

Roadblocks to Integrating Technology and Reading Pedagogy in Teacher Education

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Abstract

Major findings regarding the roadblocks to the integration of technology with reading pedagogy in teacher education programs are presented. A multiple case study of four education professors over one academic year indicates that roadblocks to integrating technology into reading pedagogy revolve around the following themes: Reading competency is driven by intrinsic motivation. Current practices which neglect “real-world” reading are producing students who know how to read, but do not have the desire to read. The pressures to conform to educational mandates has created a disconnect between “good teaching” strategies and mandated school district requirements. The use of updated practices utilizing digital media is tempered by the current knowledge and self-efficacy of professors of reading education, and the inconsistent availability and/or limited technological accessibility. The overarching theme indicated that meeting the needs of today’s students by looking at education through a new lens and gaining tools and strategies for the 21st century is imperative. Professors of reading education are change agents in their own practices, Universities, surrounding schools and community.

We live in a world of digital interactions. The ideas of social play no longer mean physically being in a room with someone using the imagination. “Today’s students are no longer the people our educational system was designed to teach” (Prensky, 2001). Educators today face many challenges. One significant challenge for instructors is how to engage students in a technologically changing world. Scholarly literature addressing the issues surrounding teaching reading with the continued growth of digital media is weak. Researchers in reading education recognize that we are falling behind times with our methods, stating, “Research on teaching digital media literacy is in its infancy. Scholarly research moves at a snail’s pace compared with the speed at which information and communication technologies proliferate” (David, 2006, p. 85). Reading educators also recognize the neglect of updating strategies to fit the current needs of society’s children. This includes not only changing how we teach in terms of strategy, but also in format. Lessons need to be structured to engage students in multi-media tasks. Additionally, the skills required to navigate in a digital format vary from that of traditional media print. “The current research does provide ample evidence of the growing need for media literacy instruction that targets the added cognitive demands posed by the Internet” (David, 2006, p. 85). Furthermore, reading educators are now cognizant of the varying ways in which students learn. Students commonly multi-task and may find it more distracting when not bombarded with stimulus. Prensky (2001) reports that high school students feel they have to “power down” to pay attention in school. “Often from the Natives’ point of view their Digital Immigrant instructors make their education not worth paying attention to compared to everything else they experience - and then they blame them for not paying attention!” (Prensky, 2001, p. 4). Although the growth of digital media requires a shift in reading theory, reading educators recognize the lack of resources and training to adequately prepare teachers to teach these “digital native” students. Educators face monumental struggles in preparing students to be critical digital readers. Predominately, the teaching of critical-thinking skills is not part of the regular curriculum, and printed text is still considered the core of school reading. Moreover, many recent studies identify unrelenting barriers to integrating new technologies into instruction, including lack of training, help for teachers, and insufficient access to functioning technology (Cuban, 2006).

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This article presents findings from a year-long study of reading professors' practices and perceptions of the issues surrounding teaching reading and learning with digital media. It is an inroad to this topic and can only scratch the surface of the larger problem for the need of research examining pre-service teacher programs' integration of reading pedagogy and digital media.

Literature Review

Digital Learning and Reading

Children begin using technology at an early age and become accustomed to high paced, highly interactive media. Twenty-three percent of nursery school children, fifty percent of third graders, and seventy-nine percent of nine through twelfth graders use the Internet (National Center for Educational Statistics, 2006). There are many positive aspects to early and continued use of technology. Computer use increases cognitive development especially in the areas of visual intelligence, specifically the skills of monitoring visual stimuli, reading diagrams, and determining visual and spatial relationships (Greenfield and Subrahmanyam 2003). Schofield's (1997) studies found computer use has a positive effect on students' motivation in both elementary and secondary levels (Schofield, 1997), and computer use has been linked to an increase in academic performance (Neimiec and Walberg, 1992). Additionally, due to increasing demands for computer literacy, computer usage can also be an indicator of the preparedness of students entering the workforce (U.S. Department of Education 1999b). Although technology can be positively correlated to promoting academic growth and developing skills needed in the workforce, it has created a challenge for educators in both their role as a teacher and their delivery of information. Nearly fifty percent of teachers recognize that the Internet has become an important tool in teaching. Eighty four percent of teachers believe that computer use and Internet access improves the quality of education, but it is not yet well integrated into the traditional classroom (Ed Tech Statistics). With all these considerations in mind, digital education is rapidly growing as it promises a technology oriented learning format while meeting students' educational needs. According to *Learning in the 21st Century: A National Report of Online Learning*, one of every five students have taken an online class and one in three identify online learning as a part of their ideal school (*Learning in the 21st Century: A National Report of Online Learning*, 2006). Though beneficial, online education presents varying challenges for educators and students alike in terms of qualifications to be a successful online learner and/or teacher, pedagogy, and strategies for effective online teaching and learning. One major consideration in online learning is identifying the skills necessary to effectively read and learn using digital media.

Alexander and Jetton (2000) argue that literacy is rapidly changing as new technologies emerge. Reading is an active process as the reader actively engages with the text to make meaning (Spivey, 1987). New comprehension skills and strategies may be required to question, locate, evaluate, synthesize and communicate information using digital media (Leu et al., 2004). Although traditional reading skills are necessary, they are no longer sufficient for digital media reading and learning. Coiro and Dobler (2007) suggest that readers must draw from and integrate multiple knowledge structures while adapting to multiple reading situations in a digital environment. The readers must make meaning from text by selecting relevant hyperlinks, icon, and interactive diagrams. Instead of simply turning a page, digital readers must select a target location from the links embedded in the text to move through the material. Both print and digital text provides navigational support for the reader. Whereas print material has a table of contents, the digital material contains a network map. However, the content of hypertext is hidden beneath layers of information not available for preview by the reader, in contrast to leafing through the pages of a book. Additionally, digital materials often have less context clues to guide the reader, which means the reader must infer relationships between links and attend to their physical location within the digital media (Balcytiene, 1999). These links, also, are typically visual representations rather than textual ones. Therefore, the reader must decode and interpret images along with using comprehension strategies (Kinzer & Leander, 2003). Teachers must guide the learners in these skills, and thus how efficacious a teacher feels about their own abilities to imbed these skills greatly impacts their practice.

Teachers' Beliefs

It is well documented that beliefs are significant factors in understanding individual and group behaviors. Kagan (1992) defines teachers' beliefs as the "implicit assumptions about students' learning, classrooms, and the subject matter to be taught" (p. 66). Rokeach (1972) identified five types of beliefs that range from core beliefs to inconsequential beliefs. Core beliefs are developed through personal experiences and are solidified through social reinforcement. These are the most resistant to change.

On the other hand, beliefs towards the inconsequential end of the spectrum include ones that are derived from authorities and can be changed based on further information from reliable authority figures. Conclusions can be drawn that beliefs about teaching are formed through many years of experience as a student and have been supported by authority figures and social pressures, and therefore, tend to be resistant to change. An abundance of studies about teachers' beliefs (Brousseau, Book, & Byers, 1988; Herrmann & Duffy, 1989; Evertson & Weade, 1989; Martin, 1989) yield two basic generalizations. First, teachers' beliefs are solid and very resistant to change, and secondly they are associated with a compatible style of teaching which is persistent across grade levels and subjects. Pajares (1992) asserted, "beliefs are the best indicators of the decisions individual make throughout their lives" (p. 307), and therefore, a teacher's beliefs are strongly connected to their lesson plans, instructional practice and classroom decisions. Furthermore, Pajares noted beliefs are "far more influential than knowledge in determining how individuals organize and define tasks and problems and are stronger predictors of behavior" (p. 311). Despite this knowledge, ascertaining beliefs can be a challenge as teachers can often follow similar practices for varying reasons, and according to Kagan (1992), teachers are often unaware of their own beliefs or do not have the language to articulate them. There is a wide spectrum of beliefs that influence behavior, however two specific beliefs tend to correlate to teacher behaviors: teacher's sense of self-efficacy and content specific beliefs. Since changes in teaching practices might be required in incorporating technology into education, an understanding of teachers' beliefs is imperative. Bandura (1997) emphasized that beliefs of self-efficacy, "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments," are the principle factors of human action (p.3). Other researchers such as Ashton & Webb (1986) and Gibson & Dembo (1984) describe self-efficacy as generalizations teachers make with the expectancy of their ability to perform professional tasks and influence students. According to Kagan (1992) self-efficacy is positively correlated to the amount of praise a teacher gives, their perseverance with struggling students, their enthusiasm, and the ability to raise test scores. With this idea in mind, even if a teacher views the value of incorporating technology into the classroom, he or she may not be willing to take the risk if his or her belief in their own personal capacity to implement the change is not strong.

Another strong predictor of teacher behavior is content specific beliefs. A teacher's epistemological understandings and their judgments about the appropriateness of the content, goals, activities, assessments, and the nature of the student learning, play a large role in their teaching (Grossman, Wilson & Shulman, 1989). Researchers have found that teachers with a conceptual understanding for a content subject will emphasize conceptual knowledge and supplement the textbook with additional materials. However, teachers with a superficial understanding of the content will rely heavily on the textbook (Grossman et al., 1989). In examining teacher's beliefs specifically about the use of digital media, a social network of support is of the utmost importance (Becker, 1994). One of the strongest predictors of teacher's media use was the "expectations of computer use from among teachers' significant others-principals, colleagues, students and the profession" (Marcinkiewicz, 1994, p. 522). Additionally, Lumpe and Chambers (2001) reported that digital media usage was influenced by self-efficacy for teaching using technology and the context beliefs about being an effective teacher and the support they would received at their school site. The effectiveness of learning to integrate technology into the teaching practice is "powerfully mediated by the interrelated belief systems about learners in schools, about what constitutes 'good teaching' in the context of the institutional culture, and about the role of technology in students' lives" (Windschitl & Stahl, 2002, p. 165). The research on teacher's beliefs concludes that beliefs are static and resistant to change, and furthermore, are not usually effected by reading and applying educational research (Kagan, 1992). In fact, most beliefs are acquired from one's own actual practice and the practice of colleagues. Strong evidence supports the fact that pre-service teachers are influenced more by their experiences with master teachers than by their college professors or supervisors (Calderhad, 1988; Hoy & Woolfolk, 1990). Additionally, Pajares (1992) reported new beliefs are the easiest to change and "change in beliefs follow rather than precede, change in behavior" (p. 321). This research suggests that practices in using technology will lead to the change in beliefs about technology in education. Dwyer, Ringstaff, and Sandholtz (1991) account for this change in beliefs due to experiences in an altered context, digital media. Furthermore, Nespor (1987) added that beliefs do not need to be abandoned in order to affect instructional change, but rather gradually replaced as new, more relevant beliefs are incorporated.

Research Rationale

Scholarly literature addressing the issues surrounding teaching reading with the continued growth of digital media is weak. First, researchers in reading education recognize that we are falling behind times with our methods, stating, "Research on teaching digital media literacy is in its infancy." (David, 2006, p. 85). Secondly, reading educators recognize the neglect of updating strategies to fit the current needs of society's children. This includes not only changing how we teach in terms of strategy, but also in format. Lessons need to be structured to engage students in multi-media tasks. Additionally, the skills required to navigate in a digital format vary from that of traditional media print. "The current research does provide ample evidence of the growing need for media literacy instruction that targets the added cognitive demands posed by the Internet" (David, 2006, p. 85). Third, reading educators are now cognizant of the varying ways in which students learn. Students commonly multi-task and may find it more distracting when not bombarded with stimulus. Prensky (2001) reports that high school students feel they have to "power down" to pay attention in school. "Often from the Natives' point of view their Digital Immigrant instructors make their education not worth paying attention to compared to everything else they experience - and then they blame them for not paying attention!" (Prensky, 2001, p. 4).

Finally, although the growth of digital media requires a shift in reading theory, reading educators recognize the lack of resources and training to adequately prepare teachers to teach these "digital native" students. Educators face monumental struggles in preparing students to be critical online readers. Predominately, the teaching of critical-thinking skills is not part of the regular curriculum, and printed text is still considered the core of school reading. Moreover, many recent studies identify unrelenting barriers to integrating new technologies into instruction, including lack of training, help for teachers, and insufficient access to functioning technology (Cuban, 2002; Zhao & Frank, 2003) This inquiry examines the foundational methods of reading education and its changing dynamics. Linda Darling Hammond notes, "Knowledge of our country's educational history is important if teachers are to understand the broader social purposes of education" (Darling Hammond, 2005, p. 172). Teachers need visible goals and purpose to make reasonable decisions about how, when and where to teach in a technological changing environment. This study was designed to gain insight into the practices and perceptions of reading educators through the examination of four reading professors. Such an investigation is significant in understanding ways in which reading educators are preparing pre-service teachers to address the issues surrounding digital literacy. Scholarly interpretation of the practices and perceptions of reading educators offer lessons for considering the role of digital media in reading education. Examination of the ways in which reading educators perceive the changing environment and how they are addressing these issues in practice will be valuable for reading educators and teachers at all levels of education who are preparing a changing society in literacy skills. Additionally, information from this study will be important in mapping a path for continued change as technology persists to invade our lives.

Method

Subjects

Four respondents were selected from reading professors teaching at the university level. These respondents had varied experiences and were experts in the field of teaching reading literacy. University professors were selected since their practice focuses on teaching educators how to teach reading and literacy. All respondents selected were:

- Involved in current reading research and active within the reading community; being members of state education and literacy organizations such as the state reading association and/or the state counsel on Teacher Education.
- Published researchers pertaining to reading strategies and education in peer reviewed journals.
- Presenters on the topic of reading literacy, education, and/or technology in statewide conferences.
- Chosen from the geographic area located within a ninety-mile radius of the researcher for convenience and ease of face-to-face interviews.
- Experts in the field of reading education.

The respondents had differing experiences, in order to provide intensity sampling of perspectives and strategies on reading education. Due to this dynamic, three respondents were currently teaching within the university classroom and one respondent was a recently retired university professor.

- One respondent was a reading educator who was a veteran instructor having taught more than 20 years and having spent more than 10 years in higher education,

- One respondent was a veteran teacher having taught more than 20 years, but less than 10 years in higher education
- A third respondent was a higher education teacher having taught less than 20 years.
- The fourth respondent was a recently retired full-time University professor whom is still active within the reading community and teaches part time as an adjunct University professor.

Instrumentation

Triangulations, using a combination of interview, direct observation, and document data provided a deeper insight into the phenomenon being studied. Multiple sources of evidence helped to develop convergent lines of inquiry, which provided triangulation and more accurate conclusions. The selection of documents was based on criterion to build an understanding of each case and create connections that occurred between cases. The criterion for selection was based on items that:

- Indicated planning of strategies that addressed digital literacy
- Indicated insights into the reading educator's thoughts and/or reflections about the students' learning.
- Indicated connections between traditional reading and digital reading and plans for future teaching.

These included teacher educator documents such as lesson plans, teacher journal notes, and any "first-person narrative that described an individual's actions, experiences, and beliefs" (Bogdan & Bilken, 2007, p. 133). Additional student documents were reviewed based on the previous criterion of supporting the data in developing the case studies. Examples of physical artifacts considered for selection were student work samples and project handouts. Upon review of the documents, the researcher made observational notes and comments recording emerging themes that connected to other data sources (Bogdan & Bilken, 2007). All notes taken during the document review were typed and given to each respondent for member checking and feedback. Additionally, document review led to new interview questions or specific observation focus. Direct observations were utilized during the interview process and when examining the documents. Observations were made while visiting the classroom communities. Each respondent was interviewed a minimum of two times and a minimum of one classroom observation occurred with each of the currently teaching reading educators. Descriptive field notes were taken during the observations, which included six aspects:

1. Portraits of the subject – these include mannerisms, style of talking and acting...particular aspects of people that set them apart from others and make them individuals.
2. Reconstruction of dialogue. The conversations that go on between subjects will be recorded... words and phrases that are unique to the setting will be a particular focus, as well as, gestures, accents, and facial expressions.
3. Description of physical setting. Pencil sketches...or verbal descriptions of the bulletin boards, the furniture, floors and walls may be included.
4. Accounts of particular events. Observations will note who was involved in the event and the nature of the action.
5. Depiction of activities. Descriptions of behavior, events and responses will be documented.
6. The observer's behavior...Since the researcher is the instrument of data collection, it will be very important to be consciously aware of your own behavior, assumptions, and any other aspect that might affect the data that are gathered and analyzed. (Bogdan & Bilken, 2007, 121-122).

Results

Responses from the four respondents revealed an overall perception of concern associated with current educational practices and the need to incorporate digital media. A collection of phrases that illustrate this finding include: "education lags behind society", "schools have limited the ability to teach using means that will motivate students", "we are teaching kids to how to read, but not teaching them to want to read", and "there is a disconnect between technology students use and the technology we have to teach with." Teacher educator respondents repeatedly referred to the common perception that education is lagging behind the trends of society in that the trainings, tools, and curriculum do not support the needs of the students.

This combined feedback is directly connected to the description and beliefs posited by Ausubel (1962) dealing with “anchoring ideas” and connecting to knowledge the students already know. Analyzing the research evidence pertaining to the guiding question for this study, the issues surrounding reading and learning through digital media are numerous. A brief synopsis of four of the theme patterns; knowing how to read versus wanting to read, strategies and schools, current knowledge of teacher educators, and technological accessibility, demonstrate alignment with the guiding question and its conclusions.

Theme 1: Knowing How to Read versus Wanting to Read Synopsis

A common thread voiced throughout the interview and observation process was the concern that educators are teaching the students to know how to read, but not teaching them the enjoyment of reading. Scripted texts and pacing guides provide the skills for students to learn to read. However, most students’ world outside of school involves vast amount of digital data in the form of texting, computer games, digital novels, and the Internet. Not only are educators not connecting to the digital world, they are not afforded the time to teach the love of literature. Prensky (2001) reported that high school students feel they have to “power down” to pay attention in school. “Often from the Natives’ point of view their Digital Immigrant instructors make their education not worth paying attention to compared to everything else they experience!” (Prensky, 2001, p. 4). The respondents recognize that the more a person reads, the better reader they become. A teacher’s role is to help students have that transactional experience, to find the meaning, and to derive pleasure from the words (Rosenblatt, 2005). Knowing the skills to read is not enough in reading education, but making the connections to current knowledge and providing motivation to engage in reading is also a key factor. Reading educators expressed a great deal of concern with this missing piece in education.

Theme 2: Strategies and Schools Synopsis

Collectively the respondents noted that education has swung from one extreme to the other at least once in their careers. Each noted the concepts of whole language and using authentic literature to teach reading, recognizing the problems surrounding whole language revolved around the lack of knowledge in reading strategies. However, respondents revealed the perception that mandated curriculum is too strict today. Respondents believe that teaching “good reading strategies” is the best way to educate teachers to prepare students. Yet, once their students get into the field they are often met with pacing guides, scripted texts, and benchmark tests. The respondents’ perceptions are that creativity has been taken out of teaching and most educators are not able to or afforded the time to incorporate “good reading strategies” into their teaching. Rosenblatt’s Readers Response Theory (2005) suggests that teaching literature needs to concentrate on the personal way each student makes meaning from the text. Teacher educators are challenged with the task of connecting what they believe are important skills for “good reading teachers” and preparing students with the actuality they will face in the field.

Theme 3: Current Knowledge of Teacher Educators Synopsis

Although respondents had varying abilities in using digital media, they came to a consensus that lack of current knowledge for teacher educators was a real issue. Nearly fifty percent of teachers recognize that the Internet has become an important tool in teaching. Eighty four percent of teachers believe that computer use and Internet access improves the quality of education, but it is not yet well integrated into the traditional classroom (Ed Tech Statistics). Respondents noted that there is not a lot of professional development provided for staff nor is there a standardized set of expectations in utilizing technology or digital media. Some respondents themselves felt like a novice in using digital media. The respondents recognized that often students know more than their instructors, and teacher educators need to feel confident to ask their students to show them and the class how to utilize these materials. As Bandura (1997) argued a teacher’s self efficacy will influence their behavior in teaching. Additionally, respondents believe that education is lagging behind society in not preparing teachers at all levels to use digital media and how to connect it to current theory. It is these teacher educators’ perception that until digital media strategies are incorporated into common practice, educators will not be preparing students for success in the 21st century.

Theme 4: Technological Accessibility Synopsis

A fourth theme that commonly arose in the course of this study was the lack of technological accessibility. Each respondent recounted the frustration with using technology due to inconsistency. It was a consensus that having unreliable Internet connections are often a barrier, as well as, inconsistency between the hardware available in varying classrooms. These issues require a lot of preparation time for the instructor and can be frustrating in finding alternate solutions when technology doesn’t work.

Furthermore, complete labs for learning hands-on and practice are often unavailable. Many noted having technical advisors on campus, but cited lack of being readily accessible to the teachers and a condescending attitude toward helping the professors as a hindrance. Furthermore, sites do not have consistency in technologies. Therefore, there is a mismatch in what is being taught and the expectations by each district in terms of knowledge and use. Respondents noted that technological use is something that requires hands-on practice to gain the skills needed. In addition, if the skills are not utilized they will be forgotten or “deleted” from memory. These lack of standardization in the area of digital media cause many barriers to incorporating these skills into an effective curriculum.

It is apparent that both self-efficacy and content specific beliefs, as Kagan (1992) noted were important, are missing due to the lack of consistency in both equipment and training. The lack of vision for how technology will improve teaching and learning appears to be a concerning issue.

Overarching Theme Synopsis

The overarching theme of this multiple case study emerged as Strategies and Practices of Reading Educators; Issues of Connecting Traditional and Digital Literacies. This overarching theme is a conglomeration of the essence of the five theme patterns that emerged from this multiple case study that examined the practices and perceptions of professors of reading education. The recognition of this overarching theme substantiates the emergence of the five theme patterns and draws a logical connection between the findings and the guiding questions. Moreover, the overarching theme stresses the importance of the theoretical frameworks for the study: Rosenblatt’s Readers’ Response Theory and Ausubel’s Learning Theory. Although respondents realize the importance of incorporating digital media in education, the impact technology has made has been minimal. This study concurs with, Becker’s (2000), conclusions that computers have not transformed teaching. However, when teachers have the necessary skills, freedom with curriculum, reliable equipment and a personal philosophy that supports digital media, technology can be a valuable teaching tool. The findings of this study revealed that the issues that hinder teacher educators from using digital media in the college classroom are similar to the issues that impede implementation of technology in the K-12 classrooms. There is a disconnect in technological education which is two-fold: not only is there a disconnect between classroom teacher and student, but also, between education professor and pre-service teacher. Bridging this gap and incorporating technology into education must begin at the college level and trickle down to the school sites. Teachers who cannot relate to their students’ world full of digital media, lack the ability to make connections needed to make learning meaningful. Rosenblatt’s Reader Response Theory (2005) stated in order to make text meaningful it must be set into the context of the student’s understanding and interests. If the language or text is foreign or too difficult, the student will not make sense of it. Since digital media daily surrounds children, it is a necessity for educators to tap into these understandings and interests. However, teachers often are not taught the connections between ‘good teaching’ strategies and digital media and many do not have the self-efficacy or experience to incorporate new technologies. Therefore, the change in practices must occur in the pre-service program.

To complicate matters more, college professors seem to have a disconnect between their use of digital media and their pre-service students. The respondents each stated a limited amount of knowledge as a hindrance. It was apparent that self-efficacy made a difference in the use of technology. As Bandura (1997) asserted a teacher’s belief in their effectiveness to teach using digital media is carried into their practice. Those educators that do not feel efficacious about their teaching with technology will tend to minimize its importance. Thus, if teacher educators are not willing to begin to take risks, make connections, be vulnerable and model technological use, incorporating digital media will continue to be scarce and inconsistent. Therefore, to begin addressing the issues surrounding teaching and learning with digital media teacher educators need to begin incorporating digital media within their coursework. As they begin to make the connections between “good teaching strategies” and new literacies, their beliefs in teaching with technology may actually change. Parjares suggested that, “change in beliefs follows, rather than precedes, change in behavior” (p. 321). Additionally, Nespor (1987) asserted that instructional change does not require abandoning beliefs, but to gradually replace them as new experiences that build self-efficacy shape them. Teacher educators cannot expect a teaching program to affect change in teachers’ behaviors without effecting change in their personal beliefs. Research suggests that teacher’s beliefs are resistant to change and that most ideas come from teachers’ own practice or from fellow teachers (Hall & Loucks, 1982). Therefore, master teachers and peers often have more influence on teachers’ beliefs than college professors or supervisors.

In order for teacher educators to begin addressing the issues surrounding reading and learning with digital media teacher educators need to require that students share their preexisting personal beliefs, challenge the validity of those beliefs, and give students time to examine, elaborate and integrate digital media into their existing belief systems (Kagan, 1992). Teacher educators must realize that Ausubel's Learning Theory applies to college students as well. The personal beliefs students hold about integrating technology can be anchors in facilitating learning while other beliefs, that are inconsistent with new knowledge, and may impede learning. Just as readers may misinterpret text due to preexisting beliefs, the transition to new knowledge and understandings can be difficult.

"The pull of prior beliefs is strong.... In learning to teach, neither firsthand experience nor university instruction can be left to work themselves out by themselves" (Feiman-Nemser & Buchmann 1985, p.259). In order to support the growing literacies with digital media there needs to be a social network of computer using teachers both for reading educators and for teachers in the field. When teachers view the norms as technologically supportive and have others to converse with, they begin to believe that technology will help them in becoming an effective teacher and their self-efficacy grows. The importance of the school environment cannot be overlooked. Not only do colleges and schools need to provide reliable equipment, but the value placed on technological use effects beliefs of digital use. Teachers' integration of technology is "powerfully mediated by their interrelated belief system about learners in schools, about what constitutes 'good teaching' in the context of the institutional culture, and about the role of technology in students lives" (Winschitl & Stahl, 2002, p. 165).

Teacher educators and teachers both have developed beliefs about teaching with digital media through personal experiences as a student and as a teacher. The school environment, peers and attitudes of other staff in which teachers work with, solidifies these beliefs. Since teaching is a highly isolated profession, beliefs are very resistant to change. The insecurities associated with incorporating digital media into the classroom when students are often more proficient with these technologies than the educator, hinder progress. Therefore, a teacher's self-efficacy plays an important part of effecting change. It appears that it is not a lack of acknowledging the value of technology that hinders its impact on teaching and learning through digital media, but rather teachers' beliefs about the curriculum and strategies in the schools, their own knowledge of technology, and the lack of inconsistent or reliable hardware limiting their efforts. To achieve an environment that would be technologically inclusive, a starting point might be to provide teacher educators and teachers opportunities to observe and collaborate with peers using technology. Providing mentors and clear expectations of baseline standards for technological use along with reliable equipment consistent throughout colleges and school sites would also set attainable goals for educators. Approaches are needed that expose teachers to alternative methods of teaching, connecting 'good teaching strategies' to technology use, and introducing the vast array of things media can bring to education. In addition, educators need a place to try out and practice technology where students are not impacted, where they can build their own self-efficacy and comfort level, and begin changing their belief systems.

Discussion

Based on the findings of this study, suggested recommendations for instructional practices of professors of teacher education in terms of reading and digital literacy are:

1. Additional support of professional development training for teacher educators in designing and facilitating courses with digital media would enhance the expertise of the faculty as they assist their students in connecting traditional and digital skills needed in today's society.
2. Providing a consistent basic level of digital hardware/software among colleges would be a good start in building digital literacy. Basic, reliable Internet, Elmos, projectors, computers, DVD's would allow professors the comfort to utilize these items regularly.
3. Collaboration time where teacher educators can share explicit connections between teaching standards and the use of digital media.
4. Providing courses that focus on connecting traditional teaching skills with new literacies and state mandated curriculum would aid teachers in making the connections to the field.
5. Collaboration time should be set aside for professors to share and practice strategies that connect "good" strategies to digital media.
6. Motivational strategies must be taught to focus on the love of literature.

Recommendations for Practice

This study examined reading educators' practices, perceptions, and beliefs in terms of issues surrounding teaching reading and learning through digital media. Although this study provided some clues to the barriers preventing technology from making a drastic impact on education, there is still much to be learned. It appears from this study that the same beliefs and barriers impact each level of education. The self-efficacy of the teachers' ability to utilize technology as well as their beliefs in the benefits of technology to guide their teaching (Kagan, 1992). A multiple case study, similar to the methodology of this study, could be designed to analyze the practices and perceptions of teachers out in the field, with regards to reading and learning through digital media.

This study would provide valuable information to inform teacher educators in how their students perceive the same issues in the same way. Similarly, a multiple case study analyzing students and their motivation and success in reading using digital media. This information would be valuable in determining the effectiveness of digital media as a tool for teaching students. Do digital natives have similar beliefs? Is self-efficacy in digital media an issue for them as well? This study examined the perceptions, practices, and beliefs of reading educators in terms of digital media. It was limited in the scope of one semester. A longitudinal study examining how teachers' beliefs evolve over time could be utilized to determine effective means of growth in educators. How do the beliefs of teachers change as their self-efficacy and comfort in utilizing strategies develop? Additional longitudinal studies which follow teacher educators through training in utilizing digital media and the carry over into their classes could give further insight into the practices which teacher educators are using and their correlation to supportive training and mentoring. Furthermore, this study was limited in scope to four participants. A larger scale qualitative study could be designed to gain a broader insight of the issues. Data from a broader range of participants would add valuable information such as does the age of the participant skew the findings? Are younger faculty members more open to change or have beliefs close to digital natives?

Additional information about the impact technology has on the learning of students would be beneficial in noting the validity of incorporating digital media into educational practices. Qualitative studies examining the academic scores and state test scores of students whose teachers connect digital and traditional literacies would add to the body of knowledge in this area. As the Office of Educational Research and Improvement (1993) reported teachers are not encouraged to integrate technology without being able to see a clear vision of how it will improve the teaching and learning. The following studies would also support this vision: Quantitative studies designed to examine what technologies are being utilized in the majority of school districts and which technologies would be most beneficial for teacher educators to focus their attention on would also be important to narrow the scope of which technologies educators should become knowledgeable about. This additionally would give educators a vision to focus on and an attainable goal in which to build self-efficacy with. Since school district administrators and district administrators control much of the curriculum and strategy expectations in schools, a mixed method study could be utilized to survey how school district administrators or principals view the incorporation of technology in their schools. An analysis of the generational gap in terms of perceptions of digital media usage between teacher educators, teachers, and/or students would be beneficial in determining the disconnect between groups. Are these issues with incorporating digital media a generational issue? Will it be resolved as digital natives grow up and become teachers and teacher educators? Can students make their own connections between school learning and digital learning?

Conclusions

This study provided an in-depth analysis of the practices and perceptions of four professors of reading education in terms of the issues surrounding reading and learning through digital media. The intent of the study was not to utilize the results to generalize to all professors of reading, but to provide an in-depth look into the opinions, points of view, feelings, and voices of a small sample of teacher educators. It is the goal that this study will add to the existing body of knowledge and literature and will make an impact on policymakers, professors, and teachers who may not have considered the implications of digital media on reading education. Furthermore, information obtained in this study can potentially inform college administrators and educators about the issues professors of teacher education and teachers in the field are facing in terms of teaching reading to the youth of today. Administrators may consider the needs for reliable equipment, faculty training and collaboration as education is brought into the 21st century with current media.

Policymakers may heed the findings of this study worthy of consideration when making guidelines of technological standards and the money needed for standardized equipment in the schools. Many teachers in the field find they need assistance in connecting to the students' interests and making the connections to current curriculum. Implementing a program at the college level that provides a base line level of technological skills and bridges the gap between traditional reading strategies and new literacies, can provide teachers with valuable information to help their students be successful. Finally, college district policymakers desiring greater success and updated programs may consider the findings from this study valuable in designing a program that meets 21st century needs of professors, teachers, and students alike.

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