies. They believed strongly in allowing children to engage with technology in both cognitive and physical ways. Labbo et al. (2000) supported the beliefs of Mr. Mathison and Ms. Glass as they suggested,

These types of activities provide children with opportunities to develop richer understandings of concepts, discover intertextual connections, and engage in interactive, multi media practice supportive of their literacy needs. (p. 10)

In addition, the work of Price and Rogers (2004) elicited new questions related to these types of cognitive and physical engagements. They asked,

In what ways does moving through a physical space, manipulating physical objects or combining them—causing various digital events to occur—get children to think more about what they are experiencing, doing and importantly, how this relates to what they know and what they do not know; and what the significance of the coupling they have experiences is to what’s happening around them and
their previous experiences? In particular, how do the children make sense of and integrate the series of physical-digital encounters they have within the physical environment they are in while also abstracting relevant knowledge from them? (p. 148)

**Motivation for Integrating Technology**

Fereshteh (1996) reminded us,

Teachers are expected to pay undivided attention to the needs and interests of their students. They provide students with choices in learning, variation in topics and curriculum, numerous ways of teaching, and interest them in learning what they teach. They use positive or negative rewards, as seem appropriate, to get unmotivated students interested in their subject. They are enthusiastic, interested in learning, and are motivated themselves. (p. 75)

The two teachers in this study were highly motivated to use technology themselves. They also found it imperative they keep their students highly motivated in learning activities by incorporating technology into daily activities in their classrooms. Papert (1996) suggested that children today have a passionate love affair with computers and felt that teachers should build on this enthusiasm in order to provide rich learning contexts.

Papert’s (1996) thinking was in line with the teachers in this study, as they also believed that technology was competing for their attention in the classroom.

Mr. Mathison and Ms. Glass believed that technology was fun. They felt that the importance of technology needed to be conveyed to the children in their classrooms. They believed that physical engagement with technology was best for students, and active engagement with the technology would not only convey its importance but would also keep the children excited about learning new things.

Gambrell (1996) reminded us,

The motivational research of the last decade supports what good classroom teachers have known for a long time. Supporting children in their literacy learning
is not an exact science, nor is it a simple matter. We can, however, make a real
difference in the literacy lives of young children when we serve as reading models
and motivators and create classroom cultures that are [print] rich, provide
opportunities for choice, and encourage social interactions. (p. 23)

Collaboration in Supportive Environments

The teachers in this study believed technology needed to be readily available, so
that teachers could practice new ways of incorporating technology into their teaching. By
practicing they felt that teachers would build up a level of comfort and support in using
technology which would help them to stay motivated.

Mr. Mathison and Ms. Glass also believed that in order to be successful with
technology in the classroom, teachers needed to be life-long learners, as they described
themselves. Mr. Mathison and Ms. Glass believed in collaborating with their colleagues
and attributed their success to this. Mr. Mathison had a very supportive and nurturing
relationship with his teaching colleagues, where they shared new information and
inspired each other in reaching their goals. Ms. Glass also had a supportive relationship
with the technology coordinator in her building, however it was not a mutual sharing of
ideas. Rather, Ms. Glass relied on the support of the technology person to help her
implement new ideas for integrating technology into her classroom practices. Both
teachers felt that a supportive and non-threatening environment was the key to building
lasting collegiality amongst co-workers. Davis and Shade (1999) also recommended,
“that teachers take it easy, relax, and have fun” (p. 250) when learning to integrate
technology into their teaching.

Integrating Technology With Literacy Instruction

Both Mr. Mathison and Ms. Glass believed that technology use in the classroom
was best when it was integrated with print-based resources and content area teaching.
They felt that encouraging students to work with digital and print-based texts would better prepare them for life as adults. In addition, using technology as a supportive tool rather than as the sole mode of teaching was believed to be more practical and realistic, as both teachers experienced occasional difficulty with planned technology-related activities. Kalinowski (2001) suggested,

> The computer should not be an afterthought or a reward, but rather another tool in the overall goal of creating lifelong learners, exciting children about learning and equipping them with the “tools” they will need as they grow and learn . . . just as we teach them the alphabet and the use of books, the computer will in itself and as a part of a whole, provide learning opportunities for children. We don’t eliminate the use of books because teachers don’t use them effectively. (p. 284)

May (2003) further reminded us, “Technology is not always going to be the answer. Instead, it’s the integration of technology that is key” (p. 5).

**Question 3: Influential Experiences**

Tsitouridou and Vryzas (2003) found that,

> Early childhood educators have limited access and positive but temperate attitudes to the world of computers. Teachers’ attitudes appear to be influenced significantly by computer use at home, experience with computers and inservice training. (p. 187)

**Motivational Events**

Both Mr. Mathison and Ms. Glass reported events that were key in motivating them to begin using or continue using technology in their teaching practices. They each indicated that there were both personal and professional experiences, which inspired their style of teaching.

Mr. Mathison noted that it was more professional experiences, such as being assigned to his current school building, which encouraged him to keep innovating with technology for classroom practices. Mr. Mathison had difficulty distinguishing between
personal and professional experiences that may have motivated him. He recalled that early in his life he was drawn to visual imagery and the technology of that time. However, it ultimately was the work with his current colleagues that brought him to where he was with integrating technology in teaching.

Ms. Glass recalled personal experiences and, unlike Mr. Mathison, she did not remember being motivated with technology during the time before she was a teacher. She reflected on experiences with her own children and attributed those to her motivation for wanting to use technology in her classroom.

**Collaborative Encounters**

Both Mr. Mathison and Ms. Glass involved themselves in varying levels of collaboration with the colleagues with whom they worked. Mr. Mathison believed that the rich collaborations he had with his fellow teachers had been the impetus for what he had done with technology in his classroom. He described many collaborative encounters with his colleagues which involved writing grants, presenting at conferences, and interacting regularly. He talked about the ways in which he and his colleagues stretched each other into becoming as innovative as they possibly could. In addition, he commented that they often brainstormed ideas which many times came to fruition in their classrooms.

Ms. Glass engaged in collaborative encounters with her colleagues, but not at the depth to which Mr. Mathison and his colleagues did. Ms. Glass interacted with the technology coordinator in her building on a regular basis and also with her fellow team teachers. However, Ms. Glass had more passion for integrating technology than did her colleagues, which left her at a disadvantage in many ways. She was continually looking
for ways to collaborate. Ms. Glass involved parents in her classroom by allowing them to assist with technology-related activities. She felt that those experiences were what kept her going as she regularly received praise and positive feedback from the parents of her students.

Key Findings

Three themes emerged from the data for this study, which were engagement with technology, collaboration/team building, and technology-centered discussion. After a thorough analysis of the data using the constant comparative method (Merriam, 1998), three key findings emerged. They were motivation, collaboration, and oral communication skills. Consistently, these three findings were evident with both teachers across a majority of research questions and themes for each.

Motivation was a key finding that was evident in the two teachers’ practices, beliefs, and influential experiences. Both teachers reported that they themselves were motivated to use technology in their classroom. In addition, they felt strongly that technology was becoming a major way to keep children interested while learning at school. Motivation was prevalent in the beliefs of both teachers as they felt it was fun and a necessity for preparing children for their lives as adults. Motivation also played a role in the personal and professional experiences that both teachers described. Each teacher reported personal and professional experiences that supported their motivation for using technology in the classroom.

The second key finding that emerged from the data in this study was the power of teachers collaborating with colleagues. Both teachers engaged in many collaborative experiences with the co-workers in their respective buildings. Although in different ways,
the interactions and relationships between these teachers and their colleagues helped to further the interest and expertise each had with using technology to support instruction in their classrooms.

Finally, the most significant finding of the study was the development of oral communication skills. Each teacher facilitated natural ways for children to engage in oral communication as they interacted with the technology in the classroom. Each did this in different ways. Mr. Mathison encouraged communication amongst students while Ms. Glass encouraged communication in a large group. Both, however, were successful in their own right.

Grounded Theory

When theory is derived from the data in a research study, it can be called “grounded theory” as the theory is grounded in the data and emerges from the data (Merriam, 1998). Merriam further described the process,

A grounded theory begins with categories . . . the development of categories, properties, and tentative hypotheses through the constant comparative method is a process whereby the data gradually evolve into a core of emerging theory. (p. 191)

Analysis of the data collected for this study revealed three major themes that characterized how the teachers integrated technology into their daily literacy practices: engagement with technology, collaboration/team building, and technology-centered discussions. In addition to these major themes, 11 categories were also established in an effort to further define the nature of each theme as evidenced in each case. The 11 categories included: motivation/enthusiasm, creativity, constructivist/facilitator, active learning, involving parents through technology, respect for students, individualized
instruction, students working together, teachers working with colleagues, building schema, and oral communication skills.

The grounded theory derived from the data in this study was: Technology can be a medium for fostering oral language development and motivation in primary grade classrooms when conducted in a collaborative, supportive environment.

The grounded theory from this study is supported in the research literature on the development of literacy in children. A major finding of this study suggested that the use of technology for meaningful learning activities has the potential to facilitate rich dialogue and oral language development in young children. Ruddell and Ruddell (1994) suggested that social experiences provide the connections for children to attach meaning to text. They supported the use of discussion to encourage the construction of meaning, comprehension, and a broadening of ideas found in print. The teachers in this study also orchestrated their classroom environments so that their students could learn in a collaborative and safe environment. Gambrell (1996), Routman (1991), and Wells (1995) confirmed this practice as they honored safe, risk-free learning environments as places where children can develop confidence as learners as they engage in shared literacy experiences.

The teachers in this study encouraged children to engage in technology-related activities that supported the development of oral communication skills. In addition, the teachers worked in supportive environments with their colleagues. This collaborative spirit was also transferred into their classrooms as they worked with their students. Additionally, the teachers supported best practices in their classrooms as they were cognizant of which technology activities were appropriate for their students.
Implications for Practice

The Use of Technology to Support Oral Communication Skills

The participants in this study effectively used technology as a tool for fostering oral communication in the students in their classrooms. They involved the children in meaningful activities that allowed the children to listen and speak as they engaged in learning. The research literature supports the practices of the teacher participants in this study as is suggested in the following ways.

Mercer, Fernandez, Dawes, Wegerif, and Sams, (2003) reported,

We have found that under the right conditions, children’s engagement with ICT increases their use of the productive and equitable type of discussion we have called Exploratory Talk; and can focus their talk on aspects of reading and writing which are important for their literate development. The research has also highlighted ways in which teacher pupil dialogue can contribute to the development of children’s understanding of the functional uses of spoken and written language. Our findings prove evidence that computers can have a distinctive role for supporting group activity and the development of children’s talk and literacy. However, our research suggests that computers will only function well in this role if their use is integrated with the teaching of speaking and listening skills. Unless children are aware of how to make discussion useful for learning—to use language well as a tool for thinking together—they miss the valuable opportunities that group work offers. (p. 88)

Kelly and Schorger (2001) found, “the use of computers in early childhood settings is not a barrier to expressive language development and continues to be appropriate” (p. 136).

Therefore, the first implication from this study supports the notion that technology can be used as a tool for developing oral communication skills when used appropriately with very young children.

The Importance of Implementing Technology in a Collaborative, Supportive Environment

The teacher participants in this study attributed part of their success with integrating technology into their teaching to the relationships they had developed with
their colleagues. Both teachers shared unique situations, but what was common to both was their reliance on others for support. In particular, Mr. Mathison was inspired by his collaborative relationship with another teacher in his school building to use technology creatively in his classroom. They also fostered a collaborative environment in their classrooms as they encouraged the children to work together to facilitate optimal learning for all. The research literature supports implementing technology in collaborative environments.

Hyuan (2005) noted,

The time has come to accept computers as fully as the chalkboard has been accepted. New technology has ushered in a new culture of learning and teaching. Computer-based instructional technology can be used simultaneously as individual slate, peer-shared slate, and communal slate in a constructivist classroom to maximize meaningful learning processes. As we move further into the twenty-first century, awareness of and responsiveness to emerging changes in learning and teaching environments will be necessary. Computers may well become a powerful learning tool and resource with which teachers may support collaborative learning in the classroom. (p. 88)

Collaborative relationships have been found to be instrumental in facilitating professional growth in teachers. Professional development should shift away from just providing content for improved teaching and focus more on building meaningful relationships amongst teachers. By doing this, teachers would have the support to then learn new content that could be implemented into their instructional practices.

Professional development should be implemented in ways that serve teachers and their needs for integrating technology in meaningful ways. Ultimately, professional development should establish environments conducive for nurturing collegial relationships.
Sanders and Schwab (2001) identified “that education is a deeply human process, and that those who teach both need and deserve psychological and social support to keep their energies focused upon what is essential” (p. 277).

The most effective models of teacher professional development must move beyond the traditional model based on the transmission of information from someone in authority. Research indicates that adults learn best in situations that reflect a constructivist view of learning. According to Zepeda (as cited in Sandholtz, 2002),

Learning is not only a matter of transferring ideas from one who is knowledgeable to one who is not. Instead, learning is perceived as a personal, reflective, and transformative process where ideas, experiences, and points of view are integrated and knowledge is created. (p. 816)

Zepeda further stated that, “When a constructivist perspective is applied to teacher learning, a key focus becomes how teachers learn to make critically reflective judgments in the midst of action and how they subsequently change their actions in response to new insights” (p. 816).

The ultimate model of professional development will result in the formulation of learning communities among staff members involved in the professional development experience. Kinnucan-Welsh and Jenlink (as cited in Sandholtz, 2002) concluded that “learning communities become important ways of supporting individual construction of meaning and knowledge” (p. 816). McCotter (2001) conducted a study which explored the ways in which participating in discussion groups helped to sustain professional beliefs about education. A key finding from McCotter’s research indicated that “support and collegiality of the group demonstrates how such relationships can enable continuous professional growth” (p. 685).

Shamburg (2004) conducted a research study investigating conditions that inhibit the integration of technology for urban early childhood teachers. Shamburg engaged in a two-year project involving the collection and analysis of interview data from 18 teachers. The constant comparative method of analysis was used to identify common barriers, which inhibited the effective integration of technology. Shamburg found:

An approach to professional development that emphasizes the social dimensions of learning from classroom teachers . . . would facilitate learning channels among professional developers and teachers, with an emphasis on formalizing opportunities for teachers to share and reflect with each other. (p. 242)

Therefore, a second implication from this study supports the notion that technology can be implemented with success in collaborative, supportive environments.

The Importance of Facilitating Technology use in Developmentally Appropriate Ways

The teachers in this study facilitated technology integration in developmentally appropriate ways. Although in different ways, each teacher supported children by providing scaffolding as necessary, integrating the technology into meaningful contexts, and serving as a facilitator of the learning process. The research literature also supports integrating technology in developmentally appropriate ways. Ferguson (2001) reported,

Technology has effectively revolutionized American society. An unexpected byproduct of this revolution has the emergence of a generation of children weaned on multidimensional, interactive media sources, a generation whose understanding and expectations of the world differ profoundly from that of the generations preceding them. We need to give these children the education necessary to succeed in a technological future. We need to build on children’s native learning abilities and technological competence with an instructional model that allows learners to be actively involved and engaged in a real-life arena, which includes technology. (p. 54)
Hannafin and Savenye (1993) suggested,

The shift in the teacher’s role, then, may coincide with an underlying change in learning theory. This could be another source of resistance. It may be that a teacher is receptive to technology but resists the accompanying change in learning theory. Some teachers are content to use the computer for low-level activities because they can readily manage and control the instruction, which is consistent with their views of learning. Teachers using computers to facilitate open-ended student-centered learning environments necessarily relinquish some control and consequently accept a different role and ideology. (p. 28)

Watts and Lloyd (2004) also suggested,

The basic commonality between the two theories is the meaning is not imposed or transmitted by direct instruction but created by a learner’s activities. What children or adults construct from a learning encounter depends on their motives and intentions, on what they already know and how they use their prior knowledge. Learning is a way of interacting with the world, and is personally integrated and critically evaluated. As learning takes place, conceptions of phenomena change and the world is seen differently. The acquisition of information itself does not bring about such change; it is the way the information is structured. (p. 51)

Finally, Hong and Trepanier-Street (2004) recommended that,

Technology is an invaluable tool for knowledge construction for people of all ages. It is available to enhance the curriculum, not to replace it. New forms of technology constantly offer great possibilities and challenges for enhancing educational experience. The early childhood community must be committed to these possibilities and challenges. (p. 93)

A third implication from this study is that technology can be implemented with success in developmentally appropriate ways.

Technology Fosters Motivation for Teaching and Learning in Both Teachers and Students

The findings of this study suggest that motivation occurred not only in the students as they used technology, but also as a driving force for the goals each teacher wanted to achieve. In addition, it served as an indicator of what was actually implemented in their classroom practices. Wadmany and Levin (2004) suggested,
A direct relationship exists between changes that occur in teacher and their students’ perceptions of learning . . . a change in learning environment may affect students beliefs or conceptions of learning as well as their attitudes towards learning in a technology based environment. (p. 4)

The Importance of Scaffolding Instruction

The findings of this study suggest that primary grade children are capable of successfully interacting with technology. When teachers guide students through the process of using technology and support them each step of the way, meaningful learning experiences can flourish.

A fourth implication from this study is that technology can be implemented when scaffolding by the teacher is carefully embedded with instruction.

The Importance of Teacher Empowerment

The findings of this study suggest that teachers are capable of facilitating meaningful professional development opportunities for themselves. This level of self-reflection and personal growth can be fostered when implemented in a safe and collaborative work environment.

A fifth implication from this study is that teachers can be empowered to create professional development opportunities unique to their teaching contexts.

Recommendations for Further Research

Many avenues for continued research evolved from the results of this study. As this research found, motivation, collaboration, and the development of oral communication were key factors when technology was integrated with literacy instruction in two primary grade classrooms.

Since motivation emerged as a key finding, this study could be expanded to include more inquiry on teacher beliefs and what motivates teachers to integrate
technology with literacy instruction. A large-scale survey on teacher beliefs and the integration of technology with literacy instruction may glean important findings, as a tool of this nature currently does not exist.

As many teachers search for ways to use the Internet with literacy instruction, the investigation of developmentally appropriate websites may be useful. A content analysis of these websites might focus on readability and navigability of the websites for children. After conducting a content analysis of existing websites, developing a way of organizing the appropriate sites into a periodically updated database for teachers might be a valuable resource that teachers could access with ease.

Collaboration has proven to be invaluable for these teachers in their success with integrating technology with literacy for meaningful purposes. Further investigation regarding the establishment of professional development that fosters meaningful collaborations amongst teachers at the building level is important. A review of the literature did not find studies illuminating specific ways to help teachers use technology in various contexts. However, the types of professional development opportunities and suggestions for how to plan effective staff development sessions relating to technology integration are what seem to be relevant in the literature rather than providing explicit ideas for teachers to use in their classrooms. It is also important to note that the researcher only found one study related to professional development opportunities designed to help early childhood teachers infuse technology into their teaching. Research needs to be conducted on effective resources and techniques for early childhood teachers to implement technology in meaningful ways in their classrooms.
The conditions for learning as suggested by Cambourne (1995) may also provide an interesting avenue for research related to establishing collaboration amongst teacher colleagues when using technology in their classrooms. These conditions include immersion, demonstration, engagement, approximations, expectations, responsibility, employment, and response. Research focusing on what types of conditions foster collaborations amongst teachers is needed. If findings could illuminate the conditions for positive support, teachers might be able to emulate those conditions in the environments in which they work.

More research on the development of oral communication skills is needed in an effort to truly understand which specific strategies teachers can implement to achieve this goal as they use technology in meaningful ways. Furthermore, research on language and communicative functions when using technology is also an area in need of future research. Halliday (1985) recommended that specific activities can be developed in the classroom to expand students’ ability to use language to carry out a variety of communicative functions. These language functions are instrumental, regulatory, interactional, personal, heuristic, imaginative, informative, and divertive. An investigation of which types of communicative language functions are fostered by technology in primary grade classrooms would be of interest in supporting language development in technology-enhanced classrooms.

The Internet and other technologies offer another audience dimension for young writers. More research is needed on how young children attend to audience awareness in their writing online or with the support of technology. Barrerra et al. (2001) suggested, these findings should be interpreted in conjunction with other work supporting the use of computers to promote writing for children at young ages. Of particular
note is the finding that students consistently wrote more when using the computer despite equitable amounts of time engaged in writing in both conditions. (p. 226)

The findings of this study suggest that primary grade children are capable of reaching high standards set forth by their teacher for using technology. When expected to interact with technology in sophisticated ways, young children can rise to the challenge when their learning is scaffolded and they are supported in a risk-free and safe learning environment. More research on the ways in which teachers communicate high expectations for technology use would prove insightful as related to the findings of this research. In addition, it would be informative to examine student outcomes and achievement in literacy learning as a result of integration of technology into classroom activities.

Lastly, research on how teachers use technology for literacy acquisition in a variety of settings, including rural, urban, and suburban schools, might offer interesting insights and would complement the results of this study. This line of research could be enhanced by gathering a larger sample of teachers to investigate their beliefs about integrating technology with literacy. Investigating how teachers communicate with parents in these settings, as supported by technology, would be of further interest.

Summary of Chapter 5

This chapter presented the findings for the study of how two exemplary primary grade teachers implemented technology into their daily literacy instruction. It was found that the teachers supported their instructional practices for integrating technology with literacy instruction by scaffolding with developmentally appropriate instruction, by integrating the curriculum, by establishing a collaborative environment with their students, by collaborating with their colleagues, and by nurturing the development of oral
communication skills. It was found that the teachers believed in the development of oral communication, in engaging children in both physical and cognitive ways as they interacted with technology, in being motivated and motivating their students, in collaborating on a variety of levels, and in integrating the curriculum meaningfully. It was also found that the teachers had experiences that influenced them in using technology and those experiences involved motivational and collaborative encounters.

Three themes emerged from the data for this study including engagement with technology, collaboration/team building, and technology-centered discussion. After a thorough analysis of the data using the constant comparative method (Merriam, 1998), three key findings emerged: motivation, teachers working with colleagues, and oral communication skills. Consistently, these three findings were evident with both teachers across a majority of research questions and themes.

The grounded theory derived from the data in this study is: Technology can be a medium for fostering oral language development and motivation in primary grade classrooms when conducted in a collaborative, supportive environment.

Five implications for practice emerged from this study. The first implication from this study, as well as from those previously mentioned, supports the notion that technology can be used as a tool for developing oral communication skills when used appropriately with young children. The second implication from this study, as well as from those previously mentioned, supports the notion that technology can be implemented with success in supportive environments. The third implication from this study, as well as from those previously mentioned, supports the notion that technology can be implemented with success in developmentally appropriate ways. The fourth
implication from this study stressed the importance of scaffolding instruction. Finally, the last implication from this study is the importance of teacher empowerment.

Eight areas of research that stem from this study were identified. First, more work needs to be conducted on teacher beliefs about integrating technology with literacy instruction, especially at the early childhood level. Second, a thorough analysis of appropriate websites for children needs to be completed so that teachers can have easy access to useful and appropriate Internet sites at their fingertips. Third, research needs to be conducted on how to establish meaningful, authentic opportunities for teachers to engage in professional development supportive of their desires for integrating technology into classroom instruction. The goal for establishing meaningful professional development would be to foster collaborative relationships amongst teachers. Fourth, further research needs to be conducted on the development of oral communication skills in authentic settings which use technology. Further analysis of the data could involve examining the functions of language in technology-enhanced classrooms. Technology has the potential to be a supportive tool for composition, even for young children. More research on the writing process and the consideration of audience awareness in technology-enhanced classroom needs further investigation. Investigating the use of technology in a variety of settings is of further interest. Expanding the population to include a wider audience of teachers and their beliefs about using technology may glean interesting results. Investigating how teachers use technology as a supportive tool to communicate with parents may also yield interesting findings. More research on the ways in which teachers communicate high expectations for technology use would prove
insightful as related to the findings of this research. In addition, examining student
achievement in literacy learning when using technology would be valuable.

Ultimately, the findings of this research suggest that the integration of technology
with literacy can be implemented in a variety of ways. This study reported how
technology was infused into the literacy programs of two unique primary grade teachers
who embraced different teaching styles and approaches for using technology as a tool for
teaching. This work confirms the notion that teachers can incorporate technology with
literacy in different ways and still be effective.
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232


238


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APPENDIX A

UNIVERSITY IRB APPROVAL LETTER

March 11, 2023

[Signature]

[Institutional Name]

[Institutional Address]

[Institutional Contact Information]

[IRB Contact Information]

To: [Researcher]

Subject: Approval of Research Proposal

Dear [Researcher],

I am pleased to inform you that your research proposal has been approved by the Institutional Review Board (IRB) at [Institutional Name]. The proposal, titled [Proposal Title], has been reviewed and found to meet all the necessary ethical and regulatory standards.

The approval is effective as of [Approval Date]. The study will be conducted in accordance with the guidelines outlined in the IRB's policies and procedures. Please ensure that all participants are informed of the study's objectives, risks, and benefits, and that they provide their informed consent.

Please note that annual reviews will be required for any ongoing research, and that any changes in the study protocol must be submitted for approval.

I encourage you to continue your research endeavors and to share your findings with the broader scientific community.

Sincerely,

[IRB Chair/Institutional Review Board Member]

[Institutional Name]

[Institutional Address]

[IRB Contact Information]
APPENDIX B

IRB APPROVAL FROM URBAN SETTING

March 29, 2006

G. Soileau, Ph.D.
8559 Blackford Drive, NW
Canton, OH 44708

Dear Dr. Soileau,

The Akron Public Schools' Proposal Review Team examined your request to conduct your research project with the Akron Public School District titled: "The Convergence between Teacher Practices and Inhaler Intervening Medicine with Early Childhood Primary Grades Teachers: A Multi-Case Study of Three exemplary primary grades teachers". Approval has been granted with the following stipulations:

- Voluntary participation only.
- Information obtained without any new or additional programming on the part of the Information Management Department.
- All data, federal and Akron Public School participation is to be followed.
- No disclosure or publication, or the Akron Public School system will be identified on any report or publication resulting from this research project.
- Upon completion of the project, a copy of the study research results must be provided to the Department of Teaching, Research, and Evaluation as well as to all the primary grades teachers who have volunteered to participate.

I have enclosed a copy of the research guidelines for Conducting Research in the Akron Public Schools and would draw your attention to the highlighted sections 11, 12, 13, 14. Please present a copy of this letter of approval to each building principal as you begin your research.

If you need additional information, please do not hesitate to contact me at 330-263-17.

We appreciate your interest and involvement with the Akron Public Schools.

Sincerely,

G. Soileau, Ph.D., Director
Teaching, Research, and Evaluation

Enclosure

CC: Patricia Adele, Bonnie Bucchi, LaPoclone DiSilvetti (Portage Path), Stephen DeVita, Connie Holton, Sue Long, Lorraine, Nikolai (Robinson), Michael Pruesse, Mary Galley

252
APPENDIX C

IRB APPROVAL FROM RURAL SETTING

--- Original Message ---
From: [Redacted]
To: [Redacted]
Subject: Request for Research Conducted in Rural Setting

I apologize if you have received this email more than once. I have been having some technical email issues and I want to make sure that you received the email. It contains information related to the request for research conducted in rural settings. I have attached the necessary documents for your review.

As I am sending this email to you, I would like to also make sure that I have provided all the necessary information. If there is anything else you need, please let me know.

Thank you for your time and consideration.

Sincerely,
[Redacted]
Dear Teacher,

You are invited to participate in a research study conducted by Kristine Still, a doctoral student from the University of Akron. The research project will hope to discover the connection between teacher beliefs about integrating technology with literacy instruction and classroom practices.

I wish to observe in your classroom for a minimum of six hours and a maximum of twelve hours at your convenience during the months of March through May of this academic year. As part of the study, I also wish to conduct semi-structured interviews with you several times and audio record your responses. In addition, I may request to analyze relevant teacher generated and/or student generated classroom artifacts at your discretion.

The tapes and digital recorded files will be secured in a locked storage space which will only be accessible to me, the researcher. At the end of the project, the tapes and digital files will be destroyed. Your confidentiality will be protected at all times during this study as I will employ the use of a specific coding system to identify the data collected. In the final dissertation document, only pseudonyms will be used so that no identifying information will be connected to you. In addition, no identifying information will ever be released in publications or presentations about this research.

Near the end of the data collection process in your classroom, I will be happy to share the data I have collected in your classroom. This will help to verify that I have accurately understood and represented your beliefs and practices relating to the integration of technology with literacy instruction.

If you should have any questions or concerns at anytime during the course of the data collection, you are welcome to contact me at 330-972-7589 or my faculty advisor, Dr. Lynn Smolen, at 330-972-6961. Also, please know that your agreement to participate in this study is completely voluntary and your decision to withdraw at anytime will most certainly be honored.

I truly look forward to the potential opportunity of working with you for this project!

Sincerely,

Kristine Lynn Still

---

**I consent to participate in this research project:**

Name ___________________________ Date __________

**I consent to being audio taped during this research project:**

Name ___________________________ Date __________
APPENDIX E

INITIAL TEACHER INTERVIEW QUESTIONS

1. How long have you been teaching? Same/different grades/buildings/continuous?

2. What degrees do you hold? Additional graduate work?

3. What types of professional activities do you involve yourself in? Conferences, subscribing to journals, member of organization, published, presentations, mentor ships, leadership roles?

4. How do you define literacy?

5. Has your current definition of literacy changed since you first began teaching? How? Do you think your definition will continue to evolve? Why?

6. How much instructional times do you to devote to literacy activities in one day?

7. How would you define your role in the classroom?

8. How would you define your interest in technology?

9. How did you first become interested in using technology in the classroom?

10. How would you define your beliefs about integrating technology with literacy instruction?

11. How often do you integrate technology into your literacy instruction?

12. What are some of the ways in which you integrate technology with literacy instruction?

13. What are some of the resources/materials that you use to integrate technology with literacy instruction?

14. What professional/personal experiences do you think may have been influential in helping to shape your current beliefs about using technology to support literacy instruction?
15. Do you see yourself continuing to use technology with literacy instruction in the future? Why and How?

16. Is there anything else I may need to know in order to assess if you will be a good match for the study?
APPENDIX F

QUESTIONS FOR INTERVIEW #1

1. How did you decide to become a teacher?

2. What is your general philosophy of teaching?

3. What is your philosophy of literacy teaching?

4. What is your philosophy of teaching with technology?

5. Have these philosophies changed since you first began teaching?

6. What do you believe is the purpose of literacy instruction at your grade level?

7. How has technology enhanced or helped with this purpose?

8. What do you believe are the most important components of literacy instruction?

9. In 1 week, describe the general types of literacy activities one would see?

10. What methods do you choose in literacy instruction? Why do you believe these are important?

11. What do you believe makes an effective literacy teacher?

12. What do you believe makes an effective technology teacher?

13. Do you believe you fit these definitions? Why or why not?

14. What does an effective ideal literacy classroom look like?

15. Describe your classroom and the reason for arranging your classroom this way?

16. How do you decide what literacy skills to teach?

17. How do literacy activities change from the beginning to the end of the school year?
18. Do you perceive yourself as literate . . . in what ways?

19. Describe a typical day in your literacy classroom.

20. Describe your room arrangement.

21. Where do you see literacy education going?

22. What inspires you?
APPENDIX G

QUESTIONS FOR INTERVIEW #2

1. Of the essential components of literacy . . . phonemic awareness, phonics, vocab., comprehension, fluency, motivation, background knowledge

What do you believe is most important? – why?

What do you believe about each of these items that informs your literacy teaching?

2. What types of materials do you believe are important in literacy instruction? How does tech. relate or fit in w/ these materials?

3. What types of materials do you use for lit. teaching? How does tech. relate or fit in w/ these materials?

4. What types of assessment tools do you use for literacy? (technology-based?)

5. How do you keep track of where children are in their literacy development? (technology-based?)

6. Do you use your literacy assessments to plan for further instruction? If so, how?

7. How do you communicate these assessments to parents/other? technology-based?

8. What do you believe about having students select their own reading materials? (technology activities?)

9. What is your belief about individual one-on-one conferencing with students?

10. What do you believe about integrating LA with other content areas?

11. What is your belief about what you should know about the reading levels of your students?

12. What are your beliefs about using technology when individualizing LA instruction? . . . and for whole group instruction?

13. What % of technology is used to support literacy instruction individually and whole group?
14. What are your beliefs about using technology and other print resources in LA instruction?

15. What is your belief about reading digital texts vs. traditional texts? Are there certain skills necessary for each?

16. What is your belief about reading digital texts vs. traditional texts? Are there certain skills necessary for each?

17. What is your belief about writing digital texts vs. traditional texts? Are there certain skills necessary for each?

18. What is your belief about writing digital texts vs. traditional texts? Are there certain skills necessary for each?

19. What is your belief about modeling for your students reading/writing enthusiastically as a life-long reading?

20. What do you believe about motivating learners to be life-long readers and writers?

21. Do you believe integ. Technology with LA instruction has positive effects on the lit development of children?

22. What are your beliefs about LA standards & Tech standards?

23. How do you think integrating LA with technology supports reading, writing, speaking, listening?

24. Do you believe students should have opportunities to work cooperatively or individually as they interact with technology for meaningful literacy activities?

25. Do you believe that technology is another tool for literacy instruction or something in addition?
APPENDIX H

QUESTIONS FOR INTERVIEW #3

1. What type of family/community were you raised in?

2. Describe your first experience with print in your home and/or at school.

3. Describe your first experience with using technology in your home and/or at school.

4. Is there anything in your family, education, or teaching experience that helped to influence your current beliefs about the teaching of literacy skills with the use of technology?

5. What stand out to you as the most important factor(s) that influence your literacy teaching?

6. How would you describe yourself as a student of reading/writing (using technology)?

7. What are your beliefs about displaying positive dispositions related to reading and the teaching of reading? What has influenced these beliefs?

8. What are your beliefs about continuing to pursue the development of professional knowledge and dispositions related to literacy teaching and the integration of technology? What has influenced these beliefs?

9. What are your beliefs about working with colleagues to observe, evaluate, and provide feedback on each other’s practice? What has influenced these beliefs?

10. What are your beliefs about participating in initiating, implementing, and evaluating professional development programs? What has influenced your beliefs?

11. Have you had any professional experiences other than teaching? If so, explain.

12. Besides teaching, what other activities or responsibilities do you assume within your school system?
13. Describe ongoing professional development programs you are involved in?

14. How would you describe your school climate? Is there any collaborative work you maintain with other teachers/administrators?

15. Where do parents fit into your literacy program?

16. Generally, in what ways does your school administration, grade level team, or parents influence your teaching?

17. Are there any books, authors, or theorists that have influenced your teaching of literacy with technology?
APPENDIX I

RUBRIC

How comfortable do I feel with using technology to support literacy instruction?

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>I have given presentations on how to integrate technology into the language arts.</td>
</tr>
<tr>
<td>4</td>
<td>My students use technology daily/almost daily to support their language arts skills.</td>
</tr>
<tr>
<td>3</td>
<td>I am familiar with some educational software and websites.</td>
</tr>
<tr>
<td>2</td>
<td>I tried using technology with my students but they just couldn’t do it!</td>
</tr>
</tbody>
</table>
| 1     | What does “log on” mean?  
       | Where’s the power switch?  
       | I don’t have any available technologies. |
Dear Mom,
We are studying birds in class. I need to bring in this material:

love,
APPENDIX L

MR. MATHISON – TEACHING ARTIFACT #3

Quiz - 4.3 - 981 - Tell me a Story - vocabulary

While Harry ran very quickly

4.3 - 981 - Tell me a Story - vocabulary

while the fox barked loudly
Directions: Find the terms listed below. Words can appear horizontally, vertically, diagonally; forwards or backwards.

See a list of terms used in this activity.
APPENDIX N
MR. MATHISON – TEACHING ARTIFACT # 5

Quit: 4.5 (34k) - My Robot - Spelling words

**Directions:** Try to uncover matching pairs of cards.
See a list of terms used in this activity.
APPENDIX P

MS. GLASS – TEACHING ARTIFACT #1

Name_________________________

My bird report is about
______________________________

Facts that should be included in my report:

Habitat: Where does it live? What does it eat?

What kind of nest does it make and where?

Egg size, color, and how many.

Enemies or predators

Interesting facts:

Song

Whistle

How does it catch or gather food?
APPENDIX Q

Ms. Glass – Teaching Artifact #2

Swim  kick  chick
trim  stick  pick
him  lick  flick
dim  trick  thick
APPENDIX R

MS. GLASS – TEACHING ARTIFACT #3

S

seeds planted in gardens
sun showing itself in the sky
sunshine is beautiful
Showers of rain make flowers grow
Sheep are grazing in fields
small flowers are popping
APPENDIX S

MS. GLASS – TEACHING ARTIFACT #

[Handwritten text]
APPENDIX T

CREDENTIALS FOR INTER-RATERS

Inter-Rater #1
- 22 years of experience in education (Language Arts / Middle Level)
- Literacy educator
- Extensive educational consulting experience
- Over 25 local, regional, and national presentations at conferences/workshops
- Grant writing experience (5 fully funded)
- Collaborations with local school districts
- Membership in 7 professional organizations
- Experience teaching at the university level (6 different literacy courses)
- Pursuing Ph.D in Literacy Education

Inter-Rater #2
- Pursuing Ph.D in Literacy Education
- Earned Master’s Degree in Educational Technology
- Outstanding Instructor (2003) / Youngstown State University
- Outstanding Graduate Teaching Assistant (2006) / The University of Akron
- Membership in 5 professional organizations
- Experience with Ohio Reading First Grant (2003)
- Experience teaching at the university level (3 early childhood and literacy courses)
- 8 Local, Regional, and National Presentations
- Grant Writing Experience (1 fully funded)
- 4 Research Articles (In Review)

Inter-Rater #3
- Over 30 years of educational experience
- Nationally Board Certified Teacher (English as a New Language)
- 25 years of teaching experience in the Urban setting
- Administrative experience at the district level (English as a Second Language and Foreign Language Manager)
- Experience with Ohio Reading First Grant (ELL expert teacher contributor for e-learning courses)
- Experience presenting at local and national literacy conferences
- Pursuing Ph.D in Literacy Education
APPENDIX U

CLASSROOM OBSERVATION TEMPLATE

<table>
<thead>
<tr>
<th>Time</th>
<th>Comments</th>
<th>Codes</th>
</tr>
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<tbody>
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Page # ______

Teacher Code ___/___/___

Date of Observation: ________________