Transforming teacher education to support multicultural technology pedagogy: an assessment of preservice teachers' beliefs about multiculturalism and diversity

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Transforming teacher education to support multicultural technology pedagogy:
An assessment of preservice teachers’ beliefs about multiculturalism and diversity

by

Audrey Denise Bowser

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Education

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Iowa State University
Ames, Iowa
2008

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DEDICATION

This dissertation is dedicated to the most remarkable woman I have ever known, my mother,


Thank you mom for the support and encouragement you gave me throughout all of my educational pursuits. Your unconditional love has been the impetus for the goals I have accomplished, the strong Black woman I am, and the individual I have yet to discover. Mom, a simple thank you could never convey the love and appreciation I have for you. Throughout your earthly life, you exemplified compassion, kindness, generosity, love, and sensitivity; a virtuous woman, indeed, and for this, I am grateful to be called your daughter. Finishing this without you, at times, seemed impossible, but I will always remember how much you believed in me. You would say, “You can do all things through Christ, who strengthens you.”

~ Philippians 4:13

I dedicate this dissertation to my mother’s loving memory.
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Because schools are becoming increasingly diverse, a significant role of teacher preparation programs is to prepare its prospective teachers with the knowledge, skills, and dispositions to help all students learn. In understanding the responsibility to prepare preservice teachers for working with diverse populations and implementing an effective multicultural curriculum, teacher education programs recognize the imperative that preservice teachers must be trained as technologically competent teachers who can skillfully integrate technology in culturally diverse classrooms. Within the context of teacher education, this research is rooted in social reconstructionist theory (Sleeter & Grant, 2003) based upon a critical multicultural conceptual framework interwoven with critical pedagogy (Freire, 1996; McLaren, 2003). This research study assessed preservice teachers’ personal and professional beliefs about ways in which technology can be used to support their conception of multicultural education.

Following procedures described by Creswell (2003) for sequential transformative mixed methods research, the data were analyzed, using both quantitative and qualitative measures. The Personal Beliefs about Diversity Scale and the Professional Beliefs about Diversity Scale were used to measure preservice teachers’ beliefs about multiculturalism and a range of diversity issues (Pohan & Aguilar, 2001). Descriptive statistics, including means, standard deviations, and percentages, were then analyzed to determine these preservice teachers’ multicultural perspectives. The multicultural framework proposed by Sleeter and Grant (2003) was used to analyze the responses to the qualitative data.

Overall, the results revealed that the preservice teachers in this study held favorable beliefs about multicultural understandings; however, the majority of students tended to
conceptualize multicultural education from the human relations approach. This study found the students’ growth in multicultural knowledge and awareness appeared to increase as they advanced through the teacher education program. From the interview data, four principle themes emerged in an effort to describe the ways technology could be used to facilitate learning about multicultural education. Furthermore, preservice teachers’ beliefs about multiculturalism were generally not reflected in ways technology can be used to support their conception of critical multicultural education.
CHAPTER 1. INTRODUCTION

Multicultural education and technology together can offer a number of challenges and possibilities for teacher education. Teachers’ beliefs about cultural diversity are powerful determinants of learning opportunities and outcomes for diverse K-12 students and classrooms in U.S. schools. Therefore, teacher education programs have a responsibility to prepare preservice teachers for working with historically marginalized populations and implementing an effective multicultural curriculum (Banks & Banks, 2005; Bennett, 1995; Gay, 2000; Ladson-Billings, 1995; Nieto & Bode, 2008). As a way of expanding preservice teachers’ understandings of these multicultural issues, researchers (Brown, 2004a; Clark & Gorski, 2001; Damarin, 1998; McShay & Leigh, 2005; Merryfield, 2001; Morse, 2004; Sleeter & Tetteghah, 2002) have illustrated ways that instructional technologies can be used to support the goals of multicultural education. In addition, teachers are central to the equitable and effective uses of technology in our increasingly multicultural classrooms, it is important that preservice teachers are trained to be technologically competent teachers who can skillfully integrate technology in culturally diverse classrooms (Chisholm, 2000). However, this may be too challenging for preservice teacher education.

Although United States (U.S.) classrooms are faced with the changing demographics towards a more diverse society as well as a rapid growth of technology in education, preparing preservice teachers to educate culturally diverse student populations and to integrate technology into instruction simultaneously has gained limited exploration within the literature (Phillion, Johnson, & Lehman, 2003-2004). In order for preservice teachers to teach effectively in culturally diverse classrooms and integrate instructional technology, they
need to acquire the appropriate knowledge, skills, and attitudes during their teacher education programs to meet these challenges. This study seeks to assess preservice teachers’ beliefs about multiculturalism and diversity within a technology enriched teacher preparation program.

Instructional technologies provide tools that may be applied to reconstruct the role of teacher education, thus providing pedagogical opportunities to teach and promote multicultural curricula. Instructional technology can also play a major role in overcoming educational barriers and broadening opportunities for cultural awareness. Yet, a number of challenges exist for teachers working in culturally diverse classrooms. For example, technological inequality has become another obstacle to equalizing educational opportunities for these students (Morse, 2004). In terms of achieving greater equality in students’ opportunity to learn, technology innovation often increases inequity (Rogers, 2003). Based on a review of research, Gorski (2005) calls for more concrete steps toward dismantling the digital divide, encouraging educational leaders to look at technology critically and understand the social, political, and economic forces that create these inequities in technology use. Educators are urged to re-think technology integration using a critical multicultural education framework (McShay & Leigh, 2005; Schoorman, 2002) as a way of addressing these substantial inequities among schools’ use of technology implementation.

According to Attewell (2000) and Morse (2004) the question is not whether or not technology belongs in classrooms, but how technology and multicultural education can be interconnected by addressing broader issues of diversity to ensure that all students gain access to technology. However, Larry Cuban (2001) argues that computers as a medium for instruction and tool for student learning have not been used as envisioned. He concludes that
there has been no significant innovation or development with computers in education because teachers tend to adapt computers to their familiar ways of teaching. Moreover, he adds that forms of technology integration that promote multicultural pedagogy can only be made possible when opportunities for learning how to use technological resources are made available to all students. Selwyn, Gorard, and Williams (2001) expand this perspective on the digital equity to assert that access to the uses of instructional technology are a necessary means of increasing social inclusion for economic competitiveness. Research (Clark & Gorski, 2001; Damarin, 1998; Morse, 2004; Roblyer, Dozier-Henry, & Burnette, 1996; Warschauer, Knobel, & Stone, 2004) shows that low-income areas and students in marginalized groups are least likely to receive the benefits of exemplary uses of instructional technology that engage students in creative and critical thinking activities. The reasons are multiple and complex, and the solutions are even more elusive. Warschauer, Knobel, and Stone (2004) found it is the social realm of U. S. education, characterized by the social implications of the rising economic inequalities linked to access to computers and the Internet that defines differences in the availability of, access to, and use of new technologies. In addition, adequate teacher training is central in ensuring that all students use computer technology equitably (Clark & Gorski, 2001; Damarin, 2000; Morse 2004).

Preparing preservice teachers to educate an increasingly diverse classroom of students and preparing them to integrate technology into instruction provides evidence for a way of promoting multicultural competence (Merryfield, 2001). Preservice teachers who have the opportunity to integrate technology in their teacher preparation program gain knowledge, practical experience, and learn the appropriate skills necessary for teaching with technology (Cradler, 2002). Teachers must be exposed to a variety of ways of teaching with different
types of technology to support their teaching (Russell, Bebell, O’Dwyer, & O’Connor, 2003). Keating and Evans (2001) found that, although preservice teachers felt comfortable with technology in their daily lives, they expressed reservations about using technology in their future classrooms. Keating and Evans recognized that “technological pedagogical content knowledge extends beyond proficiency with technology for personal use to an understanding of how technology can be integrated with subject matter and the technology itself…. The teacher understands the…inevitable challenges that accompany any new technology.” (2001, p. 2). To facilitate innovative teaching with technology, capitalizing on connections with multicultural technology pedagogy seems particularly appropriate. It is not the technology itself, but rather the way in which future teachers use the technology that has the potential to change education (Carr, Jonassen, Litzinger, & Marra, 1998). Well-planned preservice teacher preparation programs are needed in order to increase the number of effective teachers using instructional technology in meaningful ways, particularly with regard to creating successful multicultural learning environments (Chisholm & Wetzel, 2001).

**Background and Rationale**

There is little doubt that the explosion of technology in society is having a profound influence on how we view and interact with people all over the world. As the amount and variety of technologies available to schools continues to grow, the potential for new and innovative ways to enhance students’ educational experiences increases as well. In preparing future teachers to educate students in this pluralistic society, the growing number of ethnic minorities in the United States presents a challenge to institutions training future teachers. During the past decade, population growth rates have been the highest for Asian, Pacific
Islander, and Latino/a individuals. It is expected that by the year 2050, people of color will represent 50% of the United States’ population (National Association of School Psychologists, 2003). Furthermore, it is projected that by the year 2040, the majority of the nation’s school-age children in grades 1 to 12 will be students of color (Olson, 1999).

While the numbers of students from diverse cultural backgrounds are increasing, the U.S. teaching force consists primarily of monolingual, middle-class European American females who may lack the requisite background knowledge, skills, and dispositions to teach effectively children from racially, ethnically, and linguistically diverse backgrounds (Cummins, 1994; Howard, 1999; Nieto, 1999). Currently, approximately 90% of the nation’s teachers are White or European American (Gay & Howard, 2000; Johnson, 2002; Villegas & Lucas, 2002). Hodgkinson recognized in 1985, “The number of minority children in our school is now so large if they do not succeed, all Americans will have a diminished future” (p. 18).

Given the projected changes in the culturally diverse student population in American classrooms, the demographic divide between students and teachers will certainly increase in the future unless teacher preparation programs attract and graduate a larger number of teachers of color (Gollnick & Chinn, 2002). A number of researchers (McAllister & Irvine, 2000; McIntyre, 1997; Rothenberg, 1997) believe this imbalance leads to a “cultural mismatch” between students and teachers that negatively affect classroom relationships. How future teacher educators in the U.S. choose to address the issues of diversity will forever influence the success and failure of millions of students now and in the years to come. There is widespread recognition that prospective teachers must be better prepared to teach an
increasingly culturally diverse student population (Hodgkinson, 1991; Ladson-Billings, 1995; Sleeter & Grant, 2003; Zeichner & Hoeft, 1996).

This rapid cultural diversification of classrooms in the U.S. is occurring at the same time as the society is being transformed by computer technology (Russell, et.al., 2003). The growing importance of technology in the workplace as well as for access to personal information makes it clear that knowledge in this area is a necessity for teachers and their students. However, the review of the relevant literature, presented in Chapter 2, reveals that research about preparing preservice teachers for the challenges of a growing cultural diversity of school-age population and integrating multicultural based technology practices into their teaching are commonly ignored. The researcher for this study purports the simultaneous infusion of multicultural education and instructional technology may help form new understandings about preservice teachers’ beliefs regarding issues of diversity, social justice, and digital equity. Like Sleeter and Teetagah (2002), this researcher also believes that preparing prospective teachers to be sensitive to the diverse cultural backgrounds of students should involve orienting them to use computer technology in ways that are responsive to students’ cultural backgrounds.

**Theoretical Underpinning**

The historical literature is replete with evidence that documents how members of underrepresented groups have been both withheld from educational opportunities and denied access to equitable opportunities (Apple, 1990; Bowles & Gintis, 1976; Delpit, 1988; Darling-Hammond, 1995; Giroux, 1988; Irvine, 1990; Kozol, 1991; Spring, 2001). Multicultural education has been defined as a form of resistance to oppression (Banks,
The goal is to provide an education that challenges oppression, affirms diversity, and strives for social justice, equity, and opportunity. The field of multicultural education is challenging dominant forms of knowledge and constructions of truth that are created and controlled by particular groups as power over other groups. Sleeter and Grant build a powerful argument of why multicultural education must be both multicultural and social reconstructionist (2003). Within the context of teacher education, this research is rooted in social reconstructionist theory (Sleeter & Grant, 2003) based upon a critical multicultural conceptual framework interwoven with critical pedagogy (Freire, 1996; McLaren, 2003). Critical multicultural educators encourage students to think in a variety of ways so that they may begin to understand the complex web of intersectional as well as intercultural relationships. Critical multiculturalism promotes understanding of and participation in our diverse society.

Multicultural education can promote educational experiences that will enable students to enhance their perspectives about class, race, ethnicity, linguistic, gender, exceptionalities, and age within a pluralistic and diverse society (Banks, 1994, 2001). According to Gorski (2004), multicultural education calls for all aspects of education to be continuously examined, critiqued, and transformed based on the ideals of equity and social justice. Therefore, a critical analysis of the assumptions underlying digital equity highlights that it is clearly a multicultural issue. Critical multicultural research is easily tied to critical thought (Brady & Kanpol, 2000).

For critical multicultural education, research calls for thinking about technology from a multicultural perspective (McShay & Leigh, 2005; Sleeter, 2000) that has been constructed from the margins and provide the most insight. Because issues of multiculturalism are central
to understanding the issues surrounding digital equity, critical pedagogy can serve to promote the goals of multicultural education and instructional technology. Critical pedagogy explores whether the Internet and other digital technologies can become agents of transformation or will reproduce the inequalities of the status quo. Although technology is rarely linked with multicultural awareness (Gorski, 2004; Roblyer, et al., 1996; Schoorman, 2002), such a transformation towards a critical perspective may reveal ways that technology can facilitate the goals of multicultural education.

Furthermore, the effectiveness of prospective teachers to maintain and expand concepts of critical multiculturalism in the context of technology integration merits attention in teacher education. If critical pedagogy and multiculturalism are to be infused in the teacher education curriculum, then educators in all subject-matter content areas need to engage in rigorous and systematic reflective teaching and reexamine their own beliefs and practices (Major & Brock, 2003), and this includes courses in educational technology. Transforming teacher education to support multicultural technology pedagogy therefore necessitates both a close examination of personal beliefs as well as an assessment of future professional beliefs.

**Statement of the Problem**

A number of researchers (Bandura, 1982; Brown, 2004b; Gay, 2000; Nieto, 2000; Pohan, 1994) concur that the cross-cultural perceptions, beliefs and behaviors of classroom teachers can negatively affect the academic and social development of their students. Research indicates that these beliefs and behaviors are instilled early in one’s personal life (Allport, 1979; Hamachek, 1982; Richardson, 1996). However, Brown (2000), Banks (1996), and Sleeter (1995) have found that training can influence these beliefs and behaviors
to increase awareness of cultural diversity during effective preservice teacher preparation.

The assessment and understanding of what preservice teachers presently believe about multicultural education and diversity are critical steps to be taken in reducing prejudice, discrimination, and education discrepancies that occur within educational settings (Middleton, 2002).

To assist in the ongoing effort of colleges of education to evaluate and improve teacher preparation, information about beliefs of technology-competent preservice teachers towards multiculturalism and diversity are important in developing an educational environment responsible and responsive to a culturally diverse nation, its students, and its digital workforce. In their slow response to prepare future teachers for diversity, such programs tend to perpetuate traditional teaching practices, which have continuously failed to offer preservice teachers the necessary awareness, knowledge, skills, and cultural sensitivity to be successful with diverse student populations (Ladson-Billings, 2005; Sleeter, 2001).

This study also attempts to evaluate the effectiveness of the existing preparation of technology-competent preservice teachers towards multiculturalism and diversity. Therefore, an assessment of technology-competent preservice teachers’ beliefs toward issues related to multiculturalism and diversity is warranted. It is intended that this empirical study of preservice teachers’ beliefs about diversity will add to the body of literature and contribute to the national discourse on helping teacher education programs develop ways to prepare prospective teachers for the new multicultural realities of schools in the United States.
Statement of Purpose

The purpose of this mixed method study is to examine the multicultural beliefs of preservice teachers in a technology enriched teacher preparation program and to investigate the extent to which these beliefs are related to these students’ perceptions of integrating effective uses of technology. It is reasonable to argue that prospective teachers’ beliefs about multicultural education will influence their teaching of it and the ability to successfully integrate it using technology-based practices. Transforming teacher education to support multicultural technology pedagogy necessitates both a close examination of personal beliefs as well as an assessment of future professional beliefs.

This research provides baseline data for the teacher education program in an assessment of preservice teachers’ perspectives about multiculturalism and diversity while highlighting the importance of technology in teacher education. Findings from this research study examine an in depth understanding of preservice teachers’ beliefs to inform practice in higher education, as well as in K-12 school environments. These findings will also contribute to the emerging body of research documenting how various forms of technology can be used to support the teaching of multicultural education. This study has the potential to benefit higher education administrators, technology educators, and preservice teachers committed to the simultaneous infusion of technology and multicultural education to improve student learning.

Research Questions

Based on the literature and the need for designing culturally responsive teacher preparation curricula, this study addresses the following research questions developed to
examine the multicultural beliefs of preservice teachers within a technology-enhanced teacher preparation program.

1. What are preservice teachers’ personal beliefs about multicultural education in a technology enriched learning environment?

2. What are preservice teachers’ professional beliefs about multicultural education in a technology enriched learning environment?

3. In what ways do preservice teachers in different stages of their teacher preparation program differ regarding their beliefs about multicultural education?

4. What are the major multicultural perspectives of preservice teachers in different stages of their teacher preparation program?

5. Is there a relationship between preservice teachers’ multicultural perspectives and how technology can be used to support their conception of multicultural education?

Methodology

The preservice teachers in this study were selected from those attending a technology-enriched teacher education program at a large Midwestern university. After obtaining approval from the appropriate human subjects review board, data was gathered and analyzed during the spring 2006 semester from three groups of undergraduate preservice teachers. Preservice teachers in this study were at different stages of their teacher preparation program enrolled in a required professional education course in the Department of Curriculum and Instruction at Iowa State University. The design of the study sought to amplify descriptive and attitudinal data with more in-depth qualitative data to add further understanding of
participants’ views regarding the multicultural beliefs of preservice teachers. The data were gathered mainly through a questionnaire complemented with some focus groups.

**Instrumentation**

The Personal Beliefs about Diversity Scale and the Professional Beliefs about Diversity Scale were used to measure preservice teachers’ beliefs about multiculturalism and a range of diversity issues (Pohan & Aguilar, 2001). One scale measured beliefs about general issues related to diversity, and the second scale measured beliefs about diversity specifically within a professional education context. The scales were developed and tested for reliability and validity. According to Pohan (1996), preservice teachers’ life experiences and personal beliefs are closely related to their beliefs about teaching culturally diverse students.

These two empirical measures were chosen because they treat the issue of diversity from a wider perspective and included beliefs about race, ethnicity, social class, religion, languages (other than English), gender, sexual orientation, and disabilities. As a result, the instrument can be inclusive of all historically marginalized sociocultural groups. Both scales use a 5-point Likert-type format ranging from 1 (strongly disagree) to 5 (strongly agree) with a higher score being more favorable.

In addition, four open-ended questions were included to elicit preservice teachers’ understandings about their beliefs regarding issues of multicultural education. Sleeter and Grant (2003) developed a typology of five approaches to multicultural education, which were used for analyzing and interpreting students’ understandings that reflected the theoretical framework (Freire, 1996; McLaren, 2003) that define these approaches. The researcher of
this study used qualitative research methods to analyze the responses to open-ended questions of the instrument. The last section of the survey instrument was designed to gather information reflecting the demographic information of the preservice teacher.

After gathering data from the survey instrument, the researcher conducted focus group interview sessions to complement the evidence from the survey and validate findings. As Krueger (1994) argued, the acceptance of qualitative techniques, especially focus group interviews, have become a valuable tool for learning more about research participants’ opinions, beliefs and attitudes. These interviews were analyzed for emerging themes following procedures outlined by Lincoln and Guba (1985). The quantitative and qualitative components of the data were analyzed separately.

**Assumptions**

This research involves an assessment of the beliefs of teacher education students that related to their sensitivity to the politics of representations of race, ethnicity, gender, class, language, disability, and other cultural differences. Future teachers may use these beliefs to empower themselves and promote democratization through their teaching. The author assumes that education today needs to foster a variety of new types of literacy to empower students and to make multicultural education relevant to the challenges of the racially, ethnically, and linguistically diverse classrooms. The assumption of this study is that instructional technologies are altering every aspect of our society and we need to understand and make use of these to transform our teacher preparation programs using multicultural technology pedagogy.
Limitations

This study was designed with acknowledgment of the following limitations:

1. The focus of this study was limited to preservice teachers in the teacher education program from one large Midwestern institution, Iowa State University.

2. The results were also limited to the degree of reliability with which preservice teachers within the Curriculum and Instruction Department at Iowa State University rated their beliefs about multicultural education.

3. The layout and the implementation of the qualitative part of the study (e.g., open-ended questions, focus group interviews conducted) did not meet the accepted procedures for a study that is entirely qualitative in design. Time constraints limited the research in relation to the breadth and depth of inquiry possible. However, by using a mixed-method approach and by adding some qualitative aspects, the researcher was able to add richness to her study that a purely quantitative approach would have lacked.

Based on the integrative design of the study (quantitative and qualitative), the findings were not generalizable to all teacher education programs. The results provided grounds to support the development of more extensive research to study the questions and problems described in this dissertation.

Definition of Terms

The following terms are defined in order to improve the communication of this research.
Beliefs are representations of the information a person uses about an object, person, group of people, and they may be based on fact and the individual’s own personal opinions. A teacher’s or preservice teacher’s belief refers to the implicit assumptions held about students, classrooms, and the curriculum (Kagan, 1992). This is important because what preservice teachers believe about diversity as it relates to their personal lives, and what preservice teachers believe about teaching in diverse classrooms and schools (i.e., professional beliefs) guides teacher expectations about students, learning, and the curriculum (Pohan, 1996).

Diversity is used to communicate a term inclusive of historically marginalized sociocultural educational discrepancies associated with race, ethnicity, social class, gender, religion, languages (other than English), and sexual orientation (Pohan & Aguilar, 2001).

Five Approaches to Multicultural Education is the typology of approaches for addressing race, class, gender, and exceptionality in education developed by Sleeter and Grant (2003) and will be used as the conceptual framework to study preservice teachers’ understandings about multicultural education.

1. Teaching the Exceptional and the Culturally Different is characterized by teachers who recognize the need to make adaptations to the mainstream curriculum and pedagogy to better help students of color, women, economically disadvantaged students, and students with disabilities to succeed in mastering that curriculum. Emphasis is placed on individualizing instruction to help students develop the cognitive skills and knowledge that represent the standard-as defined by the experiences of the dominant cultural group.
(2). *Human Relations* is characterized by instructional content and activities that emphasize the affective components necessary to create a society that respects all cultural groups. By promoting feelings of unity and reducing stereotypes, prejudices, and biases students are encouraged to develop strong friendships across ethnic, gender, social class, and disability lines.

(3). *Single-Group Studies* fosters cultural pluralism by teaching courses (i.e., Women’s Studies; Chicano Studies; and so on) about the experiences, contributions, and concerns of distinct ethnic, gender, and social class groups.

(4). *Multicultural Education* attempts to reform the total schooling process in an effort to reduce discrimination, provide equal opportunities, and strive for social justice for all groups. This requires reconceptualizing the entire schooling process so that it links race, language, culture, gender, disability, and social class toward making the entire school celebrate human diversity and equal opportunity. This approach necessarily entails a critique of norms and practices that are exclusionary.

(5). *Education That is Multicultural and Social Reconstructionist* extends the Multicultural Education approach into the realm of social action and focuses on challenging social structural inequality and on promoting cultural diversity and equal opportunity.

*Multicultural education* is a progressive approach for transforming education that holistically critiques and addresses current shortcomings, failings, and discriminatory practices in education. It is grounded in ideals of social justice, education equity, and a dedication to facilitating educational experiences in which all students reach their full potential as learners and as socially aware and active beings, locally, nationally, and globally.
Multicultural education acknowledges that schools are essential to laying the foundation for the transformation of society and the elimination of oppression and injustice (Banks, 2004a).

**Organization of the Dissertation**

This research study is organized into five chapters. Chapter One, Introduction, provides an overview of preservice teachers’ beliefs about diversity based on the literature about multicultural education and technology related to teacher education. The statements of problem and purpose offer the significance of the study, outlining the importance of the research. Then, the research questions are identified in order to establish the direction of the research study. Next, the methodology described the data collection and instrumentation used in this study, along with the reasonable assumptions and limitations that outlined the methodological issues used to guide the research design. Finally, the definitions of relevant terms were given to improve the communication of this research.

Chapter Two provides a comprehensive review of relevant literature and issues that highlight the research on assessing preservice teachers’ beliefs about ways that technology can be used to support the goals of multicultural education in teacher education. The literature reviewed in this chapter addressed the following issues: (1) the role of multicultural education, (2) the role of technology in teacher education, and (3) the criteria for multicultural technology pedagogy. The literature review supports the importance of preservice teachers becoming aware and sensitive to issues of ensuring equitable educational opportunities as it relates to student use of technology.

Chapter Three describes the research methodology followed in this study. The chapter begins with the research design, which is a mixed method approach utilizing both
quantitative and qualitative approaches to research. This design includes quantitative survey methodology with open-ended questions and then employs semi-structured interviews to facilitate a deeper exploration of preservice teachers’ beliefs about ways technology can be used to support multicultural education. Next, the participants of the research study are presented. Then, the survey questionnaire used to assess the participants’ beliefs about diversity and the focus group interview questions are introduced. Subsequently, the data collection procedures are given and the methods for analyzing the data are described.

The results of the data analysis are presented in Chapter Four. The chapter begins with a discussion of the demographic characteristics of the survey participants and is followed by the data analyses that address the research questions. An analysis of the data gathered from both quantitative and qualitative results are presented.

Chapter Five presents a brief summary of the research study and discusses these essential findings within the larger framework of the research literature reviewed in Chapter two. This chapter includes the implications of practice for prospective research on the need for multicultural education and technology integration in preservice teacher education. The chapter ends with recommendations for further research and conclusions.

The next chapter provides the literature review for this study.
CHAPTER 2. REVIEW OF LITERATURE

The purpose of this study was to examine the multicultural beliefs about diversity of preservice teachers within a technology-enhanced teacher preparation program. Dramatic demographic changes in the cultural and linguistic diversity of today’s classrooms are occurring at the same time as the explosion in technology throughout the United States. These changes have challenged teacher education programs to modify their curricula and instructional practices to meet the needs of diverse learners and to prepare all preservice teachers to have the awareness, knowledge, and skills to be effective. Preparing culturally competent preservice teachers with the necessary skills to integrate technology in the teaching and learning process has become an issue of vital importance. This chapter highlights the literature on preparing preservice teachers about ways that technology can be used to support the goals of multicultural education in teacher education. The literature reviewed in this chapter addresses the following issues: (1) the role of multicultural education, (2) the role of technology in teacher education, and (3) the criteria for multicultural technology pedagogy.

The Role of Multicultural Education

Though the research in multicultural education has been fragmented at times, multicultural discourse and practice are now well established in the field of education. Although multicultural education was developed, in part, to respond to the concerns of ethnic, racial, and cultural groups that felt marginalized within their nation states
James Banks (2007) advocates for multicultural education to be viewed as a transformative citizenship education to help students acquire the knowledge, skills, and values needed to function effectively within their cultural communities, multicultural nation states, regions, and the global community. Banks (2005) further defines multicultural education as an idea or concept, an educational reform movement, and a process. It is also seen as a vehicle for promoting equity and social justice (Nieto & Bode, 2008). Finally, McLaren (2003) introduces the notions of critical multiculturalism and revolutionary multiculturalism to define multicultural education discourse that emerged to supplant and subvert the original intentions of theorists who set out to create pedagogy of liberation and social justice.

In her comprehensive review of genres of multicultural education, Christine Bennett (2001) identifies and develops a conceptual framework of research genres that illustrates the complex multidisciplinary roots of multicultural education as a way of bringing conceptual clarity and purpose to a field perceived by some educators as lacking definition. According to Bennett (2001), the basic principles of multicultural education in the United States are: the theory of cultural pluralism; ideals of social justice and the end of racism, sexism, and other forms of prejudice and discrimination; affirmations of culture in the teaching and learning process; and visions of educational equity and excellence leading to high levels of academic learning for all children. This comprehensive approach provides a culturally embedded vision in multicultural teaching. Defining four distinct but overlapping dimensions needed in multicultural curricula, this framework can be used as a tool to explore multiple areas of perspectives and understandings of research and practice in multicultural education. An
analysis of the various themes related to multicultural education synthesize many teacher education programs and efforts into these following four genres proposed by Bennett (2001):

- **Curriculum Reform** – historical inquiry, detecting bias in texts, media, educational materials, and curriculum theory;
- **Multicultural Competence** – ethnic group culture, prejudice reduction, and ethnic identity development;
- **Equity Pedagogy** – school and classroom climates, student achievement, cultural styles in teaching and learning; and
- **Societal Equity** – social action, demographics, culture, and race in popular culture

According to Gorski (2004), multicultural education calls for all aspects of education to be continuously examined, critiqued, and transformed based on the ideals of equity and social justice. Multicultural education must be a central part of teacher preparation in which multicultural curriculum is offered to prospective teachers to prepare them to work with culturally different students in pedagogically respective, responsive, and relevant ways (Fox & Gay, 1995).

Currently, multicultural education is also viewed as a vehicle to enrich prospective teachers’ beliefs and values by confronting social inequities, prejudices, stereotypes, ethnocentrism, and racism directly through their future professional work in schools (Sleeter & Grant, 2003; Pohan, 1994, 1995). However, these students’ own personal and professional experiences both in and outside of their teacher preparation program may affect the development of their beliefs more than formal pedagogical knowledge gained from academic
coursework (Richardson, 1996). Tatar and Horenczyk (2003) declare preservice teachers having personal experiences with diversity, along with the opportunity for appropriate processing of these experiences, is critical to their development of greater multicultural awareness and sensitivity. An examination of the educational concepts of multicultural education and educators’ beliefs about how to best educate culturally diverse students can provide an understanding of how preservice teachers conceptualize multicultural education.

*Preservice Teachers’ Beliefs About Multicultural Education*

Teachers’ beliefs have a great impact on the decisions that they make in the classroom (Pajares, 1992). Porter and Freeman (1986) mentioned that teachers’ beliefs are often about the learning process, students, curriculum, and pedagogy. Cuban (1984) emphasized that teaching practices reflect the beliefs of teachers and teachers’ beliefs are influenced by their own experiences. Richardson (2003) states that beliefs can be thought of as a subset of a group of constructs that name, define, and describe the structure and content of mental states that drive a person’s actions. Therefore, it is vital for teachers who have students from diverse backgrounds to examine the beliefs about teaching the effectiveness of classroom practices to address issues of cultural diversity (Cabello & Burstein, 1995) to enhance cross cultural knowledge that reverse the cycle of school failure (McAllister & Irvine, 2000). Bennett (1993) states that teachers need to understand their own beliefs and worldviews to be effective with such students. If teachers acknowledge and recognize their own beliefs and worldviews, they may be able to relate better to the beliefs and worldviews of their students.
Some studies have examined preservice teachers’ beliefs about culture, diversity, or multiculturalism (Bryan & Atwater, 2002; Cockrell, Placier, Cockrell, & Middleton, 1999; Middleton, 2002; Montecinos & Rios, 1999; Pohan, 1994, 1995). Moreover, research that examines the context of teaching multicultural education focuses on how teachers’ behavior guide their thinking, not their beliefs (Rios, 1996). Yet, teachers’ behavior is strongly influenced by their beliefs. Richardson (2003) suggested that preservice teachers’ beliefs serve as predictors of behaviors. Kagan (1992) stated that many students enter teacher preparation programs with beliefs and ideas regarding teaching and learning already formed. If we better understand teachers’ beliefs, we may be able to gain insight into their actions. Although beliefs do not change easily, the experiences accumulated over time can challenge teachers’ old beliefs and encourage them to develop new beliefs (Cabello & Burstein, 1995; Delany-Barmann & Minner, 1997).

Pohan (1996) states that a well-articulated program with attention to multiculturalism and diversity issues over several semesters may be the best hope for moving preservice teachers toward greater cultural sensitivity that influence preservice teachers’ beliefs in culturally diverse classrooms. Teachers’ beliefs are critical to meeting the educational needs of learners from diverse backgrounds. Researchers (Banks & Banks, 2005; Nieto, 2000) have also encouraged educators to examine their personal attitudes and beliefs about diverse groups in today’s classrooms in order to create educational environments, which are truly equitable. If these desired changes in preservice teachers’ beliefs about culturally diverse students are to be achieved, the conceptions of multicultural education must be continuously examined.
The Need for Multicultural Education in Preservice Teacher Education

Because schools are becoming increasingly diverse, a significant role of teacher preparation programs is to examine and promote preservice teachers’ acquisition of multicultural concepts (Haberman & Post, 1990). Multicultural education is a complex and multidimensional concept (Banks, 2004b). Important theoretical contributions to the concepts of multicultural education has led to more comprehensive definitions of multicultural education such as that of Sonia Nieto (2004), who emphasizes the context and process of multicultural education as follows:

Multicultural education is a process of comprehensive school reform and basic education for all students. It challenges and rejects racism and other forms of discrimination in schools and society and accepts and affirms the pluralism (ethnic, racial, linguistic, religious, economic, and gender, among others) that students, their communities, and teachers reflect. Multicultural education permeates the schools’ curriculum and instructional strategies, as well as the interactions among teachers, students, and families, and the very way that schools conceptualize the nature of teaching and learning. Because it uses critical pedagogy as its underlying philosophy and focuses on knowledge, reflection, and action (praxis) as the basis for social change, multicultural education promotes democratic principles of social justice (p. 346).

In his typology of the different dimensions of multicultural education, Banks (2004b) provides educators with a guide to school reform when trying to implement multicultural education. Banks’ five dimensions can be identified as follows: Content Integration
(e.g., content from diverse groups is used when teaching concepts and skills). Knowledge Construction (e.g., helps teachers understand how knowledge in the various disciplines is constructed); Prejudice Reduction (e.g., helps teachers to help their students develop positive inter-group attitudes and behaviors); Equity Pedagogy (e.g., teaching strategies are modified so that students from racial/ethnic, cultural, language and social class groups will experience equal opportunities and educational equity); and an Empowering School Culture and Social Structure (e.g., culture of the school will be transformed so that students from diverse groups will experience equal status in the culture and life of the school) (Banks & Banks, 2005).

After all, the aim of multicultural education is for all educators to acquire the knowledge necessary for teaching in a culturally diverse classroom.

Teachers must be well prepared to understand the principles of multiculturalism in order to foster an effective environment conducive to learning (Banks, 2005; Bennett, 2001; Fox & Gay, 1995; Melnick & Zeichner, 1998; Sleeter & Grant, 2003). Although the theory and practice of multicultural education have evolved over the last fifty years, a major goal of multicultural education remains the total reform of schools and other educational institutions so that students from diverse cultural, racial, ethnic, and social-class groups can experience educational equity (Banks, 2004b). This broader and more comprehensive meaning of multicultural education is well illustrated in Banks and Banks’ statement:

Multicultural education not only draws content, concepts, paradigms, and theories from specialized interdisciplinary fields such as ethnic studies and women’s studies (and from history and the social and behavioral sciences), it also interrogates, challenges, and reinterprets content, concepts, and paradigms from the established disciplines. Multicultural education applies content from these fields and disciplines
to pedagogy and curriculum development in educational settings. Consequently, we may define multicultural education as a field of study designed to increase educational equity for all students that incorporates, for this purpose, content, concepts, principles, theories, and paradigms from history, the social and behavioral sciences, and particularly from ethnic studies and women studies. (2005, p. xii)

The connection between these conceptions of preservice teachers’ beliefs about multiculturalism and diversity is a promising avenue for informing the philosophical frameworks of multicultural education.

**Multicultural Philosophical Frameworks**

McLaren (2003) argues that multiculturalism has taken on a variety of forms that move it away from ideals of liberation and social justice. He described the four forms of multiculturalism as: conservative multiculturalism, liberal multiculturalism, left-liberal multiculturalism, and critical multiculturalism. Conservative multiculturalism is based on the concept of White supremacy; it can be traced back to the earlier times when African Americans were perceived as slaves and servants. It is easy to see how conservative multiculturalism can breed racism and prejudice. Liberal multiculturalism focuses on the ideal that equality should exist among all people. This form of multiculturalism stresses the intellectual similarities of all people. People of one race are as intellectually capable as people of another race. The supporters of liberal multiculturalism believe that equality does not exist in the United States and that social and economic obstacles to equality can be removed. Left-liberal multiculturalism pays special attention to cultural differences. The
supporters of this form of multiculturalism claim that the focus on equality stifles cultural differences among races; however, these differences promote diversity in values, behaviors, and ideas. Critical multiculturalism views the issues of culture, race, socioeconomic class, and gender through the lens of social struggles for meaning. This form of multiculturalism focuses attention on the transformation of the social and institutional relations in society. According to critical multiculturalism, culture cannot be perceived as something harmonious because conflicts of interest can occur between and within cultures (McLaren, 2003). The proponents of critical multiculturalism say that diversity can be promoted through the commitment to social justice (Gay, 2000; Nieto & Bode, 2008; Sleeter, 1995, 1996). When a teacher supports these forms of multicultural philosophies, explicitly or implicitly, it is reasonable to assume that this may be reflected in his or her approach to multicultural teaching.

Five Approaches to Multicultural Education

Based on an extensive review of multicultural and diversity literature, Sleeter and Grant (2003) identified five approaches to multicultural education. The following section presents a synthesis and summary of the characteristics of these five approaches. These are not presented in a hierarchical order.

Teaching the Exceptional and the Culturally Different focuses on modifying instruction based upon student uniqueness. It builds upon the capabilities of the student and the demands of the school and wider society, so that the student learns to function successfully in these contexts. The second approach, Human Relations, focuses on teaching students about cultural differences to increase cross-cultural understanding and on how to
eliminate stereotyping and prejudice. This approach often calls for individuals to be more sensitive to differences and more inclusive. *Single Group Studies* is the third approach. Intended to be more critical, this approach raises awareness about the historical background, lived experiences, and oppression of a specific group. For example, students may learn about the traditions, values, and struggles of Asian Americans, women, the working class, or lesbian, gay, bisexual, and transgender (LGBT) population. This approach to diversity serves the purpose of empowering group members, while counterbalancing the study of the traditional curriculum. The fourth approach, known as *Multicultural Education*, attempts to reduce discrimination, provide equal opportunities, and establish social justice. It strives to change many school practices; for instance, this approach encourages hiring a historically marginalized school faculty. Multicultural Education is used to describe education policies and practices that affirm human differences and similarities as they relate to race, gender, disability, class, and sexuality. Advocates of this approach reject assimilation and promote social structural equality and cultural pluralism. The fifth approach, *Education that is Multicultural and Social Reconstructionist*, expands the previous approach in that it calls for social action toward societal structural inequalities. Advocates of this approach want to prepare citizens to restructure society so that it better serves the interests of all groups of people. The ultimate goal is for teachers to work toward transforming the entire academic environment to reinforce inequality.

Sleeter and Grant (2003) added the term, Social Reconstructionist, to identify this approach with “a more assertive and transforming educational position” (p. 195). Social reconstructionism is a philosophical orientation that informs the scholarship of educators who utilize social justice multicultural education. This pedagogy is marked by social action,
an integral component of education; the ideas of Freire, Shor, Giroux, McLaren, Piaget, and Dewey are central. Stanley (1992), in a seminal work on social reconstructionism, *Curriculum for Utopia: Social Reconstructionism and Critical Pedagogy in the Postmodern Era*, states that schools that have social reconstructionist missions are “institutional sites that contain the promise of counter hegemonic struggle, refigure the role of teachers from that of technicians and clerks to transformative intellectuals working towards social change and the common good…” (p. xiii). Social reconstructionists believe education is elevated when democracy, equality, and justice ground the curriculum. Fortunately, due to the revival of social reconstructionism by the work of Sleeter and Grant (2003), it can be linked to progressive, multicultural and democratic education with a social justice orientation.

As often discussed by Freire and Shor, the “students become subjects rather than objects in the classroom” and learn to “direct their own learning and to do so responsibly, rather than always being directed by someone else” (Sleeter & Grant, 2003, p. 208). Teachers who follow the fifth approach are encouraged to teach skills that can help students overcome the adverse circumstances in their lives, teach critical thinking skills, and help students analyze alternative viewpoints. Education that is Multicultural and Social Reconstructionist embraces similar practices noted in the Multicultural Education approach. According to Sleeter and Grant (2003) this approach: (1) views culture as a product of power relations; (2) helps students investigate issues of structural inequality in their own environments and encourages them to take action regarding those conditions; (3) conceptualizes culture and identity as complex and dynamic; (4) considers all cultures to be an integral part of curriculum; (5) organizes a curriculum that incorporates students’ backgrounds, learning styles, and experiences; (6) uses schools as laboratories to prepare students to participate
actively in democratic decision making; (7) builds a curriculum that enables students to become change agents in society; (8) creates an environment that supports equal opportunity in the school; and (9) teaches students empowerment skills.

Each of the five approaches to teaching for diversity in Sleeter and Grant’s framework has its own distinct goals, assumptions, and practices for teaching for diversity. This multicultural framework proposed by Sleeter and Grant (2003) was used by the researcher to learn about the major multicultural perspectives of preservice teachers and how technology can be used to support their conception of multicultural education. Given these comprehensive approaches to multicultural education, a more critical approach to multicultural education can provide an important framework for promoting teaching and learning within a multicultural perspective.

Promoting a Critical Multicultural Perspective

Critical pedagogy, which evolves from the well established discourse of critical theory (Freire, 1996; Giroux, 1988; McLaren, 2003), acknowledges diversity of all kinds instead of suppressing or supplanting it (Nieto, 2004). As leaders of the movement, Freire, Giroux, and McLaren, insist that education is always political, and that educators and students should become “transformative intellectuals” (Giroux, 1988), “cultural workers” (Freire, 1996); “cultural capitalists” (McLaren, 2003) capable of identifying and redressing the injustices, inequalities, and myths of an often oppressive world. Connecting his vision to the multicultural pedagogy of these critical theorists, Leistyna (2002) advocates critical multiculturalism as an important praxis for teachers and students to develop theoretical
frameworks that historically and socially situate the deeply embedded roots of racism, discrimination, violence, and disempowerment.

Multicultural Social Reconstructionist Education (MCSR) has been linked to critical theory and is grounded in liberatory principles as well as critical multiculturalism and the ideals of social justice and equity (Banks & Banks, 2005; Giroux, 1988; Leistyna, 2002; McLaren, 2003; Sleeter, 1996). Nieto (2004) stressed the importance of promoting critical multicultural education to improve student achievement. She stated that schools should not only expose students to different cultures, values, and traditions of various people but also encourage students to think about societal power structure and be concerned about the marginalized groups of diverse populations. Education that is Multicultural and Social Reconstructionist is a critical approach to examining the presence of diversity in school and society.

McLaren (2003) offers a notion of critical multiculturalism and calls for a restructuring of the social order through a radical approach to schooling. With this in mind, an educational framework informed by transformative knowledge should facilitate critical multicultural awareness for future teachers (Sleeter, 2000). As James Banks (2005) states:

Multicultural education views the school as a social system that consists of highly interrelated parts and variables. Therefore, in order to transform the school to bring about educational equality, all the major components of the school must be substantially changed. A focus on any one variable in the school, such as the formalized curriculum, will not implement multicultural education. (p. 25).
Because a critical perspective values diverse viewpoints and encourages critical thinking, reflection, and action, Nieto (2004) asserts that students are empowered as learners and are expected to seek their own answers and become problem solvers. Nonetheless, Leistyna (2002) argues that one of the major obstacles of critical transformative education in the United States is that critical theory of any kind is often devalued among educators.

Most school curricula reflect the experiences of the dominant group (Banks & Banks, 2005), whereas the primary goal of multicultural education is to transform schools so that “all students will acquire the knowledge, attitudes, and skills needed to function in an ethnically and racially diverse nation and world” (p. 28). This includes technology and covers its content and delivery. Based on the fluidity of the issues surrounding multiculturalism and diversity, discussions of multicultural education in instructional technology are complex.

According to Martin & Van Gunten (2002) multicultural social reconstructionist education enhances the possibilities for the transformation of traditional relationships of power and domination, and simultaneously calls attention to the representative voices of historically marginalized groups. It is particularly successful for investigating the foundations of practice regarding social policy in public schools, especially structural inequities. In particular, multicultural social reconstructionism provides a possible avenue for addressing the issues of the digital divide within a multicultural context. The need to improve multicultural education in preservice teacher education is only one of the demands that have increased during the twenty-first century. The expansion of technology has resulted in increasing pressure to integrate it within teacher education. Some critical multicultural education approaches to technology integration challenge the notion that education has ever
been, is now, or ever can be characterized by equal educational opportunities (Gorski, 2005). The next section of this study addresses the role of how technology can be integrated effectively and equitably in teacher education.

**The Role of Technology in Teacher Education**

In addition to the need for multicultural education within teacher preparation, there exists the need to prepare prospective teachers to use technology effectively. In our increasingly multicultural and technological society, new technologies are altering every aspect of our society and we need to understand and make use of them both to understand and transform our world. Though this research poses a challenge for educators to continue searching beyond the confines of the traditional hegemonic, dominant view of what is considered equitable opportunities, a historical grounding of these disparities can help explain how American schools have denied students from underrepresented populations access to educational resources.

*Brief Historical Background of Technology Diffusion*

Traditionally, historically marginalized groups have been poorly educated and denied the sorts of opportunities that create the vision necessary for technological ambition. Clark and Gorski (2001) report that schools with the highest levels of poverty and racial minority enrollments have the least amount of access. Mack (2001) explains that the historical experience of each ethnic group is unique and the educational disadvantages of minority groups have resonated throughout history, marginalizing millions of students to dramatically less desirable school environments. Inequality of educational opportunity has probably
existed before the beginning of racially segregated schools in the United States. Perhaps one of the most fundamental examples comes from David Wallace Adams’ history of boarding schools inflicted on American Indian children (1995). Members of the dominant culture were able to attend more affluent schools while students of color were subjected to impoverished and unequal conditions in segregated classrooms. And even now, the varying conditions and levels of educations across the world differ greatly and still present a divide, making the digital divide seem an age-old problem.

Before examining how technology can support multicultural education to increase educational opportunity to transform today’s classrooms, it is helpful to first explore how the educational system arrived at its current state of severely underserving students of color. As emerging technologies are introduced, adoption rates tend to vary across groups, based on race and socioeconomic status. By comparing changes in the rate of penetration of these technologies, history may help provide an analysis of how digital equity may be achieved. However, Saettler cautions, “The study of American educational history clearly documents how difficult it is to effect the adoption and use of new technologies and instructional methods in the classroom” (1990, p. 467).

The historical timeline follows significant trends in instructional media generally, focusing on these trends as the context in which educational film, radio, and television have been developed, studied, and implemented. Using the earliest survey data he could locate, Larry Cuban (1986) has written an intriguing history of how classroom teachers have taught with technological innovations in schools from 1920 to the late 1980s. In the 1920s and 1930s, classrooms were introduced to film and radio as instructional innovations. Yet by the 1950s, only a small number of teachers reported frequent use. Just as radio and film captured
the attention of technology reformers, the use of instructional television was promoted as the next technological device by the mid 1950s. Within two decades of the introduction of classroom television, the same pattern that appeared with radio and film occurred; teachers reported only limited use of this technology as well. Based on past patterns of teacher’s adoption of technology, the integration of computer technology is expected to diffuse in a similar manner. Cuban’s work supports the claim that classroom teachers tend to be selective in choosing which instructional technologies to use (1986).

When the Educational Technology Act of 1969 was introduced, educational leaders were called to recognize the promise and potential of technology as a powerful thrust toward realizing the unfulfilled goals of American education. This act was designed to meet all of the requirements for the successful introduction of technology into education. Its promise of achieving instructional excellence to be funded by a 30 percent increase in a school board’s expenditures each year (Snider & Twyford, 1969). This alone indicates how the needs of those oppressed by debilitating economic school conditions were ignored. In the tradition of critical multicultural education, it is necessary to situate schools within a broader sociocultural context as a way of questioning the dominant regimes of discourse that are implicated by social and cultural practices (McLaren, 2003). As computer technology began to flourish in public schools, Rosen (1970) writes that over ten million children [black, Mexican-American, Puerto Rican, Indian, etc.] from rural and urban poverty are in schools that are not providing them with appropriate educational experiences. Blaschke (1969) declares the benefits of technological innovations will remain ineffective until some of the major problems in education are addressed. These problems regarding the status of computers in education were listed as follows:
(1) The vast majority of the developments in applications of computers are not relevant to the major problems in education today; (2) The technological developments are outstripping the efforts to create an environment conducive to constructive change; and (3) Education is at a crossroad in time when the computer will act as a catalyst for improving the quality of education, or will further institutionalize the existing system (p. 24).

Also over four decades ago, Rosen (1970) documented his concerns about inequitable opportunities in relation to technology in schools as follows:

“Today, the majority of poverty children, crowded into ghetto slum schools in large urban areas or attending schools in rural poverty sections of the United States, have an infinitely more difficult state of affairs in operation. The far different past legacy of these people and the present mechanical, depersonalized and insensitive racist society perpetuates a poverty caste for people who are only a few generations removed from slavery and violent suppression” (p. 38).

Fifteen years later, Edeburn (1985) reported that educators continue to acknowledge a substantial inequity among schools’ use of technology implementation. While schools in high-income areas enjoyed an elite status, little money for computers, parents who were either uneducated or unable to express their concerns about educational issues, and the students’ use of computers (if they had them) restricted mostly to drill and practice characterized schools in low-income areas.
Technological innovations continuously challenge today’s classrooms. These new ideas and technologies may show great promise, but historical facts and research show that access may be limited for minority classrooms. New technologies are supplementing the chalkboard, filmstrip, radio, overhead projector, and classroom television. According to Means (2000), these technologies have the potential to radically alter the nature of current pedagogy when designed around constructivist theories of learning. More specifically, computer-based applications that encourage students to reason, explore essential questions, and link key ideas can result in positive effects on student achievement. This alone makes it even more imperative to include multicultural instructional strategies to find answers concerning disparities among schools in exposure and access to instructional technology (Attewell, 2000; Morse, 2004).

**Overview of Technology Integration in Teacher Preparation**

Based on the conceptions of the problems that foreground the historical background of educational technology, this section provides an overview of technology integration in teacher preparation. Despite the considerable benefits of technology use for preservice teachers and their students, it is widely acknowledged that the potential for technology to influence education has not yet been realized (Cuban, 2001).

The growing impact of new technologies on today’s culturally diverse American classrooms will depend on the skill with which preservice teachers integrate these new tools into their future practices (Preparing Tomorrow’s Teachers to Use Technology [PT3], 2002). Research indicates that colleges of education are making some progress in moving prospective teachers from the beginner level into more advanced skill levels in their use of
Furthermore, although technologically enhanced learning environments can have enormous motivating power for students, these learning environments do require that teachers have basic technology proficiency skills in curriculum and instruction (Means, 2000). Viewed in terms of teaching, Means (2000) recommends that teachers should be able to: (1) use technology for personal productivity; (2) use technology to support learning in a subject area; (3) design or adapt technology-supported learning activities; (4) manage authentic student-centered, technology-based activities; and (5) assess student skills within the context of technology-supported activities. Similarly, in order to integrate technology into teaching practices, Moursund and Bielefeldt (1999) state that preservice teachers need to develop expertise in technology proficiency. In this well-publicized study commissioned by the Milken Exchange and conducted by the International Society for Technology in Education (ISTE), Moursund and Bielefeldt (1999) argued that teacher education programs needed to increase the level of technology integration in their preparation programs. This integration should include: (1) building the appropriate technology infrastructure and facilities; (2) having faculty who model the use of technology skills in teaching; (3) implementing technology-specific coursework throughout the program, not in stand-alone courses only; and (4) requiring prospective teachers to use technology during field experiences.

A number of national reports have concluded that teacher preparation has emerged as the critical factor limiting the potential of educational technologies to improve student learning in K-12 environments (CEO Forum on Education and Technology, 1999; Office of Technology Assessment [OTA], 1995; Preparing Tomorrow’s Teachers to Use Technology [PT3], 2002). These reports indicate that few teacher preparation programs are adequately
preparing preservice teachers to use technology. Teacher preparation programs at colleges and universities are constantly being examined for their effectiveness in preparing teachers who posses the theoretical knowledge and technological skills to create optimal learning environments for their students. Researchers (Pellegrino, Goldman, Bertenthal, & Lawless, 2007) contend that prospective teachers are not learning about transformative ways to use technology to support deep engagement with content and to support the design and delivery of K-12 learning environments. As a result, many prospective teachers feel unprepared to integrate technology in their future classrooms (O’Bannon & Puckett, 2007; Sandholtz, 2001).

Consequently most preservice teachers graduate from teacher preparation programs with limited knowledge of ways technology can be used in their future classrooms (CEO Forum on Education and Technology, 1999; Moursund & Bielefeldt, 1999; Office of Technology Assessment [OTA], 1995; Sandholtz, 2001). In addition to a lack of training, much of the preparation for preservice teachers does not focus on using computer technology or integrating it across the curriculum (Sandholtz, 2001). Instead, most technology courses in colleges of education are restricted to the use of technology as an information-presentation and content-delivery tool (Pellegrino, et al., 2007). Moreover, Moursund and Beilefeldt (1999) found that a single course in educational technology was not adequate preparation for prospective teachers to integrate technology into their classrooms. Dede (2000) suggests that teacher education majors must complete courses throughout the program in which they are taught more than just computer-literacy skills; they should be taught how to incorporate technology in the classroom to support student learning (Means, 2000).
Integrating instructional technology into a teacher preparation program involves changes in the culture of the curriculum for preservice educators, as well as changes on the part of university faculty. Faculty experience with, and modeling of technology in instruction varies, nevertheless, it has had a significant influence on how preservice teachers use technology (Bullock, 2004). It was stated the majority of teacher education faculty do not sufficiently model technology use to accomplish objectives in the courses they teach, nor do they demonstrate how to use information technologies for instruction (Moursund and Bielefeldt, 1999). Unfortunately, this translates into a negative perspective of integrating technology to facilitate pedagogy, in which prospective teachers reinforce traditional modes of teaching the way they are taught (Pellegrino, et al., 2007).

There are a number of research studies documenting technology integration in teacher education programs (Brown & Warschauer, 2006; Bullock, 2004; Keating & Evans, 2001, Russell et al., 2003; Thompson, Schmidt, & Davis, 2003). However, most of the present research addressing this topic focuses primarily on describing successful programs, preservice teachers’ experiences, or documenting changes in the way faculty utilize technology to prepare preservice teachers (Pellegrino, et al., 2007). While these studies are important, they fail to delineate the double infusion of multicultural education and technology (McShay & Leigh, 2005), even though both fields represent dramatic changes in the foundation of U.S. society and both are developing simultaneously (Damarin, 1998).

Technology has become ubiquitous in American classrooms and the demands for teachers to become more technologically competent are growing. With effective uses of technology, learning new teaching models becomes an integral component in teacher preparation (Beckett et al., 2003). Therefore, as teacher education programs work to develop
effective uses of technology, it is important to explore equity issues concerning technology access and use in teacher education (McShay & Leigh, 2005).

Framing the Discourse about Digital Inequities in the Context of Teacher Education

Given the conceptualization of the role of multicultural education in the context of technology integration, a critical analysis of the digital divide can possibly explain the implications of the widening technology gap (Mack, 2001). According to Gorski (2004), the “digital divide” in general refers to inequities that exist in access to technology between groups of people based on one or more social or cultural identifiers. With respect to computer technology access, the guarantee of public education being open to all students should reflect a commitment to equality (Attewell, 2000; Morse, 2004).

The conflict of digital equity in education has been at the forefront since Brown v. Board of Education, Topeka (1954). The Court decision specifically noted that the equality of educational opportunity referred to measures of tangible and intangible factors. Though many state constitutions uphold education as a fundamental right, there exists a lack of resources in impoverished districts, whereby economically disadvantaged children and children of color are being denied equal educational opportunity in technology (Gorski, 2005; Morse, 2004). The digital divide is the latest challenge in multicultural education’s struggle toward closing the larger gap in equitable opportunities (Clark & Gorski, 2001).

Terminating the digital divide as a more broadly defined multidimensional construct, Gorski (2005) and Morse (2004) concluded that inequities exist in student access to computer technology in both tangible factors, such as Internet access to computers at homes and schools, and less tangible factors, such as how students interact with a computer. With
respect to the ways computer technology is used differently and by various marginalized groups, Morse (2004) warns of the apparent teaching of the hidden curriculum, perpetuating the issues surrounding the digital divide. For example, whereas teachers working with predominantly students of color tend to use instructional technology for word processing, skills and drills, and other lower-order thinking activities, their colleagues in schools with predominantly white students tend to use computer and Internet technologies to encourage critical analysis, construction of ideas and concepts, and inquiry (Solomon, Allen, & Resta, 2003). Using this broader educational view, multicultural education replaces an equality orientation with an equity orientation, resulting in a significant paradigm shift from the traditional conceptualization to a more progressive understanding of the digital divide (Gorski, 2004). To better address these concerns, teachers are being instructed in the utilization of technology in order to deal with issues of digital equity.

Technology educators engaged in the ideals of multicultural education foster the kind of dedication necessary for facilitating educational experiences in which all students have equitable opportunities in a digital classroom. From the book, Toward Digital Equity: Bridging the Divide in Education, the editors, Solomon, Allen, and Resta (2003), defined the term digital equity to mean:

…ensuring that every student, regardless of socioeconomic status, language, race, geography, physical restrictions, cultural background, gender, or other attribute historically associated with inequities, has equitable access to advanced technologies, communication and information resources… (pg. xiii).
With the widening gaps of the tangible inequities of the digital divide, Morse (2004) questions whether we are meeting this challenge or perpetuating these same educational inequities with the integration of technology. Although technology has often been portrayed as an equalizer for a level playing field, research (Gorski, 2005) has demonstrated inequities are being perpetuated, based on race, ethnicity, gender, socioeconomic status, disability, language, and geography. The National Center for Education Statistics (NCES) sampled approximately 1,205 US public schools, with a response rate of 86 percent from elementary and secondary schools. Although 100 percent of public schools in the sample had access to the Internet, schools with the lowest level of minority enrollment had fewer students per computer than did schools with higher minority enrollments (NCES, 2006). Though the number of computers at schools has increased and school connectivity has risen, school access remains inequitable (Gorski, 2005).

Damarin (2000) defines technology equity in the context of making digital content maximally accessible for a diversity of students in multiple platforms. Damarin attempts to differentiate between digital differences and the digital divide by addressing five equity principles of educational technology. Damarin asserts that these five principles provide direction for appropriate technology-enhanced educational activities:

Parsimony – use the least costly tool that will accomplish the task.

Accessibility – use the most accessible technology that will accomplish the task.

Multiplicity – make computer-based materials available in multiple formats.

Separability – make parts of documents and files easily separable.

Full utility – teach students to make maximal use of any tool available (p. 19).
Damarin’s five equity principles of educational technology may support educators in recognizing and adapting the use of instructional technology to a wider variety of uses among students integrating technology based practices. A greater number of individuals have become users of technology, increasing the access rates across all groups. It is now a much more complex conceptualization of computer access, the very nature of digital equity that has emerged (Morse, 2004). Damarin (2000) talks about how there are definite gaps in the United States, separating computer users into four categories:

1. those who own state-of-the-art computers and subscribe to an Internet service provider
2. those who have access to computers and the internet at work, libraries or other locations and know how to use them
3. those who have minimal access to computing technologies and few reasons for use
4. those who have no experience of computer and information technologies (p.17).

The literature (DiMaggio, Hargittai, Celeste, & Shafer, 2004) further examines how the Internet’s implications for equality of access to information compare to other forms of communication technologies, like newspapers, magazines, and the daily press. Not surprisingly, the research shows that Internet-based information is likely to reinforce or even exacerbate the usual inequalities. These suggestions not only serve as guiding principles for promoting the integration of technology to support multicultural initiatives, but also form the basis for teacher preparation in the digital classroom.
**Integrating Technology to Support Multicultural Initiatives**

Preparing preservice teachers to educate an increasingly diverse classroom of students and preparing them to integrate technology into instruction proves to be a way of promoting multicultural competence (Merryfield, 2001). Until recently, multicultural education in the United States focused primarily on ethnic groups within society (Bennett, 2003), but the rapid diffusion of technology can be used to facilitate multicultural awareness. By providing preservice teachers with the opportunity to integrate technology in their program, these students gain experience, practice, and learn the appropriate skills necessary for teaching with technology (Cradler, 2002). Teachers must be exposed to a variety of ways of teaching with different types of technology to support their teaching (Russell et al., 2003). Well-planned preservice teacher preparation programs are needed in order to increase the number of effective teachers using instructional technology in meaningful ways, particularly with regard to multicultural learning environments (Chisholm & Wetzel, 2001).

Though the demographic identities of students are changing in America’s public schools, teacher education students are predominantly European American women with little experience or knowledge of multicultural education (Ladson-Billings, 2005; Nieto & Bode, 2008; Sleeter & Grant, 2003). These concerns need to be at the center of the decisions made by those leading the public schools and colleges (Banks, 1994) to create learning experiences that offer preservice teachers the opportunity to bridge the cultural gap. Additionally, this causes concerns on how teacher preparation programs can simultaneously prepare prospective teachers to become culturally responsive and technologically proficient (Damarin, 1998; Gorski, 2004; McShay & Leigh, 2005; Schoorman, 2002). In 1995, the Office of Technology Assessment (OTA) conducted a comprehensive study of teachers and
the effective use of technology in schools. The key findings of the study concluded that despite an increased emphasis on technology, many future teachers graduate to the field unprepared to use technology effectively. Bridging the technology gap between the “haves” and “have-nots” is a long and onerous task, but exposure in the classroom can be one of the most critical first steps (OTA, 1995). Thus, most preservice teachers graduate from teacher preparation programs with limited knowledge of ways technology can be utilized across the curriculum. There is a need for technologically prepared teachers for multicultural schools (Chisholm, 2000) and preservice teachers can receive a richer, more coherent learning experience when they rely on the use of technology to improve upon their teaching practices (Chisholm & Wetzel, 2001).

Teacher preparation programs must help preservice teachers learn to use technology and develop their understanding of multiculturalism and diversity (Brown, 2004a; Damarin, 1998; McShay & Leigh, 2005; Munoz, 2002; Schoorman, 2002; Wassell & Crouch, 2008). When preservice teachers master these skills, it is important that they demonstrate their understanding for creating equitable opportunities to engage in culturally relevant pedagogy. Gaining an understanding of these phenomena may assist teacher educators in developing programs that provide multicultural-based technology practices, thus highlighting the importance of this study.

**Multicultural Technology Pedagogy**

Due to the challenges of the changing demographics in today’s student populations and the rapid growth of technology, the issues of multicultural-based technology practices have gained exceptional importance. Some researchers (Beckett et al., 2003; Brown, 2004a;
Using technology to examine issues of multiculturalism and diversity depicted within a framework designed by postcolonial theory and reflective inquiry, Merryfield (2001) asserts that online pedagogy can provide educators with a guide on how to approach curriculum development with a multicultural perspective. This study involved the graduate students enrolled in a one-semester multicultural course. Merryfield (2001) used the World Wide Web to transform learning and teaching in an asynchronous threaded discussion, recognizing that the teachers felt more comfortable engaging in cross-cultural online discourse. While the online discussion helped create a community of learners who had equal opportunity to have voice in interaction patterns, it is important to note the paradox that Merryfield (2001) wrote about when discussing the issues of cross-cultural interactions online. The teachers in the multicultural course felt that technology acts as a barrier that keeps them from “knowing one another or having real relationships” (p. 295).

E-learning is also suitable for multicultural teaching. Orly (2007) examined the perceptions of teachers and students on what e-learning is and what its characteristics are. The researcher defined an e-learning course as one that is composed of a virtual class which receives tasks, comments and reports and participates in academic activity such as online discussions. The 130 respondents who participated in the project were composed of 12 student teachers, 19 teachers and 99 students, representing 11 schools of diverse cultural backgrounds. The results indicated significantly different viewpoints concerning e-learning in culturally as well as functionally diverse populations. The majority of the participants
agreed that this form of learning was more enjoyable and challenging and that knowledge is more accessible to them. In this respect, e-learning creates multicultural awareness and encourages the formation of new social relationships, which can contribute to academic productivity.

Although technology-based practices are emerging as instructional potential for increasing multicultural awareness (Roblyer, et al., 1996; Merryfield, 2001; Sleeter & Tettagah, 2002; Schoorman, 2002), a transformation of curriculum ideology reveals how technology can facilitate the goals of multicultural education. Multicultural education can promote education experiences that will assist students to enhance their perspectives about class, race, ethnicity, linguistic, gender, exceptionalities, and age within a pluralistic and diverse society (Banks, 2001). Pedagogical technologies can influence all components of multicultural education: the teachers, the students, the curriculum, the instructional material, the information sources and the ways of delivering the material. All these affect the teaching in terms of the perceptions and beliefs of the prospective teachers’ and their future students’ use of technology. Furthermore, the effectiveness of new teachers to maintain and expand concepts of multiculturalism in the context of technology integration merits attention in teacher education.

**Toward Multicultural Curriculum Transformation**

If students in teacher preparation programs can became committed to the concepts of technology integration, they have the potential to transform teaching and learning, putting students at the center of the learning process (Sleeter, 2000). Beginning with a dedication to equity and social justice, Gorski (2004) asserts that multicultural education provides a
framework for a new understanding of the incorporation of technology, which provides an adequate social, cultural, and historical context throughout education and society. Though these issues are complex, Gorski (2005) insists that educational leaders refocus their thinking to assess the present and future directions of the integration of technology in our schools:

Multicultural education is a progressive approach for transforming education that holistically critiques and addresses current shortcomings, discriminatory practices in education, and inequities in schools. It is grounded in ideals of social justice, education equity, and a dedication to facilitating educational experiences in which all students reach their full potential as learners and as socially aware and active beings, locally, nationally, and globally. Multicultural education acknowledges that schools are essential to laying the foundation for the transformation of society and the elimination of oppression and injustice. (pp. 12-13).

In recent years, a number of scholars (Gorski, 2004; McShay & Leigh, 2005; Pittman, 2007; Schoorman, 2002; Wassell & Crouch, 2008) recognize that multicultural education and technology have emerged as critical issues in teaching and teacher education. Multicultural education is viewed as curriculum grounded in a multicultural and social reconstructionist approach (Sleeter & Grant, 2003), which is based on the principles of critical pedagogy. Teaching from a critical multicultural perspective means to question the sociopolitical and socioeconomic contexts of schooling from a critical and social justice standpoint (McLaren, 1998; Sleeter, 2000). The action research study employed by Schoorman (2002) utilized technology as a tool to promote critical thinking through e-mail correspondence, which is the beginning stage of the critical pedagogy continuum.
Using James Banks’ five critical dimensions of multicultural education: content integration, knowledge construction, prejudice reduction, equity pedagogy, and empowering school culture and social structure, Marshall (2001) looks at how technology can support multicultural education efforts. Effective multicultural education requires attention to each of the five dimensions stated above and the relationships between them (Banks, 1994). In doing this, educators shape students into critically thinking, socially active and aware members of society. Although Roblyer, Dozier-Henry, and Burnette (1996) identify the legitimacy of the coalition between technology and multicultural education, they admit that simply combining the two does not foster intercultural understanding. To think so is a reflection of a superficial understanding of multicultural education and intercultural communication. Additionally, Damarin (1998) cautions that accepting technology as a neutral medium is also a reflection of a superficial understanding. Furthermore, these superficial characteristics of technologies are a disregard for certain built-in cultural biases, which yield adverse effects to the goals of implementation. Moreover, Chisholm and Wetzel (2001) assert that individual teaching pedagogies have a direct influence on the type and quantity of technology that individual teachers employ in their classroom teaching.

Wassell and Crouch (2008) used blogs to create opportunities for preservice teachers to connect theoretical, textbook-based readings in multicultural education. In an action research case study undertaken with 24 preservice teachers enrolled in an elementary multicultural education course, the researchers used a weblog project to help these students make connections with critical multicultural concepts. Nieto’s (2004) *Affirming Diversity: The Sociopolitical Context of Multicultural Education* was used as the central text for the critical multicultural education component of the course. Wassell and Crouch (2008) found
that blogs can be used in multicultural education to stimulate thinking and writing about important issues and to allow students to present their own ideas and opinions and respond to others.

Multicultural educators can draw on this understanding as a reconceptualization of teaching and learning to develop instructional technology practices that are unilaterally equitable for all students (Clark & Gorski, 2001). Effective teaching and learning with technology can emerge from a critical, multicultural pedagogical framework (Gorski, 2005). In this sense, the goal of multicultural technology pedagogy should be to empower teachers to meet the challenge of teaching in our increasingly multicultural and technological society by infusing the necessary instructional technologies in education as a way of promoting a culturally responsive curriculum.

Opportunities Through the Integration of Technology

Advances in technology have changed the way we access information. Students have a wealth of knowledge and information available to them through technology, and this has implications for multicultural education.

For example, Schoorman (2002) uses an e-mail correspondence project in a class on multiculturalism to help preservice teachers understand and recognize the implications of race, class, and gender. This project occurred over ten weeks for two separate semesters between middle school students enrolled in a social studies course and their university-based partners, 86 preservice teachers. Allowing the preservice teachers to develop the skills of a reflective practitioner while acknowledging the role of technologically mediated
communication in facilitating the goals of critical multiculturalism, Schoorman revealed several benefits of the use of technology as:

(a) a point of reference within which to contextualize otherwise abstract class discussions;
(b) a more personalized means for learning about culturally different experiences;
(c) an opportunity for more engaged and active learning;
(d) a less threatening environment in which to examine teachers’ own biases, privileges, and implications; and
(e) the impetus for greater commitment toward issues of multiculturalism (p. 357).

Schoorman (2002) found this e-mail project to be meaningful ongoing collaboration for both public school students and future teachers.

Indeed, multicultural educators are beginning to use technology in creative ways to engage preservice teachers in meaningful multicultural understandings. For example, a group of researchers (Phillion, Malewski, & Richardson, 2006) developed a distance education project to link diversity and technology in a non-traditional field experience. Because their teacher preparation program is located in a non-diverse geographical area, faculty and preservice teachers at Purdue University use Internet videoconferencing to teach K-12 students in inner-city classrooms. The preservice teachers are required to complete reflective journal writings after each virtual field experience. These writings revealed that the preservice teachers were able to develop critical perspectives about student learning and multicultural understanding, questioning their own stereotypes about students from culturally diverse backgrounds. Phillion, Malewski, and Richardson (2006) affirm that virtual field
experiences can help meet the multicultural challenge of educating White preservice teachers in rural settings.

Another example illustrates how graduate students enrolled in a restructured cultural diversity course were required to interact with one another via online discussion boards and chat rooms. Brown (2004a) found that teaching a multicultural education course using a social reconstructionist approach to a racially homogeneous group (fewer than 5% students of color) was too limiting for students to gain the expertise necessary in one semester. With the infusion of technology, they were able to participate in ongoing dialogues pertaining to overcoming student resistance to multicultural tenets, and they had opportunities to share ideas and information gathered from their own experiences. This sharing of ideas and information may, in turn, enhance teaching and learning in P-12 schools as preservice teachers acquire new technology pedagogy to integrate in their own culturally diverse classrooms.

**Summary**

The literature addressing preservice teachers’ beliefs about multicultural education, multicultural philosophical frameworks, barriers to understanding how to use technology equitably, and the criteria for multicultural technology pedagogy in preservice teacher education was reviewed. This discourse is only a brief overview of the issues of multicultural technology pedagogy. However, it supports the premise that it is not just necessary, but important for preservice teachers to become aware and sensitive to issues of ensuring equitable educational opportunities as it relates to student use of technology. Moreover, it recognizes a need for multicultural pedagogy that enables all students to
succeed in today’s digital age. The thrusts of this research study are on describing the beliefs about multiculturalism and diversity of the technology competent preservice teachers who participated in it. In this review of literature, I have tried to emphasize how instructional technologies can be used as tools for learning multicultural curricula.

Chapter Three discusses the methodology used by the researcher.
CHAPTER 3. METHODOLOGY

The purpose of this study was to examine the multicultural beliefs about diversity of preservice teachers within a technology enriched teacher preparation program. This research was planned to provide baseline data to assess preservice teachers’ perspectives about multiculturalism and diversity while highlighting the importance of technology in teacher education. Although several studies have used both quantitative and qualitative measures to address these issues in teacher education, a mixed methods approach assessing similar issues in teacher education are more difficult to find. However, most of this study was based on quantitative research methods to prepare and administer the surveys, and analyze the data obtained from them, following the procedures described by Creswell (2003) for sequential transformative mixed methods research.

This chapter describes the methods used to investigate the questions of the study and is divided into the following sections: (a) research design, (b) participants, (c) instrumentation, (d) data collection procedures, and (e) data analysis.

Research Design

A mixed methodological research was designed utilizing two brief attitudinal and demographic surveys, open-response questions, and focus group interviews. This mixed and triangulated design seeks to amplify descriptive and attitudinal data with more in-depth and clarifying qualitative data that adds richness and understanding of preservice teachers’ multicultural views regarding their use of computer technology in teaching and learning. The benefit of using the sequential transformative model is its use of distinct phases in the
sequential mixed methods approach, allowing the researcher to give priority to either the quantitative or the qualitative phase. Creswell (2003) contends that this strategy works best to serve the theoretical perspective of the researcher.

Many studies that have researched technology infusion in teacher education utilized survey design methodology to delineate effective strategies for technology integration into preservice teacher education programs (Evans & Gunter, 2004; Kay, 2007; Moursund & Bielefeldt, 1999; Sandholtz, 2001; Yildirm, 2000). The mixed method approach utilized in this research augmented quantitative survey methodology with open-ended questions and semi-structured interviews to facilitate a deeper exploration of preservice teachers’ beliefs about ways technology can be used to support multicultural education and present triangulation.

Furthermore, this particular design allowed for both quantitative and qualitative approaches to research as recommended by Creswell (1998, 2003). The quantitative data obtained from the questionnaire were analyzed using the *Statistical Package for the Social Sciences* (SPSS), version 14.0.1. Descriptive statistics, such as means, standard deviations, and percentages, were used to analyze individual survey responses. A one-way analysis of variance was also employed to test the quantitative measures.

The second phase of this study utilized an emerging qualitative research design to analyze the responses to the open-ended questions of the survey instrument and examine the interview data from the semi-structured interviews. According to Lincoln and Guba (1985), qualitative methods are most adaptable to dealing with the multiple realities of human participants. Lincoln and Guba (1985) also suggested that researchers could not separate human participants from the context of their reality if the research goal is complete...
understanding. Moreover, multiple sources of data facilitated triangulation and insured adequacy and appropriateness of collected information (Merriam, 1998).

**Participants**

The study collected data from undergraduate preservice teachers in different stages of their teacher preparation program at a large historically White Midwestern university. The university is situated in a rural midwestern community. The College of Human Sciences had an enrollment of 2,647 students during the Fall 2005 term (ISU Fact Book 2006-2007). Specifically, the 376 participants in this study were enrolled in a required professional education course (CI 204, CI 245, CI 332, CI 333, CI 377, CI 378, or CI 426) within a technology enriched teacher education program. The data were derived from students enrolled in 10 sections of these courses during the spring 2006 semester (see Table 1).

**Table 1**

*Survey Participants Enrolled in a Required Professional Education Course (n=376)*

<table>
<thead>
<tr>
<th>Course</th>
<th>Section</th>
<th>Enrolled</th>
<th>Returned</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
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<td>42</td>
<td>36</td>
<td>Instructor 1</td>
</tr>
<tr>
<td>CI 204</td>
<td>2</td>
<td>43</td>
<td>33</td>
<td>Instructor 1</td>
</tr>
<tr>
<td>CI 204</td>
<td>5</td>
<td>41</td>
<td>31</td>
<td>Instructor 2</td>
</tr>
<tr>
<td>CI 245</td>
<td>1</td>
<td>107</td>
<td>93</td>
<td>Instructor 3</td>
</tr>
<tr>
<td>CI 332</td>
<td>1</td>
<td>109</td>
<td>15</td>
<td>Instructor 4</td>
</tr>
<tr>
<td>CI 333</td>
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<td>90</td>
<td>64</td>
<td>Instructor 5</td>
</tr>
<tr>
<td>CI 377</td>
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<td>24</td>
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<td>Instructor 6</td>
</tr>
<tr>
<td>CI 378</td>
<td>1</td>
<td>28</td>
<td>28</td>
<td>Instructor 7</td>
</tr>
<tr>
<td>CI 378</td>
<td>2</td>
<td>21</td>
<td>21</td>
<td>Instructor 7</td>
</tr>
<tr>
<td>CI 426/526</td>
<td>1</td>
<td>35</td>
<td>32</td>
<td>Instructor 8</td>
</tr>
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</table>
Patton (2002) underscores that nothing “better captures the difference between quantitative and qualitative methods than the different logics that under gird sampling approaches” (p. 169). Where quantitative methodologies are concerned with acquiring large samples to ensure that results can be generalized to larger populations, qualitative methodologies are more focused on studying smaller cases in much greater depth. A diverse number of students with different areas of teaching licensure provided a broad cross-section of teacher education majors to address the research questions and contributes to the overall generalizability of the study. Table 2 provides the demographic information for the sample population.

Three hundred seventy six students (376) participated in this research study. Because the quantitative instrument was designed to obtain empirical data about preservice teachers’ multicultural beliefs about diversity, it was necessary to only include respondents who identified as being an undergraduate teacher education major. Due to the elimination of unusable data, a total of 346 participants comprised the final survey sample population.

For the interviews, the researcher employed a purposeful sampling strategy, selecting students who agreed to volunteer to participate in focus group sessions when completing the survey instrument. The eleven volunteers selected as interviewees were individuals from whom the researcher could “learn a great deal about issues of central importance to the purpose of the research” (Patton, 2002, p. 46). Patton (2002) outlined many different variations of purposeful sampling strategies and indicated that combinations of the various strategies may be necessary to fit the purpose of the study.
<table>
<thead>
<tr>
<th>Characteristics</th>
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<td>Latino/a</td>
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<tr>
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<td>Advanced</td>
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</tbody>
</table>
The survey instrument (Appendix A) used in this study was titled: *Preservice Teachers’ Assessment of Multiculturalism and Diversity*, and focused on collecting data from preservice teachers regarding their beliefs about multiculturalism, diversity, and how technology can be used to support these beliefs. In reviewing previously created empirical measures to assess educators’ beliefs about diversity, the researcher determined that a modifiable version of the Personal Beliefs About Diversity Scale and the Professional Beliefs About Diversity Scale copyrighted in 1998 by Pohan and Aguilar (1999) would be acceptable. These scales were originally developed as Pohan’s (1996) dissertation research, which was the development and validation of an instrument that could be used to assess personal and professional beliefs about diversity. Written permission was given to the researcher to use a modified version of the instrument (see Appendix B). In addition to the need for assessing preservice teachers’ beliefs about multicultural education is the need to prepare teachers to use technology effectively. In an effort to better address the issue of multicultural teacher preparation with the use of technology, two items relating to the ways technology can be used to facilitate learning about multicultural education were included in the open-ended response section.

The following procedures established content validity of the instrument. The first draft of the instrument underwent minor revisions after suggestions by the researcher’s co-major professors and a small group of seven colleagues from the university. In field-testing this initial instrument, 12 students who identified as prospective teachers were asked to review both the transmittal letter and the survey instrument for readability and understandability, adding comments on each item for distinction and clarity. Additionally,
recommendations on revision, elimination and addition of items were made. The desired result was to decrease the open-ended questions to four and include a question in the demographics section of the survey on respondents’ familiarity with multiculturalism. This procedure served to establish content validity of the instrument.

The *Preservice Teachers’ Assessment of Multiculturalism and Diversity* survey instrument had four parts and 50 items. A copy of the survey is provided in Appendix A. Part I contained the Personal Beliefs About Diversity Scale, comprised of 15 items. The 25-item Professional Beliefs About Diversity Scale was included in Part II. Both scales employed a quantitative five-point Likert-type response format to assess educators’ beliefs about diversity. Part III, Open-ended Questions, solicited feedback about preservice teachers’ experiences with multicultural education and technology within the teacher education program. These open-ended questions provided an opportunity for the respondents to personalize, add to, or clarify answers given in Parts I and II. The responses to these open-ended questions were organized and discussed according to the approaches to diversity proposed by Sleeter and Grant (2003). The Demographic Data, Part IV, was designed to establish personal and professional characteristics of the respondents, including undergraduate major, race, gender, and stage of admission to the University Teacher Education Program. Other questions asked the preservice teachers to identify whether they were obtaining a minor in educational computing and probed the students’ level of familiarity with issues related to multiculturalism. The demographic data were used to determine which factors contributed to higher mean scores on the Personal and Professional Beliefs About Diversity Scales and the major multicultural perspectives of preservice teachers in different stages of their teacher preparation program.
Personal and Professional Beliefs About Diversity Scales

The Personal Beliefs About Diversity Scale and the Professional Beliefs About Diversity Scale were used to measure preservice teachers’ beliefs about multiculturalism and a range of diversity issues (Pohan & Aguilar, 2001). Pohan and Aguilar’s (2001) review indicated the need for reliable measures for studying teachers’ beliefs about diversity. The Personal Beliefs scale measures beliefs about general issues related to diversity, and the Professional Beliefs scale measures beliefs about diversity specifically within a professional education context. According to Pohan (1996), preservice teachers’ life experiences and personal beliefs are closely related to their beliefs about teaching culturally diverse students. Based on the results of Pohan and Aguilar’s (2001) review of literature regarding related studies to assess educators’ beliefs about diversity, the investigators saw a need for sound instrumentation. Related attitudinal measures were often incompletely described or not empirically validated. Throughout the development and refinement process, the researchers determined that their measures needed to “(a) include a broader approach to diversity than was currently available, (b) address both personal and professional (i.e., educational contexts) beliefs regarding diversity issues, and (c) be rigorous and psychometrically sound” (p. 163). Sociocultural diversity topics and issues frequently addressed in multicultural education courses guided the item development. Two empirical measures were developed and validated that included beliefs about race, ethnicity, social class, religion, languages (other than English), gender, sexual orientation, disabilities, and immigration. As a result, the instrument can be inclusive of many historically marginalized sociocultural groups.
The 15-item Personal Beliefs About Diversity Scale and the 25-item Professional Beliefs About Diversity Scale are the result of a series of pilot, preliminary, and field tests utilizing both preservice and practicing teachers. Items on the Personal Beliefs About Diversity Scale are posed within the context of one’s personal sphere or worldview (for example, relationships, raising children, living conditions, and collective stereotypes). Items on the Professional Beliefs About Diversity Scale are posed within the professional, educational contexts of schooling (for example, curricular materials, instruction, staffing, segregation/integration, and ability tracking). Both scales use a 5-point Likert-type format ranging from 1 (strongly disagree) to 5 (strongly agree) with a higher score being more favorable.

Pohan and Aguilar (2001) developed and tested the scales for reliability and validity. The researchers, Pohan and Aguilar (1999), conducted 12 field tests in five states. In an effort to address item clarity, scale reliabilities, and procedural issues, both scales were administered as a pilot test to 280 undergraduate preservice education students enrolled in a required multicultural education course. Cronbach’s alpha coefficients for the 1992 version for the Personal and Professional Beliefs About Diversity Scales were .77 and .86, respectively. Based on the item-total correlation data and frequency distributions, and with the goal of maximizing scale reliability, items with an item-total correlation index of .30 or greater were retained.

The preliminary testing stage conducted by Pohan and Aguilar (1999) included 187 participants, including undergraduate students, graduate students, and practicing educators. To further investigate reliability and construct validity, these two researchers conducted field-testing in 1994 and 1995 with 1295 preservice and practicing teachers from four states.
Upon analyzing the data, both scales underwent minor changes such as the addition of items, changes in wording, and sequencing of items. The current 1998 version of both Beliefs Scales was then administered as a pretest and as a posttest to 179 students enrolled in a multicultural education course. The alpha coefficients were .78 for both the pretest and the posttest conditions of the Personal Beliefs About Diversity Scale. The alpha coefficients for the Professional Beliefs About Diversity Scale were .81 for the pretest and .85 for the posttest. According to Pohan and Aguilar (2001), “These data support acceptable reliability for the current versions of both scales” (p. 166). Therefore the current researcher selected these scales as an appropriate measure for understanding preservice teachers’ beliefs about multicultural education.

**Data Collection Procedures**

A mixed-methods approach was used for data collection for a number of reasons. Erickson (1986) comments on the necessity of using multiple methods in research. He makes an important methodological assumption that no matter what sequence of actions one chooses to study, all methods are fallible. This is why it becomes important to use multiple methods to discover participants’ meaning structures in order to perceive events in as many different ways as possible. In order to strengthen the findings, both quantitative and qualitative data collection procedures were used. Therefore, a mixed methods design is useful to capture the best of both the structure of quantitative research and the flexibility of qualitative inquiry (Creswell, 2003).
Quantitative Procedures

The licensure analyst in the College of Human Sciences Student Services office was contacted to gain information about the enrollment of students in the University Teacher Education Program. She helped the researcher distinguish at what time during enrollment students take the professional core courses while taking courses toward teacher education licensure. After consideration of what groups of students were needed for the study, the researcher obtained a list of courses by instructor from the Department of Curriculum and Instruction record analyst. A short email message was sent on January 25, 2006, to twelve professors of the potential survey participants (Appendix C), informing the professors of the intent and scope of the research and asking for permission to administer the survey instrument during a scheduled class session. Eight out of ten professors answered favorably, scheduling approximately 20 minutes of time for the researcher to seek volunteers to participate in the research study.

Data were gathered from the administration of the survey from the preservice students enrolled in the following courses: CI 204: Social Foundations of American Education; CI 245: Strategies in Teaching; CI 332: Educational Psychology of Young Learners; CI 333: Educational Psychology; CI 377: The Teaching of Reading and Language Arts (K-3); CI 378: The Teaching of Reading and Language Arts in the Intermediate Grades (4-6); and CI 426: Principles of Secondary Education. These students were grouped at the beginning, intermediate, and advanced stages of their teacher preparation program by enrollment in the courses selected to survey. Table 3 provides a description of these groups with regards to students’ current admission status to the University Teacher Education Program. A transmittal letter introducing the study, describing the survey instrument, assuring
confidentiality, and instructions for completion and submission was attached to each survey (Appendix D). Additionally, a scantron bubble sheet and a statement of informed consent were given to students for review and a signature was required before the survey was administered.

Table 3

The Three Stages of Teacher Preparation with Regards to Students’ Current Enrollment in the Teacher Education Program

<table>
<thead>
<tr>
<th>Group</th>
<th>Description of Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>Planning to apply for admission</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Meet the requirements for admission and/or have applied</td>
</tr>
<tr>
<td>Advanced</td>
<td>Admitted to the University Teacher Education Program</td>
</tr>
</tbody>
</table>

The surveys and scantron bubble sheets were coded by course numbers to identify the number of students per class who submitted a return survey. The answers for Parts I, II, and IV were recorded on the scantron form while answers to the open-ended questions in Part III were handwritten on the hard copy survey instrument. The researcher administered the survey to volunteer participants in ten sections of a required professional education course during the months of January and February. This process yielded a statistically large return, representative of the sample teacher education population at ISU; N= 376 returned surveys. Three students chose not to participate and returned incomplete scantron forms. Following the distribution and collection of surveys, all scantron bubble answer sheets were sent to Test and Evaluation Services in the Solution Center for scanning. A csv (comma separated)
spreadsheet file, containing the raw scores of each respondent was emailed back to the researcher and then uploaded to Microsoft Excel and transferred to SPSS for data analysis.

*Qualitative Procedures*

The researcher also used qualitative research methods to analyze the responses to the open-ended questions of the instrument. Qualitative methods tend to be “more sensitive to and adaptable to the many mutually shaping influences and value patterns that may be encountered” (Lincoln & Guba, 1985, p. 40). The responses to the open-ended questions were organized and discussed according to the approaches to diversity proposed by Sleeter and Grant (2003). As stated in Chapter 2, the multicultural framework proposed by Sleeter and Grant (2003) will help identify the broad areas of coverage included in the survey instrument. The multicultural framework includes five approaches for dealing with race, class, gender and disability diversity in schools: (1) Teaching the Exceptional and Culturally Different, (2) Human Relations, (3) Single Group Studies, (4) Multicultural Education, and (5) Education That Is Multicultural and Social Reconstructionist. These five approaches form the basis for the themes created through selective coding. These multicultural perspectives are congruent with the theoretical foundation outlined in this research study.

In addition, the researcher also conducted three semi-structured interviews designed to complement the data from the questionnaires. Focus groups are a useful way to ascertain group and individual perspectives from a large group of people in a limited amount of time (Patton, 2002). Focus groups provide for interaction among interviewees, collection of extensive data, and participation by all individuals in a group (Krueger, 1994). The advantage of utilizing focus groups is that the interaction allows the researcher to yield the best
information when the individuals are similar to and cooperative with each other (Creswell, 2003). Since the researcher was interested in getting the widest participation possible for this study, she conducted focus groups at the end of the initial quantitative data analysis.

The students who indicated yes on the informed consent that they were willing to participate in a focus group session were sent email requests (Appendix E) and invited to attend one of the scheduled sessions. However, no volunteers attended the planned first focus group session on April 12, 2006. The researcher then contacted three professors asking for permission to return to their classes and appeal to the students who had participated in the research study. The researcher returned to these classes with personal invitations (hard copy) to participate. Immediately following this distribution, an electronic follow-up reminder was sent to those receiving invitations. Three focus group sessions were held and a total of 11 students participated. Each interview lasted from one hour to 90 minutes. Throughout the data collection process, all of the participants were assured confidentiality. Interview questions are provided in Appendix F. These questions provided a structure for the interview process. Where appropriate, other emergent questions were used to probe preservice teachers for additional information. The focus groups were facilitated by the researcher and audio taped. To maintain anonymity, the students were identified as Student 1 through Student 11. During the interviews, the researcher took brief notes, noting both verbal communication and non-verbal cues. As expected, the researcher found difficulty in taking very accurate notes and at the same time being an active participant in the discussion. The researcher personally transcribed the focus group interviews. In addition, the researcher kept a reflexive journal from January to April to assist in the data collection phase. Creswell (2003) contends that the
use of this type of field diary allows the researcher to chronicle his/her own thinking, feelings, experiences and perceptions throughout the research process.

**Data Analysis**

To examine the multicultural beliefs of preservice teachers in a teacher preparation program, data from the survey instrument were examined using quantitative analysis. The results were analyzed using SPSS. Responses to the open-ended questions of the instrument were analyzed using qualitative research methods. In addition, the researcher conducted three focus group interview sessions to complement the evidence from the survey to triangulate findings. The quantitative and qualitative components of the data were analyzed separately. The researcher is aware that the layout and the implementation of the qualitative part of the study would not meet the accepted procedures for a study that is entirely qualitative in design. However, by using a mixed method approach and by adding some qualitative aspects, the researcher was able to add richness to her study that a purely quantitative approach would have lacked. All information were reported in terms of group summarizations; none were reported as individual student responses.

**Quantitative Analysis**

Descriptive statistical methods were used to analyze the data from the survey instrument. Statistical analysis procedures used to analyze data were descriptive statistics, factor analysis, reliability analysis, and univariate analysis of variance. Descriptive statistics were analyzed to determine preservice teachers’ personal and professional beliefs about multicultural education. Descriptive statistic techniques were used to tabulate the frequency
counts, percentages, means, and standard deviations for individual item analysis and total
groups of items on the Personal and Professional Beliefs about Diversity Scales. Mean scores
were employed in much of the statistical analyses. As evidence of construct validity, the
factor analysis procedure was used on Parts I and II of the survey instrument. The reliability
analysis was used to determine the internal consistency of the measurement scales in Parts I
and II using Cronbach’s alpha. The univariate analysis of variance tests were performed to
explore if there were significant differences between the selected demographic characteristics
and the mean scale total scores. The one-way ANOVA was conducted to determine in what
ways the preservice teachers in different stages of their teacher preparation program differ
regarding their beliefs about multicultural education. The probability level of statistical
significance for the quantitative analyses was set with an \( a \) priori alpha of \( p < .05 \).

Before the data were analyzed, a number of the survey items were reverse coded. Reverse
coding was necessary to indicate a more open and accepting response to the issues
of diversity and to insure that the negatively phrased items would not reflect a narrow or
biased belief (Pohan & Aguilar, 2001). The items that were statistically reversed are listed in
Table 4. Upon recommendation of an expert statistician, the total subscale mean scores were
calculated and used to indicate more favorable beliefs about issues of diversity between the
preservice teachers in different stages of their teacher preparation program.

Qualitative Analysis

Patton (2002) offered an intimidating description of what is involved in analyzing
qualitative data. The challenge of the process lies in “making sense of massive amounts of
data…reducing the volume of raw information, sifting trivia from significance, identifying
Table 4

*Negatively Worded Survey Items Reverse Coded*

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>America’s immigrant and refugee policies have led to the deterioration of America.</td>
</tr>
<tr>
<td>3</td>
<td>Making all public facilities accessible to the disabled is simply too costly.</td>
</tr>
<tr>
<td>5</td>
<td>It is not a good idea for same-sex couples to raise children.</td>
</tr>
<tr>
<td>6</td>
<td>The reason people live in poverty is that they lack motivation to get themselves out of poverty.</td>
</tr>
<tr>
<td>8</td>
<td>People with physical limitations are less effective as leaders than people without physical limitations.</td>
</tr>
<tr>
<td>9</td>
<td>In general, White people place a higher value on education than do people of color.</td>
</tr>
<tr>
<td>11</td>
<td>Since men are frequently the heads of households, they deserve higher wages than females.</td>
</tr>
<tr>
<td>13</td>
<td>Society should not become more accepting of gay/lesbian lifestyles.</td>
</tr>
<tr>
<td>14</td>
<td>It is more important for immigrants to learn English than to maintain their first language.</td>
</tr>
<tr>
<td>15</td>
<td>In general, men make better leaders than women.</td>
</tr>
<tr>
<td>16</td>
<td>Teachers should not be expected to adjust their preferred mode of instruction to accommodate the needs of all students.</td>
</tr>
<tr>
<td>18</td>
<td>Gays and lesbians should not be allowed to teach in public schools.</td>
</tr>
<tr>
<td>20</td>
<td>Money spent to educate the severely disabled would be better spent on programs for gifted students.</td>
</tr>
<tr>
<td>22</td>
<td>Only schools serving students of color need a racially, ethnically, and culturally diverse staff and faculty.</td>
</tr>
</tbody>
</table>
Table 4. (continued)

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Survey Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>The attention girls receive in school is comparable to the attention boys</td>
</tr>
<tr>
<td></td>
<td>receive.</td>
</tr>
<tr>
<td>25</td>
<td>People of color are adequately represented in most textbooks today.</td>
</tr>
<tr>
<td>28</td>
<td>Generally, teachers should group students by ability levels.</td>
</tr>
<tr>
<td>33</td>
<td>Multicultural education is most beneficial for students of color.</td>
</tr>
<tr>
<td>38</td>
<td>Students should not be allowed to speak a language other than English</td>
</tr>
<tr>
<td></td>
<td>while in school.</td>
</tr>
<tr>
<td>40</td>
<td>Multicultural education is less important than reading, writing, arithmetic,</td>
</tr>
<tr>
<td></td>
<td>and computer literacy</td>
</tr>
</tbody>
</table>

significant patterns, and constructing a framework for communicating the essence of what
the data reveal” (p. 432), and noted that while there are guidelines for the process, these are
not absolute, and the analysis ultimately depends on the researcher. According to Denzin and
Lincoln (1994), “qualitative research is multi-method in focus, involving an interpretive,
naturalistic approach to its subject matter” (p. 2). In this research study, the researcher was
trying to learn about the major multicultural perspectives of preservice teachers and how
technology can be used to support their conception of multicultural education.

In an effort to employ interpretive and naturalistic methodologies, qualitative
strategies of inquiry were conducted to understand the phenomenon of multiculturalism
through the preservice teachers’ personal and professional beliefs. Sleeter and Grant (2003)
developed a typology of five approaches to multicultural education, which is reflected in the
theoretical framework (Freire, 1996; McLaren, 2003) of the study. The multicultural
framework proposed by Sleeter and Grant (2003) was used to analyze the responses to the open-ended questions on the survey instrument and to examine the responses from the focus group interview sessions that asked about the goals of multicultural education.

To avoid repetition, lack of focus, and information overload, Merriam (1998) recommended that researchers keep the analysis of data dynamic and parallel with the collection of data, and use the results of one effort to improve the quality and focus of the next one. The researcher followed these suggestions and focused her interviews on questions raised during the analysis of the questionnaires. This is why all the interviews were performed after a preliminary analysis of the quantitative data had been conducted so that the researcher could concentrate, during the interviews, on topics for which she wanted further clarification. The interviews were audio taped and transcribed verbatim for subsequent data analysis. Data analysis can be described as a process; one that involves an ongoing, continuing engagement that begins at the moment the first data is collected (Miles & Huberman, 1994). Embracing this process, I personally transcribed the interview tapes to continuously immerse myself in the data.

Following procedures outlined by Lincoln and Guba (1985), the interviews were analyzed for emerging themes for content analysis of qualitatively obtained data, including unitizing, categorizing, and filling in patterns. The researcher used the constant comparative method of data analysis, in which, first, the smallest possible units of data were defined (unitizing), and then continually examined and contrasted with one another to find recurring ideas, topics, and categories (categorizing). This process required an understanding of the data, and constant manipulation. During data analysis, unitizing and categorizing occurred simultaneously. The analytic process was based on immersion in the data and repeated
sortings, codings, and comparisons that characterize qualitative research (Creswell, 1998). Through this process, overarching themes began to emerge from the data. The researcher used a spreadsheet software to organize the data. After this stage of analysis, the responses to the focus group questions, which were supported, by the open-ended questions on the survey instrument and the researcher’s reflexive journal comments, were grouped into four themes: availability and access to technology, information resources that support learning about diversity, instructional strategies and tools that support multicultural education, and virtual distance education in the global context.

To establish trustworthiness, the researcher engaged in additional techniques following suggestions by Lincoln and Guba (1985). Using information collection techniques that increase the probability of high credibility, the researcher used prolonged engagement, persistent observation, and triangulation. Although the researcher only conducted three semi-structured interview sessions for this study, she has participated in many teacher education activities related to the study that provide for prolonged engagement and persistent observation. For example, the researcher served as the graduate teaching assistant in the multicultural education course and has been a guest lecturer in many ISU classes discussing teacher education issues. Also, the researcher worked for two years as a research assistant as part of the Iowa State University’s Teacher Education Program (UTEP) reaccredidation process.

For triangulation, the researcher used different sources and methods for her study (quantitative methods and qualitative methods, including open-ended questions and focus group interviews). During the whole research process, the researcher exposed herself and her work to two peer examiners. Peer debriefing is a process in which the researcher exposes
him/herself to a “disinterested peer . . . for the purpose of exploring aspects of the inquiry that might otherwise remain only implicit within the inquirer’s minds” (Lincoln & Guba, 1985, p. 308). The peer debriefers raised questions about methodology and design; they asked for clarification of, or in some cases, challenged the interpretations being made. They asked a variety of questions, which probed the biases of the researcher. Peer debriefing sessions allow the researcher the opportunity to test tentative hypotheses that emerge from the data and receive advice on methodological “next steps” in the research design (Lincoln and Guba, 1985, p.283). One of the major purposes of peer debriefing is to help keep researchers honest in the process of interpreting the data. For this study, I debriefed with a fellow doctoral student in curriculum and instructional technology education and with a colleague of mine, experienced in qualitative research methods. Over the course of this study, we continuously debriefed about the research design, data collection, and data analysis.

To further ensure internal validity, the researcher regularly reviewed her reflexive journal. A reflexive journal is “a kind of diary in which the investigator on a daily basis, or as needed, records a variety of information about self . . . and method” (Lincoln & Guba, 1985, p. 327). The reflexive journal is very useful to the establishment of credibility, transferability, dependability, and confirmability. It is especially useful in order to determine the “extent to which the inquirer’s biases influenced the outcomes” (Lincoln & Guba, 1985, p. 327). Thus, the researcher included in the reflexive journal reflections of her own biases and orientation toward different issues related to the research topic, and how they were affecting her research inquiry.
Summary

Data from the research study on technology and multicultural education was triangulated through quantitative and qualitative methodology. Accepting this study as critical research, it takes the form of a transformative endeavor to seek change for educational inequality by legitimizing the multicultural perspectives of future teachers. The Personal Beliefs About Diversity Scale and the Professional Beliefs About Diversity Scale (Pohan & Aguilar, 2001) were used to measure preservice teachers’ beliefs about multiculturalism because it treated the issue of diversity from a wider perspective. The students responded on a five-point Likert scale 1 (strongly disagree) to 5 (strongly agree) to a series of 40 questions. Data were collected from 346 undergraduate preservice teachers who were enrolled in different stages of their teacher preparation program. After gathering basic data from the survey instrument, the researcher also used qualitative research methods to analyze the responses to the open-ended questions of the instrument. Moreover, eleven focus group participants provided additional insights into the beliefs of preservice teachers to integrate technology in multicultural education. In this context, critical theory-informed qualitative research involves the empowerment of individuals in an attempt to confront injustice. After the data were collected, it was analyzed in a number of ways in order to help answer the research questions. The next chapter presents the results of the data analysis followed by the findings that address preservice teachers’ perspectives about how to integrate technology in multicultural education.
CHAPTER 4. DATA ANALYSIS AND RESULTS

Utilizing a mixed method research design, this study examines the multicultural beliefs about diversity of preservice teachers within a technology-enhanced teacher preparation program. An analysis of the data gathered from the questionnaire, *Preservice Teachers’ Assessment of Multiculturalism and Diversity*, is presented in this chapter. The responses of the survey participants were used to compute statistical analyses that describe preservice teachers’ perspectives about how to integrate technology in multicultural education.

The chapter begins with a discussion of the demographic data and is followed by the findings that address the following research questions guiding this study:

1. What are preservice teachers’ personal beliefs about multicultural education in a technology enriched learning environment?
2. What are preservice teachers’ professional beliefs about multicultural education in a technology enriched learning environment?
3. In what ways do preservice teachers in different stages of their teacher preparation program differ regarding their beliefs about multicultural education?
4. What are the major multicultural perspectives of preservice teachers in different stages of their teacher preparation program?
5. Is there a relationship between preservice teachers’ multicultural perspectives and how technology can be used to support their conception of multicultural education?
Demographic Characteristics of the Survey Participants

This section provides descriptive statistics, reporting frequencies and valid percentages of the survey participants. Data from a total of 346 preservice teacher participants who voluntarily completed the questionnaire became the sample population in this study. Demographic information collected from the survey used for this study included undergraduate major; number of students seeking a minor in educational computing; familiarity with issues related to multiculturalism; race; gender; and respondents’ stage of admission in the teacher preparation program.

According to the demographic information provided (Table 1, Chapter 3) 326 students identified their race as Caucasian/White, making up 95% of the survey respondents. Of the remaining students who identified their race, three students were African-American, one student was American Indian, four students were Asian or Pacific Islander, four students were Latino/a, and five students identified as Other. Data for three of the respondents is missing. Descriptive information regarding gender indicated that 20% of the students were males (n=70) and 80% were females (n=276). Given that approximately 95% of all respondents were members of the dominant group, Caucasian/White, the demographic background for the majority of the respondents were White females (n=263), consistent with the majority number of students who prepare for and enter the teaching profession. Comparison data on race and gender is shown in Table 5.

The demographic data indicated that the largest numbers of preservice teachers were majoring in elementary education (n=161). The survey participants’ undergraduate majors consisted of 21% majoring in early childhood, 47% elementary education, 28% secondary
Table 5

Demographic Data for the Preservice Teachers’ Race and Gender

<table>
<thead>
<tr>
<th>Race</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>African-American or Black</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>American Indian</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>63</td>
<td>263</td>
<td>326</td>
</tr>
<tr>
<td>Latino/a</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>68</td>
<td>275</td>
<td>343</td>
</tr>
</tbody>
</table>

education, and 4% identified as K-12 education. Of the students surveyed, only 14 (4%) identified themselves as preservice teachers seeking the educational computing minor.

Additionally, the students were asked to report how familiar they were with issues related to multiculturalism. The students’ responses were categorized by the following answers: don’t know about issues related to multiculturalism; know a little about issues related to multiculturalism; somewhat familiar with issues related to multiculturalism; familiar with issues related to multiculturalism; and completely familiar with issues related to multiculturalism (Table 6). Table 6 indicates the number of preservice teachers who felt they were familiar with issues related to multiculturalism. Surprisingly, 76% of the preservice teachers stated they were familiar with issues related to multiculturalism, at or above the “somewhat familiar with issues related to multiculturalism” level. For the highest score on this item, 14 students (4%) believed they were “completely familiar with issues related to
Table 6

*Preservice Teachers’ Familiarity with Issues Related to Multiculturalism (N=343)*

<table>
<thead>
<tr>
<th>Degree of Familiarity</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don’t know about issues related to multiculturalism</td>
<td>11</td>
<td>3.2</td>
</tr>
<tr>
<td>Know a little about issues related to multiculturalism</td>
<td>72</td>
<td>21.0</td>
</tr>
<tr>
<td>Somewhat familiar with issues related to multiculturalism</td>
<td>122</td>
<td>35.6</td>
</tr>
<tr>
<td>Familiar with issues related to multiculturalism</td>
<td>124</td>
<td>36.2</td>
</tr>
<tr>
<td>Completely familiar with issues related to multiculturalism</td>
<td>14</td>
<td>4.1</td>
</tr>
</tbody>
</table>

multiculturalism”. Conversely, a small percentage (3.2%) of the students indicated they “don’t know about issues related to multiculturalism.” The mean score for this item was 3.17 with a standard deviation of 0.92. A frequency distribution bar graph of the scores (see Figure 1) indicates a slightly skewed distribution in that the two extreme familiarity characteristics are close, but not equal, i.e. 3.2% compared to 4.1%. Additionally, for a distribution to be considered normal, 68% of the responses should fall within ± 1 standard deviation from the mean. Given that 35.6% of the responses fell in the middle family characteristic, one could make the point that the distribution is negatively skewed.

To help determine differences regarding beliefs about multicultural education, the study analyzed data from these undergraduate preservice teachers in different stages of their teacher preparation program. Students were divided into three groups: Beginning (planning to apply for admission to the teacher education program); Intermediate (meet the
requirements for admission and/or have applied); and Advanced (admitted to the University Teacher Education Program). As shown in Figure 2, over 100 students participated in each of the three stages of the teacher preparation program. The number of preservice teachers participating in this survey totaled 30% at the beginning stage, 33% at the intermediate stage, and 38% were at the advanced stage. Figure 2 displays descriptive information regarding the three groups of students in different stages of the teacher preparation program. As stated in Chapter 3 (see Table 1), all survey participants were enrolled in a required professional education course.

Figure 1. Preservice Teachers’ Familiarity with Issues Related to Multiculturalism
Figure 2. The Three Groups of Preservice Teachers at Different Stages of the Teacher Preparation Program

Data Analysis

Diversity Scale

The Preservice Teachers’ Assessment of Multiculturalism and Diversity survey instrument (Appendix A) contained the Personal Beliefs About Diversity Scale, comprised of 15 items and the 25-item Professional Beliefs About Diversity Scale, adapted from Pohan and Aguilar (2001). The scales were used to assess the multicultural beliefs about diversity for the 346 preservice teachers within a technology enriched teacher preparation program. Both scales employed a quantitative five-point Likert-type response format to assess the
survey respondents’ beliefs about diversity. The undergraduate preservice teachers expressed their belief by responding to each statement with one of the following: “strongly agree,” “agree,” “undecided,” disagree,” or “strongly disagree.” Before analyzing the perceptions of the survey participants, the researcher statistically reverse coded the negatively phrased items according to the directions for scoring the instrument (Pohan & Aguilar, 1999). This insured that the negatively phrased items would not reflect a narrow or biased belief, giving a culturally sensitive answer a higher score. Reversing the item value indicated that 1 = 5; 2 = 4; 3 = 3; 4 = 2; and 5 = 1 when scoring the personal and professional beliefs scales. On the Personal Beliefs About Diversity Scale, item numbers 2, 3, 5, 6, 8, 9, 11, 13, 14, and 15 were recoded. The responses for items 16, 18, 20, 22, 23, 25, 28, 33, 38, and 40 were reversed on the Professional Beliefs About Diversity Scale. After the negative items were recoded, responses for the survey items were summed to generate the scores for each subscale.

Two subscale scores were calculated. The total subscale scores consisted of the responses to the 15-item Personal Beliefs About Diversity Scale and the 25 items on the Professional Beliefs About Diversity Scale. The possible range for Total Personal Beliefs is 15 to 75 for each respondent. The Total Professional Beliefs subscale score can range from 25 to 125 for each respondent. The total subscale mean scores were calculated and used to indicate more favorable beliefs about issues of diversity between the preservice teachers in different stages of their teacher preparation program. As shown in Figure 3, the total score on the Personal Beliefs About Diversity Scale for the survey participants ranged from 30 to 74. The mean score was 59.06 with a standard deviation of 7.329 and median score of 60. A close examination of the distribution of total scores for the Personal Beliefs About Diversity
The total score on the Professional Beliefs About Diversity Scale ranged from 61 to 123. The mean score was 94.18 with a standard deviation of 10.651 and median score of 94. A frequency distribution histogram of these scores is shown in Figure 4. As shown, the frequency distribution of total scores for the Professional Beliefs About Diversity subscale indicates a slightly skewed distribution.
Factor Analysis

Factor analysis is a statistical procedure that, by examining interrelationships among the items on the survey, helps identify the clusters of items measuring the same factors (Krathwohl, 2004). This technique was used to identify factors on the survey that explained common variance, indicating groups of variables that measured some common construct. Although the survey scales had been validated by the original authors (Pohan & Aguilar, 1999), factor analysis was used to check the construct validity for the Personal and Professional Beliefs about Diversity Scales in this study.
For the 15 items of the Personal Beliefs about Diversity subscale, factor analysis of the raw data from this study was used to summarize the relationships among this set of variables. The Kaiser-Meyer-Olkin measure of sampling adequacy is an index for comparing the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients, which should be greater than .06 for conducting a satisfactory factor analysis (George & Mallery, 2007). As shown in Table 7, the degree of common variance among the fifteen variables is .817, interpreted as beyond “middling” (George & Mallery, 2007). Another indicator of the strength of the relationship among variables is Bartlett’s test of sphericity, a measure of the multivariate normality of this subscale. Bartlett’s test of sphericity is used to test whether the correlation matrix is an identity matrix, which would indicate that factor analysis would be meaningless. If this were the case, then the variables on the subscale would be noncollinear. Bartlett’s test of sphericity is significant; \( p < .001 \) (see Table 7). It is concluded that the strength of the relationship among variables is strong.

**Table 7**

*Measures for Conducting Factor Analysis for the Personal Beliefs About Diversity Subscale*

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Statistic</th>
<th>df</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaiser-Meyer-Olkin Measure</td>
<td>.817</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bartlett’s Test of Sphericity</td>
<td>1191.931</td>
<td>105</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

The values of the KMO and Bartlett’s test of sphericity indicate that the data are excellent for factor analysis on the 25-item Professional Beliefs About Diversity subscale.
Kaiser-Meyer-Olkin (KMO) measure of .851 indicated a meritorious sampling adequacy and the Bartlett’s test of sphericity is significant ($p < .001$). This output can be found in Table 8, indicating that the factor model is also appropriate for the 25 items of the Professional Beliefs subscale.

**Table 8**

*Measures for Conducting Factor Analysis for the Professional Beliefs About Diversity Subscale*

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Statistic</th>
<th>df</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaiser-Meyer-Olkin Measure</td>
<td>.851</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bartlett’s Test of Sphericity</td>
<td>1835.364</td>
<td>300</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Taken together, these tests provide the minimum standard, which should be passed before principal component analysis (or factor analysis) should be conducted. For the 15 items on the Personal Beliefs subscale, principal component analysis was conducted utilizing a varimax rotation. The scree plot was then assessed and indicated that the eigenvalues level off after four components. As a general rule, a factor should have an eigenvalue of 1.00 or greater to be retained (Mertler & Vannatta, 2005). After rotation, the four-component solution accounted for 53.17% of the total variance in the fifteen survey items (see Table 9). The factors that loaded for each of the components for the Personal Beliefs About Diversity Subscale are: Component 1: sexual orientation; Component 2: disabilities and gender; Component 3: immigration; and Component 4: race and social class.
Table 9

*Total Variance Explained for the Personal Beliefs About Diversity Subscale*

<table>
<thead>
<tr>
<th>Component</th>
<th>Rotation Sums of Squared Loadings</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.510</td>
<td>16.736</td>
<td>16.736</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.109</td>
<td>14.063</td>
<td>30.799</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1.913</td>
<td>12.756</td>
<td>43.555</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1.442</td>
<td>9.615</td>
<td>53.169</td>
<td></td>
</tr>
</tbody>
</table>

Using the 25 items of the Professional Beliefs about Diversity subscale, the factor extraction using principal components analysis yielded seven factors with eigenvalues greater than 1.00. Table 10 shows the total cumulative percent of variance accounted for by the seven-component solution was 54.22%. The factors that loaded for each of the components are: Component 1: race, religion, and languages; Component 2: social class; Component 3: immigration; Component 4: disabilities; Component 5: sexual orientation; Component 6: gender; and Component 7: disabilities.

Table 10

*Total Variance Explained for the Professional Beliefs About Diversity Subscale*

<table>
<thead>
<tr>
<th>Component</th>
<th>Rotation Sums of Squared Loadings</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.882</td>
<td>11.527</td>
<td>11.527</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.712</td>
<td>10.846</td>
<td>22.373</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.388</td>
<td>9.553</td>
<td>31.926</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1.549</td>
<td>6.195</td>
<td>38.121</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1.473</td>
<td>5.893</td>
<td>44.014</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1.327</td>
<td>5.309</td>
<td>49.323</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1.223</td>
<td>4.894</td>
<td>54.216</td>
<td></td>
</tr>
</tbody>
</table>
As stated in Chapter 3, these scales were designed to investigate an individual’s
general beliefs about a broad range of issues related to diversity within the context of one’s
daily life (personal beliefs) and school or classroom (professional beliefs). Based upon the
preliminary studies of scale development conducted by Pohan and Aguilar (1999), data
provide strong evidence that both scales are reliable and valid measures of one’s personal and
professional beliefs about diversity. The authors maintained that the scales were developed to
reflect multiple dimensions/issues about diversity. Therefore, all survey items on both scales
were retained and used in further analysis for this research study.

In addition, the Cronbach’s alpha value of the reliability test was used to check the
diversity scales for internal consistency. The evidence produced from the previous studies
conducted by Pohan and Aguilar (1999) found that both scales have strong reliability.
Cronbach’s alphas and item-total correlations for the Personal and Professional Beliefs
About Diversity Scales (1998 version) were reported as .780 and .855, respectively.
Coefficient alpha ranges in value between 0 and 1 and may be used to describe the reliability
of factors extracted from questionnaires or scales (Santos, 1999). The closer the alpha is to
1.00, the greater the internal consistency of items in the instrument. Nunnally and Bernstein
(1994) recommend reliability estimates of .70 are considered sufficient.

Furthermore, the reliability of both scales was checked with the undergraduate
preservice teachers for this study. The internal consistency reliability of the scales was
assessed using item-total correlation and Cronbach’s alpha. Robust values of coefficient
alpha were obtained for both scales: Personal Beliefs About Diversity subscale, \( \alpha = .797 \)
\((n=344)\) and Professional Beliefs About Diversity subscale, \( \alpha = .843 \) \((n=346)\). This implies
that over half of the variability was internally consistent or reliable.
Quantitative Results

Personal Beliefs About Multicultural Education

Research question one examined preservice teachers’ personal beliefs about multicultural education. The data shown in Table 11 indicate that the undergraduate preservice teachers who volunteered to participate in this study tended to be more positive about their personal beliefs about issues of diversity and multiculturalism. The highest mean in this subscale was 4.82 for the item, “There is nothing wrong with people from different racial backgrounds having/raising children.” These responses with this high mean score indicate that the preservice teachers are likely to accept and be sensitive to diversity. Two mean scores on the Personal Beliefs subscale were below neutral, “It is more important for immigrants to learn English than to maintain their first language” and “Many women in our society continue to live in poverty because males still dominate most of the major social systems in America.” The scores for these items were 2.79 and 2.60 respectively. Based on their personal beliefs about linguistic diversity and gender bias, preservice teachers often have a limited awareness of the life experiences of marginalized population groups. Therefore, it is likely that the preservice teachers may hold negative perceptions about these broader areas of diversity, given our nation’s history of exclusion and discrimination.

Professional Beliefs About Multicultural Education

Research question two asked preservice teachers’ professional beliefs about multicultural education. Information in Table 12 displays the professional beliefs about issues of diversity and multiculturalism within the context of schooling for these undergraduate preservice teachers. A high score suggests that the preservice teachers’ beliefs
Table 11

*Descriptive Statistics for the Personal Beliefs About Diversity Subscale*

<table>
<thead>
<tr>
<th>Perception Statement/Item</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is nothing wrong with people from different racial backgrounds having/raising children.</td>
<td>4.82</td>
<td>.026</td>
<td>.482</td>
<td>346</td>
</tr>
<tr>
<td>America’s immigrant and refugee policies have led to the deterioration of America.</td>
<td>3.67</td>
<td>.049</td>
<td>.905</td>
<td>346</td>
</tr>
<tr>
<td>Making all public facilities accessible to the disabled is simply too costly.</td>
<td>4.47</td>
<td>.042</td>
<td>.773</td>
<td>346</td>
</tr>
<tr>
<td>Accepting many different ways of life in America will strengthen us as a nation.</td>
<td>4.42</td>
<td>.041</td>
<td>.754</td>
<td>346</td>
</tr>
<tr>
<td>It is not a good idea for same-sex couples to raise children.</td>
<td>3.40</td>
<td>.074</td>
<td>1.372</td>
<td>346</td>
</tr>
<tr>
<td>The reason people live in poverty is that they lack motivation to get themselves out of poverty.</td>
<td>3.67</td>
<td>.051</td>
<td>.946</td>
<td>346</td>
</tr>
<tr>
<td>People should develop meaningful friendships with others from different racial/ethnic groups.</td>
<td>4.38</td>
<td>.036</td>
<td>.663</td>
<td>345</td>
</tr>
<tr>
<td>People with physical limitations are less effective as leaders than people without physical limitations.</td>
<td>4.29</td>
<td>.047</td>
<td>.871</td>
<td>346</td>
</tr>
<tr>
<td>In general, White people place a higher value on education than do people of color.</td>
<td>4.16</td>
<td>.054</td>
<td>1.011</td>
<td>346</td>
</tr>
<tr>
<td>Many women in our society continue to live in poverty because males still dominate most of the major social systems in America.</td>
<td>2.60</td>
<td>.058</td>
<td>1.081</td>
<td>346</td>
</tr>
<tr>
<td>Since men are frequently the heads of households, they deserve higher wages than females.</td>
<td>4.58</td>
<td>.041</td>
<td>.769</td>
<td>346</td>
</tr>
<tr>
<td>It is a good idea for people to develop meaningful friendships with others having a different sexual orientation.</td>
<td>3.85</td>
<td>.048</td>
<td>.900</td>
<td>345</td>
</tr>
<tr>
<td>Society should not become more accepting of gay/lesbian lifestyles.</td>
<td>3.77</td>
<td>.068</td>
<td>1.271</td>
<td>346</td>
</tr>
<tr>
<td>It is more important for immigrants to learn English than to maintain their first language.</td>
<td>2.79</td>
<td>.058</td>
<td>1.085</td>
<td>346</td>
</tr>
<tr>
<td>In general, men make better leaders than women.</td>
<td>4.18</td>
<td>.057</td>
<td>1.059</td>
<td>346</td>
</tr>
<tr>
<td>Overall Personal Beliefs Subscale Total</td>
<td>59.06</td>
<td>.395</td>
<td>7.329</td>
<td>344</td>
</tr>
</tbody>
</table>
about issues of multiculturalism within an educational context are likely to be more effective in diverse school settings. As designed by the original author of the scale, Pohan (1996) believed that higher scores would indicate more sensitivity and/or more cultural responsiveness. A low score on this subscale indicates the views that these preservice teachers believe these issues are less significant in education, as noted by the item, “People of color are adequately represented in most textbooks today.” At the lowest mean score of 2.90 on this subscale, this statement represents a less than neutral acceptance of this topic. However, the item with highest mean score (M=4.50) of agreement read, “Only schools serving students of color need a racially, ethnically, and culturally diverse staff and faculty.” The last question on the Professional Beliefs subscale had a statement linking multicultural education and computer literacy together. The mean score of 3.46 for the item, “Multicultural education is less important than reading, writing, arithmetic, and computer literacy” was slightly closer to undecided than agree.

Overall, the undergraduate preservice teachers scored slightly higher on the Total Personal Beliefs Subscale (M=3.94) than on the Total Professional Beliefs Subscale (M=3.78), as shown in Table 13. These findings indicate that the preservice teachers have more accepting personal beliefs about diversity, than their professional beliefs about issues of diversity as they relate to policies and practices within educational settings. This seems to support other literature that reports preservice teachers beliefs about expected teaching practices can be limited by their experiences in multicultural settings and with diverse student populations.
Table 12

**Descriptive Statistics for the Professional Beliefs About Diversity Subscale**

<table>
<thead>
<tr>
<th>Perception Statement/Item</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers should not be expected to adjust their preferred mode of instruction to accommodate the needs of all students.</td>
<td>4.34</td>
<td>.049</td>
<td>.909</td>
<td>345</td>
</tr>
<tr>
<td>The traditional classroom has been set up to support the middle-class lifestyle.</td>
<td>3.51</td>
<td>.042</td>
<td>.788</td>
<td>346</td>
</tr>
<tr>
<td>Gays and lesbians should not be allowed to teach in public schools.</td>
<td>4.23</td>
<td>.053</td>
<td>.993</td>
<td>346</td>
</tr>
<tr>
<td>Students and teachers would benefit from having a basic understanding of different (diverse) religions.</td>
<td>4.27</td>
<td>.038</td>
<td>.708</td>
<td>346</td>
</tr>
<tr>
<td>Money spent to educate the severely disabled would be better spent on programs for gifted students.</td>
<td>4.23</td>
<td>.042</td>
<td>.779</td>
<td>346</td>
</tr>
<tr>
<td>All students should be encouraged to become fluent in a second language.</td>
<td>4.09</td>
<td>.048</td>
<td>.887</td>
<td>346</td>
</tr>
<tr>
<td>Only schools serving students of color need a racially, ethnically, and culturally diverse staff and faculty.</td>
<td>4.50</td>
<td>.039</td>
<td>.723</td>
<td>346</td>
</tr>
<tr>
<td>The attention girls receive in school is comparable to the attention boys receive.</td>
<td>3.06</td>
<td>.053</td>
<td>.985</td>
<td>345</td>
</tr>
<tr>
<td>Tests, particularly standardized tests, have frequently been used as a basis for segregating students.</td>
<td>3.44</td>
<td>.055</td>
<td>1.018</td>
<td>346</td>
</tr>
<tr>
<td>People of color are adequately represented in most textbooks today.</td>
<td>2.90</td>
<td>.057</td>
<td>1.054</td>
<td>346</td>
</tr>
<tr>
<td>Students with physical limitations should be placed in the regular classroom whenever possible.</td>
<td>4.25</td>
<td>.046</td>
<td>.849</td>
<td>346</td>
</tr>
<tr>
<td>Males are given more opportunities in math and science than females.</td>
<td>3.17</td>
<td>.057</td>
<td>1.068</td>
<td>346</td>
</tr>
<tr>
<td>Generally, teachers should group students by ability levels.</td>
<td>3.57</td>
<td>.052</td>
<td>.970</td>
<td>346</td>
</tr>
<tr>
<td>Students living in racially isolated neighborhoods can benefit socially from participating in racially integrated classrooms.</td>
<td>4.11</td>
<td>.045</td>
<td>.829</td>
<td>346</td>
</tr>
<tr>
<td>Historically, education has been monocultural, reflecting only one reality and has been biased toward the dominant (European) group.</td>
<td>3.74</td>
<td>.047</td>
<td>.867</td>
<td>346</td>
</tr>
<tr>
<td>Whenever possible, second language learners should receive instruction in their first language until they are proficient enough to learn via English instruction.</td>
<td>3.54</td>
<td>.051</td>
<td>.946</td>
<td>342</td>
</tr>
</tbody>
</table>
### Table 12. (continued)

<table>
<thead>
<tr>
<th>Perception Statement/Item</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whenever possible, second language learners should receive instruction in their first language until they are proficient enough to learn via English instruction.</td>
<td>3.54</td>
<td>.051</td>
<td>.946</td>
<td>342</td>
</tr>
<tr>
<td>Teachers often expect less from students from the lower socioeconomic class.</td>
<td>3.44</td>
<td>.053</td>
<td>.991</td>
<td>344</td>
</tr>
<tr>
<td>Multicultural education is most beneficial for students of color.</td>
<td>3.92</td>
<td>.051</td>
<td>.950</td>
<td>345</td>
</tr>
<tr>
<td>More women are needed in administrative positions in schools.</td>
<td>3.58</td>
<td>.050</td>
<td>.928</td>
<td>344</td>
</tr>
<tr>
<td>Large numbers of students of color are improperly placed in special education classes by school personnel.</td>
<td>3.26</td>
<td>.051</td>
<td>.938</td>
<td>342</td>
</tr>
<tr>
<td>In order to be effective with all students, teachers should have experience working with students from diverse racial and ethnic backgrounds.</td>
<td>4.22</td>
<td>.039</td>
<td>.725</td>
<td>344</td>
</tr>
<tr>
<td>Students from lower socioeconomic backgrounds typically have fewer educational opportunities than their middle-class peers.</td>
<td>3.88</td>
<td>.045</td>
<td>.826</td>
<td>344</td>
</tr>
<tr>
<td>Students should not be allowed to speak a language other than English while in school.</td>
<td>3.94</td>
<td>.051</td>
<td>.944</td>
<td>344</td>
</tr>
<tr>
<td>It is important to consider religious diversity in setting public school policy.</td>
<td>3.83</td>
<td>.053</td>
<td>.992</td>
<td>344</td>
</tr>
<tr>
<td>Multicultural education is less important than reading, writing, arithmetic, and computer literacy.</td>
<td>3.46</td>
<td>.055</td>
<td>1.016</td>
<td>343</td>
</tr>
<tr>
<td>Overall Professional Beliefs Subscale Total</td>
<td>94.18</td>
<td>573</td>
<td>10.651</td>
<td>346</td>
</tr>
</tbody>
</table>

### Table 13

**Descriptive Statistics for the Personal and Professional Beliefs Subscale Totals**

<table>
<thead>
<tr>
<th>Subscale Totals</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Beliefs Subscale</td>
<td>344</td>
<td>3.94</td>
<td>.49</td>
</tr>
<tr>
<td>Professional Beliefs Subscale</td>
<td>346</td>
<td>3.78</td>
<td>.42</td>
</tr>
</tbody>
</table>
Preservice Teachers’ Beliefs at Different Stages

The third research question asked: In what ways do preservice teachers in different stages of their teacher preparation program differ regarding their beliefs about multicultural education? To show and compare these differences at each stage, the mean value for each of the three groups is listed in Tables 14 and 15. The descriptive data reveals that preservice teachers at the advanced stage scored the highest on both the personal and professional beliefs subscales (M=4.03 and M=3.92), respectively. As students matriculate through their teacher preparation program, the data suggests that they tend to have more favorable beliefs about issues of diversity. These results illustrated movement in the expected direction. These findings support the positive results found in the students’ familiarity with issues related to multiculturalism and the value of teacher preparation programs’ role of helping preservice teachers become culturally sensitive.

Table 14

Descriptive Statistics for the Preservice Teachers’ Personal Beliefs at Different Stages of the Teacher Education Program

<table>
<thead>
<tr>
<th>Stages in Teacher Education Program</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>102</td>
<td>3.84</td>
<td>.47</td>
</tr>
<tr>
<td>Intermediate</td>
<td>113</td>
<td>3.91</td>
<td>.50</td>
</tr>
<tr>
<td>Advanced</td>
<td>131</td>
<td>4.03</td>
<td>.48</td>
</tr>
<tr>
<td>Total Personal Beliefs Subscale</td>
<td>346</td>
<td>3.94</td>
<td>.49</td>
</tr>
</tbody>
</table>
Table 15

Descriptive Statistics for the Preservice Teachers’ Professional Beliefs at Different Stages of the Teacher Education Program

<table>
<thead>
<tr>
<th>Stages in Teacher Education Program</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>102</td>
<td>3.62</td>
<td>.37</td>
</tr>
<tr>
<td>Intermediate</td>
<td>113</td>
<td>3.76</td>
<td>.40</td>
</tr>
<tr>
<td>Advanced</td>
<td>131</td>
<td>3.92</td>
<td>.43</td>
</tr>
<tr>
<td>Total Professional Beliefs Subscale</td>
<td>346</td>
<td>3.78</td>
<td>.42</td>
</tr>
</tbody>
</table>

The univariate analysis of variance (ANOVA) tests were used to investigate the differences between the preservice teachers in different stages of the teacher preparation program and the mean scale total scores for the Personal Beliefs About Diversity subscale and the Professional Beliefs About Diversity subscale. ANOVA is a versatile statistical procedure that identifies whether there is a significant difference among the sample means of two or more groups (George & Mallery, 2007). A one-way ANOVA highlighted differences among these three groups. When significant differences were found in analyses with the three groups, the Tukey’s honestly significantly difference (HSD) post hoc procedure was used to identify which groups differ significantly from each other. A significant mean difference at the .05 level was used to evaluate the significance of the results.

The descriptive data shown in Tables 14 and 15 indicate that the mean of each group was different. The one-way ANOVA was conducted to determine if the ways the preservice teachers in different stages of their teacher preparation program differ regarding their beliefs about multicultural education was statistically significant or not. Levene’s test of equality of variances was conducted within ANOVA and indicates homogeneity of variance within groups. When the homogeneity assumption is not violated, the tests indicate equal variances
among teachers in different stages of their teacher preparation program. Levene’s test for homogeneity of variance is not significant for the Personal and Professional Beliefs Scales at \( p \) values of .770 and .263, respectively.

There was sufficient evidence to indicate a significant difference between the personal beliefs mean index scores of the three groups, \( F(2, 343) = 4.705, p = 0.010 \), indicating the ANOVA results showed significant differences. Additionally, the results indicate that the professional beliefs mean index scores were significantly different among the three groups, \( F(2, 343) = 16.214, p < .001 \). The ANOVA results for the survey respondents in different stages regarding their personal and professional beliefs about multicultural education are shown in Table 16.

**Table 16**

*ANOVA Summary Table for the Preservice Teachers’ Personal and Professional Beliefs at Different Stages of the Teacher Education Program*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>2.190</td>
<td>2</td>
<td>1.095</td>
<td>4.705</td>
<td>0.010</td>
</tr>
<tr>
<td>Within Groups</td>
<td>79.837</td>
<td>343</td>
<td>.233</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>82.027</td>
<td>345</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Professional Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>5.241</td>
<td>2</td>
<td>2.620</td>
<td>16.214</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Within Groups</td>
<td>55.432</td>
<td>343</td>
<td>.162</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60.672</td>
<td>345</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Based on these results obtained from the survey, the analysis of the data was continued with qualitative data to identify the preservice teachers’ major multicultural perspectives at different stages of their teacher preparation program. The overall results revealed that the students’ growth in multicultural knowledge and awareness appeared to increase as they advanced through the teacher education program.

**Qualitative Results**

*Approaches to Preservice Teachers’ Major Multicultural Perspectives*

Part III of the questionnaire included four open-ended questions that asked about multicultural education and technology as a way of gathering data about the survey respondents’ experiences. The responses to the open-ended questions were organized and discussed according to the approaches to diversity proposed by Sleeter and Grant (2003). These multicultural perspectives are congruent with the theoretical foundation used in the development and validation of the Personal and Professional Beliefs About Diversity Scales, noted by Pohan’s dissertation research. Pohan (1994) viewed the instrument development from a multicultural and social reconstructionist perspective as a way to measure a full range of educators’ multicultural beliefs. The multicultural framework proposed by Sleeter and Grant (2003) includes five approaches for dealing with race, class, gender, and disability diversity in schools, which worked well to categorize the responses of the survey participants in this study.

From a review of literature outlined in Chapter 2, the typology of approaches examined by Sleeter and Grant (2003) has provided the framework to assess how preservice teachers conceptualize multicultural education. This framework was chosen by the researcher...
to encompass the multicultural issues that are often cited as prevalent for educators.
“Teaching the Exceptional and Culturally Different” is an approach used to assimilate
students of color into the cultural mainstream and existing social structure. A “Human
Relations” approach is used to address cultural diversity, helping students of different
backgrounds get along better and appreciate each other. “Single Group Studies” fosters
cultural pluralism by teaching courses about the experiences, contributions, and concerns of
distinct ethnic, gender, and social class groups. The “Multicultural Education” approach
promotes cultural pluralism and social equality by reforming the school program for all
students to make it reflect diversity. Finally, “Education That Is Multicultural and Social
Reconstructionist” prepares students to challenge social structural inequality and empowers
students to advocate for social justice. These five approaches to multicultural education
provided the categories for the results to research question four. These are not presented in a
hierarchical order. It cannot be proved that one approach is right and the other approaches are
wrong.

The fourth question of the study was: What are the major multicultural perspectives
of preservice teachers in different stages of their teacher preparation program? In order to
answer this question, these five approaches formed the basis for the themes created through
selective coding. Not all survey respondents elected to respond to these open-ended
questions. The researcher first categorized the responses independently. She then asked
another researcher who has expertise in the field of multicultural education to verify her
findings. Then they compared categories and discussed discrepant interpretations before
achieving a consensus on the categories of diversity coded. Although the categories are
mutually exclusive and collectively exhausted, a small number of responses unrelated to the
approaches to diversity could not be categorized. Examples of these over-generalized comments are: “I don’t know,” and “Education about diversity.” Table 17 below presents the total of the tallied responses to the open-ended questions using Sleeter and Grant’s (2003) five approaches to multiculturalism and diversity.

**Table 17**

*Preservice Teachers’ Responses to Open-ended Questions Using the Five Approaches as Categories*

<table>
<thead>
<tr>
<th>Approaches to Diversity</th>
<th>Beginning</th>
<th>Intermediate</th>
<th>Advanced</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Teaching the Exceptional and the Culturally Different</td>
<td>17</td>
<td>19.8</td>
<td>9</td>
<td>9.7</td>
</tr>
<tr>
<td>Human Relations</td>
<td>56</td>
<td>65.1</td>
<td>47</td>
<td>50.5</td>
</tr>
<tr>
<td>Single-Group Studies</td>
<td>7</td>
<td>8.1</td>
<td>12</td>
<td>12.9</td>
</tr>
<tr>
<td>Multicultural Education</td>
<td>6</td>
<td>7.0</td>
<td>22</td>
<td>23.7</td>
</tr>
<tr>
<td>Social Reconstructionist</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>Total Responses</td>
<td>86</td>
<td>93.2</td>
<td>99</td>
<td>93.2</td>
</tr>
</tbody>
</table>

N = Number of responses tallied by category

Students in this study tended to embrace the different conceptions of multicultural education. It is reasonable that students begin to synthesize and evaluate their own beliefs about multicultural education as they gain experiences in the teacher education program. On the questionnaire, students were asked, “What does multicultural education mean to you,” and “Why should preservice teachers learn about multicultural education during their training in teacher preparation?” Table 17 presents the preservice teachers’ responses to these open-ended questions of the instrument that fell within each approach in the multicultural
framework proposed by Sleeter and Grant (2003). The majority of preservice teachers’ responses at the beginning (n=56), intermediate (n=47), and advanced (n=48) stages of their teacher preparation program conceptualized multicultural education from the Human Relations approach. 54.3% of the 278 responses demonstrated that students view multicultural education as a way of promoting unity and respecting diversity among all individuals. A student’s response from the beginning group confirmed this belief, “Preservice teachers need to learn about multicultural education so that they can teach it to their students and respect it.” One of the advanced students stated, “Preservice teachers need to learn about multicultural education so they are somewhat prepared for the classroom diversity they are met with. They need to learn how to be sensitive to the fact that not everyone is just like them.” The Human Relations approach is directed toward promoting positive feelings among students in an attempt to replace hostility and tension with acceptance and tolerance. Additional comments like, “to be comfortable in a multicultural setting;” “learn acceptance and appreciation for other cultures;” it is important not to teach stereotypes;” and “celebrating diversity in the classroom;” are all examples of the statements provided by the preservice teachers that are consistent with the Human Relations approach.

The category with the second highest percentage of comments was coded in the Multicultural Education approach (n=52, 18.7%). The results revealed that the preservice teachers’ beliefs supported this conceptualization of cultural pluralism and equal opportunity as they developed more experiences in the teacher education program. This category had a number of statements like these: “It means providing an education that is equal for all and is inclusive and representative of all cultures and beliefs,” and “Learning skills to help avoid prejudice and racial tension in the classroom.” As one of the intermediate students defined it:
Teachers are the leaders in the classroom; it is good for our educators to not be biased against certain individuals, so that everyone can receive equal education opportunity. And teachers need to be prepared to know how to interact with as many people as possible. People aren’t all the same anymore.

From the perspective of Sleeter and Grant (2003), advocates of Teaching the Culturally Different and Single-Group Studies approaches are too limited in defining an approach to multicultural education. Students who favor the Teaching the Culturally Different approach believe that U.S. society is essentially good and just. The goal of this approach is to assimilate marginalized students into the dominant culture, by preparing them with the necessary skills, knowledge, and values to compete in the classroom. The preservice teachers who embrace this multicultural approach made statements like the following: “Different ways of teaching so that everyone understands material;” “So they can better educate students from the rural area by exposing them to new and better things;” “Close the gaps in achievement;” and “Having the knowledge for teaching students with limited English proficiency.” The responses from preservice teachers who subscribe to the Teaching the Exceptional and the Culturally Different approach totaled 13.3% (n=37) of the total responses.

Single-Group Studies advocates view a specific’s group oppression as the most fundamental issue to empower members of the target group in order to create the basis for group liberation. Most advocates for this approach integrate the study about the specific groups’ historical and cultural experiences into the content of the mainstream curriculum.
About 10% of the total responses given identified with this approach. One of the preservice teachers at the beginning stage described multicultural education this way:

Teachers can be prepared for every ethnic group. Because no matter where you go, there is not going to be just one culture. It also helps them understand what they some day may have to explain. They should be prepared to teach to students with a variety of backgrounds and lifestyles. That way, they know about others’ ways of life and so they know what kind of students may be in their classroom.

If any of these definitions about multicultural education are adopted by the preservice teachers, they can provide a beginning point to help them develop a more critical awareness of their approach to issues of diversity. The last approach to multicultural education, the multicultural and social reconstructionist approach, remedies the multicultural celebration of difference by acknowledging the social problems that give rise to disparity and by empowering for social justice. The Education That is Multicultural and Social Reconstructionist approach is political, identifying and examining oppression due to social structures based upon issues of difference, such as race, social class, gender, ethnicity, religion, sexuality, and disability. Very few of the responses from the preservice teachers supported this conception of multicultural education. This category was coded with the lowest percentage of comments at 3.2% (n=9). None of these comments were given by students at the beginning stage of their teacher preparation program. A student from the intermediate group stated, “To help eliminate racism, ideas of ethnic superiority, and gender inequalities for future generations,” as the goal of multicultural education. According to one of the students at the advanced stage, a call for social activism was made:
To prepare them for the real world and to show people about the injustices of society in the U.S. and get them to take off their white lenses and see what’s really going on so they can better help their students in their classrooms.

Taking a critical perspective toward issues of multiculturalism and diversity, another advanced student viewed the meaning of multicultural education as the following:

There are many hidden institutions that are present in our society, let alone our educational systems. These institutions unfairly treat people for reasons other than their character. Because many of us will be placed in multicultural schools, it is time to turn our country into a place that is more tolerant.

For prospective teachers whose multicultural perspectives are situated within the multicultural and social reconstructionist approach, they appear to have an understanding of the critical and sociopolitical context of multicultural education as a movement for equity and social justice. The ultimate goal of multicultural education is to transform the entire school environment (Banks, 1996; Leistyna, 2002). Although the preservice teachers’ multicultural perspectives addressed multiple approaches of multicultural education, it is reasonable to argue that students begin to synthesize and evaluate their beliefs about multicultural education as they gain knowledge of multicultural curriculum in a teacher education program.
Focus Group Interview Responses

To complement the data from the questionnaires, focus groups were used as a way to elicit perspectives regarding preservice teachers’ understandings about diversity. Three focus groups were conducted with a total of 11 volunteers. These students consisted of the survey respondents who indicated yes on the informed consent that they were willing to participate in a focus group session. In an effort to examine the multicultural perspectives of preservice teachers within a technology enriched teacher preparation program, the participants were asked again to state their beliefs and understandings about the role of multicultural education. In agreement with the prevailing beliefs found in the open-ended questions using the five approaches to diversity (see Table 17), the students answered from more of a Human Relations approach. One student answered, “I think my idea would be to learn about people from diverse backgrounds and races and cultures because I have had a chance to deal with others from different backgrounds and races and stuff like that.” The students’ comments demonstrated well how they subscribe to the different approaches to diversity.

The quotes chosen were selected as representative comments of the focus group interviewees. Typical examples that show how beliefs about multiculturalism were reflected in the preservice teachers’ understandings include the following statements from each of the five approaches to diversity:

Teaching the Exceptional and Culturally Different

- “I think with No Child Left Behind, we all have to step it up. It is about teaching all students so they can learn and achieve. No student, no matter what race can be left behind.”

- “I don’t think that a textbook class can teach you how to deal with these kids. I think like the most they can do is tell you how students with diverse needs may act, if they have a disability. We know, they deserve the same
opportunities. But I think the field experiences, working with different populations of students, is the only way to really understand completely how to interact with these kids and every kid is different. We have to try to help them achieve.”

- “As a future teacher it is important to know what could possibly be in your classroom, and how to adjust your teaching style to accommodate all types of kids. It makes you more flexible as a teacher, and more aware of your students’ needs… I believe it is important to learn about students’ disabilities and abilities in our classroom. I have also learned that students in my classroom come from different backgrounds, and that each student is raised differently. When educating children, you know how important to take these things into account. You want to make sure they have the kind of skills that make them successful though.”

- “People of different races and backgrounds learning in the same class. Teachers can adapt instruction to everybody’s own unique learning.”

- “Multicultural education means giving every student the same opportunity to excel. We want all students to be able to get jobs after graduation. That’s why it is important to bring everybody up to speed. No matter how diverse your background is, you still need exposure.”

This approach focuses on helping students of difference to achieve, assimilate, and fit into the current society. The statements made by the preservice teachers during the interviews capture their desire to help exceptional learners and culturally different students achieve in school so they can meet the demands of traditional schooling. These preservice teachers do not expect to teach in a homogeneous classroom and they express their willingness to make adaptations for diverse students.

The second approach to multicultural education, Human Relations, is represented by the students’ comments in the list:
**Human Relations**

- “I think that it is important so that we are able to incorporate other cultures into what we do, teach to our students. It also prepares us for other things that might happen in the world and in other cultures other than ours.”

- “It means learning about other cultures and broadening your horizons to the rest of the world.”

- “Encompassing many cultural views in education. I say, can’t we just all get along? It’s time we stop putting other people down. So what, you don’t look like me. As a teacher, I want to help my students be more accepting of cultural differences.”

- “It means that all students learn about diverse cultures and their religions, literature, histories, societies, governments, and languages. Well, I think, multicultural education wants us all to interact. It means that diversity is encouraged, by all of us.”

- “It means teaching students to embrace differences and learn from others until difference makes no difference anymore.”

- “Helping all students to feel comfortable in their school environment”

The majority of the interviewees suggested that multicultural education should be about developing positive relationships among everyone. Throughout this study, the Human Relations approach seemed to be the most popular, earning agreement among all of the eleven students interviewed. As advocates of the Human Relations approach, it is clear to conclude that these preservice teachers believe in a curriculum that includes collaborative and cooperative learning experiences among all students in order to help students feel positive about themselves as well as people from different cultural groups.

The next approach to multicultural education, Single-Group Studies, is found in the list of views expressed by the preservice teachers:
Single Group Studies

- “Awareness of the differences in values, …traditions and history of different cultural groups and people from different races, including studying how historically these are misrepresented.”

- “Having students in a classroom who are from diverse backgrounds and teaching them all together. We go ahead and educate students about different races, cultures, sexual orientations, and religions, not just about race/ethnicity. This means we talk about our differences and know it’s okay.”

- “Multicultural education means, I think, well several different culture backgrounds should be taught. After all, we are all different. So different ethnic groups should get acquainted with each other.”

- “It’s the learning and teaching of different races, religions, cultures and a hope to increase tolerance between different groups of people. In your classroom, you can do this by using group activities. Students can at least start talking. They may even recognize that we all have similar values and beliefs.”

- “I am very proud to be who I am [African American student]. I like learning about my own people. Of course, it’s important to teach White students we made contributions, too.”

- “As a teacher, I want to be able to discuss the kinds of experiences that all people are going through. Living here, our students just won’t know about it.”

This approach promotes a willingness among the preservice teachers to work toward social equality for a recognized oppressed group, for example – women, African Americans, Asian Americans, Native Americans, people with disabilities, people in poverty, Jewish communities, or lesbian, gay, bisexual and transgender (LGBT) individuals. The students’ comments reflect the belief that the goal of multicultural education should be to consciously teach about the contributions of specific groups, helping members of the dominant group appreciate the experiences of others.
The preservice teachers were able to define the meaning of diversity in a manner parallel to the fourth approach, known as Multicultural Education. These statements are given below:

**Multicultural Education**

- “Making sure that everyone, no matter their role receives a fair and equal education; that the classroom should be made up of all kinds of races.”

- “It means to me that there are many students from many different religions and ethnic backgrounds all learning together. It has become real important to teach children about different cultures to gain more than one perspective.”

- “…means that education is equally provided among all cultures and races because the whole school is involved in making sure no kid is alienated or left out.”

- “Integrating different races and ethnic backgrounds into the classroom in order to broaden students’ perspectives. There will be a diversity of materials to teach a variety of approaches, a variety of viewpoints.”

- “It promotes a more welcoming environment, like making students aware of diverse societies, and their own biases and prejudices so they can be better citizens in our multicultural society. I see being able to have a nonsexist education program.”

Preservice teachers who adopt this approach must be committed to teaching from a multicultural perspective. From the statements above, the preservice teachers acknowledged that the United States is a pluralistic nation and its racial, religious and cultural diversity needs to be recognized. It appears that some of the students interviewed champion equal educational opportunity and schooling that encourages awareness from diverse perspectives. As advocates for Multicultural Education, these students seek to reform the entire process of schooling to include the needs of all children.
The last approach to multicultural education, Education That is Multicultural and Social Reconstructionist, is described by the students’ comments below:

**Education That Is Multicultural and Social Reconstructionist**

- “Teaching in a way that recognizes, respects, and looks critically at a wide array of cultures.”

- “…helping students analyze that inequality exists in our own schools. It is true; discrimination exists still. So we have to address it, confront it and seek out ways to get rid of it.”

- “Working with students to change all aspects of this world that are biased against blacks and members of other ethnicities.”

Parallel to the results from the survey instrument, analyses of the qualitative data for this category, “Education That is Multicultural and Social Reconstructionist” approach, indicated a low response. Central to a critical multiculturalist’s perspective, this approach focuses on and offers a more direct response to the concerns espoused in this research study. For example, a preservice teacher needing to provide access to computer technology for a class of urban students in a poverty district would adopt this approach to address the tremendous inequities that exist in this school environment. Although small in number, the preservice teachers’ statements reflect the idea that multicultural education means promoting social structural equality in an effort to work toward social justice.

For each approach, excerpts of the participants’ perspectives are provided to demonstrate the meaning of these five theoretical approaches to multicultural education. Although the preservice teachers’ comments reveal an awareness of multicultural education, they illustrate that the participants lack a deeper understanding of what is necessary to question and challenge existing norms, beliefs, values, practices, and structures that promote
real injustices in today’s schools and society. These are the more complex issues of diversity that impact their decisions in the classroom as they relate to possible ways to use technology to increase critical multicultural understanding (McShay, 2005; Pittman, 2007; Schoorman, 2002; Wassell & Crouch, 2008).

**How Technology is used to Facilitate Learning About Multicultural Education**

In addition to asking what the preservice teachers believe about multicultural education, the researcher probed further to gather qualitative data that described the ways technology could be used to facilitate learning about multicultural education. Research question five asked: Is there a relationship between preservice teachers’ multicultural perspectives and how technology can be used to support their conception of multicultural education? In both the interviews and the open-ended questions from the questionnaire, the respondents were asked about how technology can be used in the classroom to address issues of multiculturalism. The questions used during the interviews (see Appendix F) served as a guide for the description of the findings. The four main themes that emerged from the data include: availability and access to technology, information resources that support learning about diversity, instructional strategies and tools that support multicultural education, and virtual distance education in the global context. A representative sample of the responses from the focus group sessions are summarized next.
Availability and Access to Technology

Comments such as, “It’s not fair to be in a school with limited access”; and “This depends on whether the school can afford it”; and “The technology divide is a real problem” were abundant. Other statements from the interviewees are listed below:

- “Having being able to work with students, not only as a teacher associate for a year and a half, which was an extremely good experience for me, there are limited amount of uses of technology in one school system. And hopefully them legislators or whomever make the final decisions, will understand that future teachers need to go out there and want to teach special needs students with more than a textbook or chalkboard. Just because they are classified as special needs doesn’t mean they are totally stupid and hopefully teachers will be given an awareness eventually. That yes, they know how to use computers better than older people, they need access to that resource.”

- “I really, really am extremely hopeful and want to learn how to do this [podcasting]. But my concern is that a lot of schools do not have the capabilities to do such and do not necessarily want to have it either. For me I am an auditory learner, so if I could listen to lessons as an elementary student, that would make a difference. So I am very excited to learn how to use that kind of technology in the classroom and willing to try. How do we handle this when we are in schools with no access? It’s necessary for all children to use software like this.”

- “Without this access, those [poor] students are falling behind. I don’t think their knowledge is falling behind; they simply don’t have the opportunity that those with technology have to gain more. They may not be less smart because of the technology but compared to other schools with technology they may not have as much knowledge as they do.”

- “With the use of computer labs even less fortunate students have access to lots of information and can use the opportunities at school to become more self aware throughout their educational journey.”

- “I’m not ignoring the statement on the divide… Technology can also enable those with a disadvantage to learn just as well. It is now a possibility for students to take classes online if a certain class is not available to them at their own school. There are endless possibilities with technology in education now. I have to say, the most important thing to remember, though, is that technology is an available resource but we must not take it for granted and completely rely on it.”
Information Resources That Support Learning about Diversity

All of the students interviewed mentioned how important learning with technology was, particularly when it is used to enhance learning about multicultural education.

“Everything in our culture in America is based on technology. I don’t think that students don’t learn as well without the technology; I just think it gives them a higher level of learning.” Additional comments about this theme can be demonstrated by the following comments:

- “I agree this is the age of technology and the amount of technology that is out there makes it easy for us to use it in our classrooms, like using it to communicate with different cultural groups. Actually, you know, it is a way of seeing what others know, what they have available, sharing your information, more of an open view to learning about them, unlike the textbook.”

- “It has definitely been helpful in my learning process to use technology in aiding my own understanding and for communication. Now I can see technology and multicultural education like this. Students could look up information online, then write a report on what they have seen and heard. The students could also see how different cultures treat minorities in their society and discuss this in class.”

- “So much information is available. They [students] are able to look up multicultural information and communicate with individuals who may have firsthand experience in the culture in question. Students are also able to remain current on news and events involving multicultural experiences.”

- “I just had an opportunity to view a website with a man who has a very highly regarded website that includes a blog, a chat room, and a variety of different resources online with his students. His students use pod casting in the classroom. I think that is a great use of technology to be able to connect with classrooms of diverse people. We all know there are certain kinds of ways we learn better and this gives his students access to the information at whatever time best suits their learning, at whatever time of the day that is best.”

- “Also, technology allows you to communicate with many diverse people. Using a computer you can find out anything about diversity and equity.”
“You have to know something about me, it must be noted that I graduated from a small, rural school ten years ago; consequently the computer training I received cannot feasibly be compared to the training available to today’s high school students. This is scary because I feel that technology can be beneficial for older people like me. For me, technology is most directly associated with computers. We now have greater access to information. With computers the whole world can be brought into a classroom via the Internet. We can do more research on different cultural events, like learning about students’ culture in an online environment.”

“Technology can be used to learn about multicultural education by being able to research information, read articles, and communicate with your classmates… You could have your class send weekly emails about what they learned when they did that research on diversity.”

**Instructional Strategies and Tools that Support Multicultural Education**

Among answers mentioning specific instructional strategies and tools that foster multicultural education, the most frequent included: interacting with students using the internet, communicating by email, creating a PowerPoint presentation, developing a video lesson plan about diversity, and watching a video on multicultural education. The use of these instructional tools and strategies are supported by the following comments:

“One class, CI 201 deals with technology in the classroom and one short lecture in that class deals with technology that is available for special needs students. I personally in a young adult lit [erature] class which most elementary ed [ucation] majors don’t take got to email a bunch of 8th graders about a literature book. Granted we never see each other except on video; that was great and I wish there was a way for us to do that and mentor the special needs students, giving us a more hands-on experience in that respect. But it is like so much that you aren’t going to learn in a textbook. You need to get out there, whether it is an online experience or a face to face, I think we really need to have both. Quite honestly, we are not learning how to use that kind of technology in the classrooms that help us teach diverse students.”

“Teachers can start by displaying videos over equity and diversity.”

“Some classes can be taught by someone else. You can video record your lessons. You know, ICN. Now you are able to collaborate with a teacher who works in an inner-city school setting.”
“Televisions can be used to watch movies about other cultures, and teachers can use some technology such as the new projectors and PowerPoints to teach on diversity. You know, a great example of this would be technology being used as a tool to learn about diversity and other cultures. I mean, well, an example of this is assigning each student in a given class a research paper on a different race, gender, or culture. Then each student should use the computer to make a PowerPoint presentation on their assigned subject. Now each student in the class would present their project to the class, teaching every other student in the class about different kinds of people and their backgrounds.”

“I see this as a way of improving teaching. It makes learning about this topic [multicultural education] more motivating. With the Internet, educational programs and websites can bring the latest, most accurate information about any group of people. I just haven’t had a chance to get to know many minorities… Multimedia presentations use a wide range of technology, like, including video, audio, and that photograph technology used in classroom instruction. Now, this can prove to be valuable resources in, you know, umm, this multicultural learning we talking about.”

“Technology has opened several doors for student learning. Students can create educational projects through PowerPoints, databases, web quests, videos, multimedia projects. Being the teacher you can teach a lesson, and have students do a project to demonstrate their understanding about diversity using some technology. Through these, students learn computer programs that enhance their education beyond imagination, and learn the lesson. Also educational computer games can be used as a drill and practice. You could also do simulation to teach different ways of life.”

“Technology can make multicultural education easier for us and more exciting for them. Possibly, there should be a variety of different lessons and activities that teachers can use to promote diversity and …equity in the classroom. Students can research different cultures, find out what’s going on in other places of the world, too, on some kind of web quest. Teachers can even use technology as a great aid to textbooks and study sheets and to help students understand and learn about other people’s values and beliefs. In lessons not pertaining specifically to multicultural lessons, teachers can use technology to tie it in with all subjects… A number of educational software games for ESL students now exist that make wonderful supplements to the teacher’s lesson.”
Virtual Distance Education in the Global Context

The emergence of distance education in a number of schools is growing rapidly. As our society becomes more globally interconnected, a number of the prospective teachers interviewed agreed that the integration of technology into the curricula has the potential to develop global awareness and intercultural understandings. Several students had comments indicating how to use this medium to communicate with a more global classroom of learners. The statements about ways technology makes it possible to have intercultural experiences are included:

- “I had the privilege at church to connect via Internet by email with a similar church in the African country, Tanzania. Our older students 5th and 6th graders were able to once a month to interact with these Tanzanian students. They became pen pals over email. It was a very good learning experience because everybody would write down characteristics of who their buddy was.”

- “I think it would be great to let students to do email or chat room to talk with someone in a different country… It would help us to better understand people from different cultures and traditions, religions, countries and just gaining knowledge in that way. To be able to learn worldviews… using technology is a great thing for us.”

- “I plan to go to Australia to do my student teaching, cross my fingers. With that, I hope to be able to do pen pals from there with a classroom in my hometown, a very small rural Iowa classroom. To speak to an adult about what is going on in their lives from a different country is completely different than getting to speak to another person your age you can relate to… It is this kind of opportunity that is priceless, being able to interact with diverse cultures abroad. And technology can make all of this possible.”

- “You know, technology could be used to help all students learn about multicultural education and the diversity we have, not only in this country, but in the world as well. Students could use the access of the Internet to look up information about the different cultures we have within our own country and learn about those different cultures. And the students could also contact other students in foreign countries and find new friends. Students could use software too, to learn new languages and customs from other countries; we did this at my high school. Basically, what I am saying, technology could take
the students to different settings throughout the world by the touch of their fingertips and learn how beautiful and wonderful that we all are.”

- “Technology is a fantastic way to integrate multicultural learning. The Internet is rich in resources. Students can see what another part of the world is like with a click. They can see what other students their age are learning in China. Students can also come in contact with people and possibly develop a correspondence and maybe even an international friendship.”

Because the world is globally interdependent, students would be better served by acquiring skills that lead to the comprehension of others’ perspectives. Therefore, the researcher agrees that global perspectives should be incorporated into teacher education programs to help students increase their geographic and cultural competence. With a growing number of students and teachers now using the Internet and the exciting potential technology has to offer, constructing multicultural understanding and intercultural awareness is more attainable than ever before.

Although not all students answered the question about a relationship between their multicultural perspectives and how technology can be used to support their conception of multicultural education directly, one student’s comment was memorable: “I believe technology allows students access to things outside of their classroom and their little world. The more multiculturalism is introduced the better off students will be.” While all students spoke very positively about using technology to facilitate learning about multiculturalism, they seemed to have a much more difficult time expressing how technology can be incorporated and reconceptualized within a critical multicultural education framework.

Consistent with their beliefs about the goals of multicultural education, the preservice teacher comments seemed to reflect that of a more human relations perspective in the context of how to integrate technology in multicultural education. As an advocate of Education that
is Multicultural and Social Reconstructionist, the researcher supports the use of technology to engage preservice teachers in critical dialogue about dealing with issues such as race, class, gender, digital equity, and social justice.

**Summary**

This chapter has described the results and findings of this mixed method research study. The purpose of this study was to examine the multicultural beliefs and attitudes of preservice teachers in a technology enriched teacher preparation program. The responses from the questionnaire, *Preservice Teachers' Assessment of Multiculturalism and Diversity*, were used to present the statistical analyses that described and determined differences among three groups of preservice teachers’ regarding their major multicultural perspectives. Augmenting these findings was the use of open-ended questions and three focus groups with semi-structured interviews thus facilitating a deeper exploration of preservice teachers’ beliefs about ways technology can be used to support multicultural education.

In addition to the quantitative analyses, the results of the research identified the relationship between preservice teachers’ multicultural perspectives and how technology can be used to support their conception of multicultural education. The multicultural framework proposed by Sleeter and Grant (2003) helped identify the broad areas of coverage included in the survey instrument. When the qualitative data were analyzed, the researcher found that the preservice teachers’ beliefs about the role of multicultural education were usually supported within the literature; the majority of their perspectives were consistent with a Human Relations approach.
From the responses gathered at the focus group interviews, four themes emerged: availability and access to technology, information resources that support learning about diversity, instructional strategies and tools that foster multicultural education, and virtual distance education in the global context. The analysis of the interview responses generally supports the quantitative results. These results suggest that the preservice teachers’ personal and professional beliefs about multiculturalism may be favorable, but they have only a limited understanding of how technology can be used to engage students through a social reconstructionist approach. The next chapter presents a discussion of the findings, implications of practice, and recommendations for future research.
CHAPTER 5. DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

This chapter offers a brief summary of the study, the discussion of findings, implications of practice, and recommendations for future research. The purpose of this study was to examine the multicultural beliefs about diversity of preservice teachers within a technology-enhanced teacher preparation program.

Dramatic demographic changes in the cultural and linguistic diversity of people are occurring at the same time as the explosion in technology throughout the United States. These changes have challenged teacher education programs to modify their curricula and instructional practices to meet the needs of diverse learners and to prepare all preservice teachers to have the awareness, knowledge, and skills to effectively integrate uses of technology in our increasingly diverse classrooms. Yet, evidence in the research suggests that prospective teachers have not been adequately educated to work effectively with culturally diverse students (Bennett, 2003; Cruz-Janzen & Taylor, 2004; Ladson-Billings, 2001; Zeichner, 2003). Therefore, a comprehensive multicultural education program in the teacher education preparation remains an imperative. In addition, research has emerged to document how various forms of technology can be used to support the teaching of multicultural education (Brown, 2004a; Damarin, 2000; McShay, 2005; Merryfield, 2001; Orly, 2007; Schoorman, 2002; Sleeter & Tettegah, 2002; Wassell & Crouch, 2008). Given that technology skills are unlikely to be used unless they fit with the teachers’ existing pedagogical beliefs, it is imperative that teacher educators increase their understanding of and ability to address prospective teachers’ beliefs (Ertmer, 2005). To examine the effectiveness of such technology-based competencies, it is necessary to examine preservice
teachers’ beliefs and useful to ask them about ways in which technology can be used to support their conception of multicultural education.

The preservice teachers in this study appeared to acknowledge both the importance of multicultural education and technology with limited understandings of being able to articulate how to integrate technology to address topics and issues in critical multiculturalism. Sleeter (1989) emphasized the need for a transformative curriculum that is consistent with the basic mission of the multicultural education movement. She stressed, “to challenge oppression, and to use schooling. . . to help shape a future America that is more equal, democratic, and just, and that does not demand conformity to one cultural norm” (p. 63). Transforming teacher education to support multicultural technology pedagogy necessitates both a close examination of personal beliefs as well as an assessment of future professional beliefs. It is reasonable to argue that prospective teachers’ beliefs about multicultural education will influence their teaching of it and the ability to successfully integrate it using technology-based practices. Munoz (2002) declared the need for teacher preparation programs to prepare prospective teachers to use technology to create meaningful multicultural learning experiences for their K-12 students. Consequently, teacher education programs have the responsibility of preparing future teachers in this area and continuous research studies that examine how teacher education programs can integrate technology in the multicultural teaching/learning process will help with this purpose.
Summary of the Study

Summary of the Participants

Descriptive data presented in Chapter 4 described the sample population that consisted of a total of 346 preservice teachers who voluntarily completed the questionnaire, *Preservice Teachers’ Assessment of Multiculturalism and Diversity*. According to the demographic information provided (Table 2, Chapter 3) 326 students identified their race as Caucasian/White, making up 95% of the survey respondents. Of the remaining students who identified their race, three students were African-American, one student was American Indian, four students were Asian or Pacific Islander, four students were Latino/a, and five students identified as Other. Descriptive information regarding gender indicated that 20% of the students were males (n=70) and 80% were females (n=276). The largest number of preservice teachers were majoring in elementary education (n=161). The undergraduate majors were early childhood, elementary education, secondary education, and K-12 education. Given that approximately 95% of all respondents were members of the dominant group, Caucasian/White, the demographic background for the majority of the respondents were White females (n=263), consistent with the majority number of students who prepare for and enter the teaching profession.

Approximately 76% of the survey participants stated they were familiar with issues related to multiculturalism. However, knowledge alone is insufficient to change unyielding beliefs or deeply ingrained attitudes (Pohan, 1996). Although most of the preservice teachers in this study did not identify with the theoretical approach congruent with my multicultural lens, “Education that is Multicultural and Social Reconstructionist,” I was continually struck
by the rich personal experiences, ideas, and beliefs about teaching topics in multiculturalism and diversity that such a racially homogeneous group of teacher candidates had.

The preservice teachers of the study were all enrolled in a required professional education course, 30% at the beginning stage, 33% at the intermediate stage, and 38% at the advanced stage. Eleven students participated in a semi-structured focus group interview.

**Summary of the Data Analysis**

Following procedures described by Creswell (2003) for sequential transformative mixed methods research, the data were analyzed, using both quantitative and qualitative measures. The quantitative and qualitative components of the data were analyzed separately. Utilizing a mixed method approach for data analysis allowed me to add the richness to this research study that a purely quantitative approach would have lacked.

The quantitative data obtained from the questionnaire were analyzed using the *Statistical Package for the Social Sciences* (SPSS), version 14.0.1. Descriptive statistics, including means, standard deviations, and percentages, were analyzed to determine preservice teachers’ personal and professional beliefs about multicultural education. A one-way analysis of variance (ANOVA) was conducted to determine in what ways the preservice teachers in different stages of their teacher preparation program differ regarding their beliefs about multicultural education. The probability level of statistical significance for the quantitative analyses was set with an *a priori* alpha of $p < .05$.

Responses to the open-ended questions of the instrument were analyzed using qualitative research methods. The multicultural framework proposed by Sleeter and Grant (2003) was used to analyze the responses to the open-ended questions on the survey
instrument and the responses from the focus group interview sessions that asked about the
goals of multicultural education. In addition, qualitative data from the focus group interviews
were analyzed following procedures outlined by Lincoln and Guba (1985). From the
interview data, four principle themes emerged in an effort to describe the ways technology
could be used to facilitate learning about multicultural education.

Discussion of the Findings

Quantitative Findings

The Personal and Professional Beliefs Subscales

The Preservice Teachers’ Assessment of Multiculturalism and Diversity survey
instrument contained the modified version of the Personal Beliefs About Diversity Scale,
comprised of 15 items, and the 25-item Professional Beliefs About Diversity Scale (Pohan &
Aguilar, 2001). Both scales employed a quantitative five-point Likert-type response format
ranging from 1 (strongly disagree) to 5 (strongly agree) with a higher score being more
favorable. The Personal Beliefs About Diversity Scale and the Professional Beliefs About
Diversity Scale were used to measure preservice teachers’ beliefs about multiculturalism and
a range of diversity issues. Based upon the preliminary studies of scale development
conducted by Pohan and Aguilar (1999), data provide strong evidence that both scales are
reliable and valid measures of one’s personal and professional beliefs about diversity.

Researchers (Brown, 2004b; Bryan & Atwater, 2002; Pohan, 1996; Richardson, 1996,
2003) have revealed that teachers hold beliefs about students based on race, ethnicity,
language, social class, gender, religion, ability/disability, and other differences that lead
teachers to differential expectations and treatment of their students. In response to the
concern that an educator’s personal beliefs may be in direct conflict with his/her beliefs in a professional context, the two-dimensional (personal and professional) approach was adapted from Pohan (1994) for assessing the beliefs about diversity with the survey participants of this study. The Personal Beliefs scale measures beliefs about general issues related to diversity, and the Professional Beliefs scale measures beliefs about diversity specifically within a professional education context.

Furthermore, the reliability of both scales was checked with the undergraduate preservice teachers for this study. The internal consistency reliability of the scales was assessed using item–total correlation and Cronbach’s alpha. Robust values of coefficient alpha were obtained for both scales: Personal Beliefs About Diversity subscale, $\alpha = .797$ ($n=344$) and Professional Beliefs About Diversity subscale, $\alpha = .843$ ($n=346$). This implies that over half of the variability was internally consistent or reliable.

**Personal Beliefs about Multicultural Education**

The purpose of research question one was to display the personal beliefs about issues of diversity and multiculturalism posed within the context of one’s personal sphere or worldview. Overwhelmingly, the preservice teachers in this study held favorable beliefs about multicultural understandings. The participants’ responses were complimentary to Nieto and Bode’s (2008) assertion that “becoming a multicultural teacher, therefore, means first becoming a multicultural person” (p. 424). This could lay the groundwork for continued development in multicultural competencies as they relate to the education of culturally diverse students.
The highest mean in this subscale was 4.82 for the item, “There is nothing wrong with people from different racial backgrounds having/raising children.” These responses with this high mean score indicate that the preservice teachers are likely to accept and be sensitive to diversity. Conversely, two mean scores on the Personal Beliefs subscale were below neutral, 2.79 and 2.60 respectively. “It is more important for immigrants to learn English than to maintain their first language” and “Many women in our society continue to live in poverty because males still dominate most of the major social systems in America.” It is apparent that the preservice teachers have limited experiences with broader areas of diversity (Brown, 2004b; Pohan, 1996). Since prejudice reduction is often a central objective in multicultural education, Banks (2003) encourages all educational institutions to help students develop more democratic values and beliefs for teaching about various racial, ethnic, social class, cultural, and language groups and from both gender groups. Immigration and gender equality are often dismissed as having little significance in the school curriculum. That is why Nieto and Bode (2008) assert that multicultural education can help create affirming classrooms and an affirming society in which biases are no longer acceptable. Issues like bilingual education and women’s rights can be argued as issues of civil rights (Banks, 2007).

Although not all of the mean scores on the Personal Beliefs subscale were at or above “agree” or “strongly agree,” the overall Personal Beliefs subscale mean score was 59.06. The level of commitment to issues of diversity for this group of preservice teachers is impressive. Training effective teachers who are sensitive to multicultural issues remains the goal of multicultural teacher education. Prospective teachers need to have meaningful, direct, and positive experiences so that they gain the multicultural knowledge base prior to student teaching and develop into culturally sensitive teachers (Bryan & Atwater, 2002). According
to Tatar and Horenczyk (2003), knowledge of and personal experiences with cultural diversity are regarded as essential goals for teacher preparation.

**Professional Beliefs about Multicultural Education**

The purpose of research question two was to display the professional beliefs about issues of diversity and multiculturalism within the context of schooling for the undergraduate preservice teachers who volunteered to participate in this study. A high score indicates an educator’s beliefs about issues of multiculturalism within an educational context, indicating preservice teachers who are likely to be more effective in diverse school settings. According to Pohan (1996), preservice teachers’ life experiences and personal beliefs are closely related to their beliefs about teaching culturally diverse students. Acknowledging that prospective teachers’ entering perspectives serve to filter what they learn, Pohan (1996) commented that students who bring strong biases and negative stereotypes about diverse groups will be less likely to develop professional beliefs most consistent with multicultural sensitivity and responsiveness.

A low score on this subscale indicates the views that the survey participants believe these issues are less significant in education. At the lowest mean score of 2.90 on this subscale, this statement, “People of color are adequately represented in most textbooks today,” represented a less than neutral acceptance of this topic. Since the beliefs of most White middle class preservice teachers are based on their life experiences as members of the dominant cultural group, they often lack an understanding of the ethnocentric nature of school practices and curriculum (Nieto & Bode, 2008; Sleeter & Grant, 2003). Often, these
teachers will minimize the reality of racism and perceive schools as inherently fair institutions which provide equal educational opportunity to all students (Sleeter, 1995).

Additionally, two items on this subscale were at undecided, “The attention girls receive in school is comparable to the attention boys receive,” and “Males are given more opportunities in math and science than females,” 3.06 and 3.17 respectively. Based on their neutral responses to these items, it appears that the respondents were resistant to notions of gender bias. In spite of the increasingly diverse student populations in public schools, teachers continue to interact and motivate one group of students more often, European-American, male, and middle-class students (Sadker & Sadker, 1995). Sadker (2000) asserts that teacher education programs do little to prepare preservice teachers to see the subtle, unintentional, but damaging gender bias that characterizes classrooms. For preservice teachers who do not have a strong understanding of gender issues, advocates of Single-Group Studies believe this approach to multicultural education provide a beginning point to help all groups gain equality and empower oppressed groups (Sleeter & Grant, 2003). Gender equity can sometimes be an invisible component of teacher education.

The last question on the Professional Beliefs subscale had a statement linking multicultural education and computer literacy together. The mean score of 3.46 for the item, “Multicultural education is less important than reading, writing, arithmetic, and computer literacy” was slightly closer to undecided than agree. Although both multicultural education and computer technology are important components of the teacher education curriculum, few connections between the two areas have been uncovered in the literature with respect to preservice teachers’ understanding (McShay & Leigh, 2005). As Damarin (1998) pointed out, the two fields “are pursued almost totally independent of each other” (p. 11). Although
Roblyer, Dozier-Henry, and Burnette (1996) identified the legitimacy of the coalition between technology and multicultural education, they admitted that simply combining the two does not foster intercultural understanding. Furthermore, Marshall (2001) described the combination of the two fields as incompatible. The findings in this research study illuminate similar viewpoints of these preservice teachers surveyed.

Overall, the undergraduate preservice teachers scored slightly higher on the Total Personal Beliefs Subscale (M=3.94) than on the Total Professional Beliefs Subscale (M=3.78), indicating that the preservice teachers appear to have more accepting personal beliefs about diversity, while their thinking about issues of diversity as they relate to policies and practices within educational settings may somewhat be less accepting. Classroom teachers are directly linked to the quality and equitable delivery of education and student academic achievement. Although teacher educators recognize the achievement gap reality and agree that preservice teachers need to be well prepared, they continue to implement conservative ideologies and programs that are Eurocentric and monocultural (Ladson-Billings, 2000; Nieto, 2000). These multicultural educators have criticized these policies and practices as assimilationist and ones that maintain the status quo. Ladson-Billings (2000) specifically indicts teacher educators for their reluctance to “address their own culpability in reproducing teachers who cannot and will not effectively teach diverse learners” (p. 96). There is a widespread perception by educators that multicultural education is only for the “culturally different” (Nieto & Bode, 2008; Sleeter & Grant, 2003). According to Brown (2004b) teacher education programs “designed to examine self-concept, perception, and motivation will generate a more receptive attitude toward multicultural tenets” (p. 326).
Unfortunately, beginning teachers report feeling inadequately prepared to teach diverse students and in multicultural school settings (Futrell, Gomez, & Bedden, 2003).

One of the fundamental goals shared by a number of researchers (Nieto, 2000; Tatar & Horenczyk, 2003) is for teacher candidates to exit their programs with a deep concept of what multicultural understanding is. These beginning teachers must then be able to transform their teaching practices into comprehensive, transformative approaches to ensure equal and high quality education for all students in a positive, affirming manner (Nieto & Bode, 2008). Clearly, if schools are to better serve the needs and interests of all students, particularly students who have been marginalized by society, then low expectations, negative stereotypes, biases and prejudices, and cultural misconceptions held by teachers must be identified, challenged, and reconstructed (Pohan & Aguilar, 2001).

**Preservice Teachers’ Beliefs at Different Stages**

The purpose of research question three was to determine in what ways preservice teachers in different stages of their teacher preparation program differ regarding their beliefs about multicultural education. The results of the one-way ANOVA indicated that there were significant differences between the three groups. The descriptive data revealed that preservice teachers at the advanced stage scored the highest on both the Personal and Professional Beliefs subscales (M=4.03 and M=3.92) respectively. As students matriculate through their teacher preparation program, the data suggests they tend to have more favorable beliefs about issues of diversity. Because the participants surveyed were at different stages of their teacher preparation program, they have likely formed some of these positive understandings as a result of
experiences within the teacher education program. This would be consistent with the range of experiences students participate in during practica and student teaching (e.g., Boys & Girls Club, seminars that focus on exceptional learners, tutoring at Meskwaki (Native American) settlement, and student teaching abroad). Some researchers (Banks, 2007; Brown, 2000; Gay, 1997; Melnick & Zeichner, 1998) have asserted that providing appropriate information, cross-cultural interactions, and experiences of others for teacher candidates throughout their training can be effective in forming more receptive attitudes toward multicultural awareness. Conversely, despite their experiences in teacher preparation programs, prospective teachers graduate with a worldview that is situated and remains within their own sociocultural background (Bryan & Atwater, 2002).

Although beliefs do not change easily, the experiences accumulated over time in a teacher preparation program can challenge preservice teachers’ old beliefs and create an opportunity for them to develop new beliefs (Cabello & Burstein, 1995). In agreement with the ideas espoused by Gay (2000) in employing culturally responsive teaching, Sleeter (2001) found that preservice teachers’ attitudes and beliefs can change as a result of cultural-immersion experiences over time. However, Sleeter (2001) recognized that convincing teacher educators to include such experiences in teacher preparation programs is “difficult without a stronger research base” (p. 97). In order to meaningfully design more comprehensive programs to meet the demands of teaching in multicultural classrooms, the researcher proposes that our research needs to begin identifying those beliefs and practices that support desirable and equitable multicultural education.

As noted in past research studies (Cabello & Burstein, 1995; Cooper, 2007; Delany-Barmann & Minner, 1997; Pohan, 1996), the results of the preservice teachers’ beliefs in this
study illustrated movement in the expected direction. These findings support the positive results found in the students’ familiarity with issues related to multiculturalism, as reported in Chapter 4 (Table 16). The underlining premise of multicultural sensitivity is to be reflective of preservice teachers’ personal beliefs and professional experiences. Thus, teacher preparation programs must work to refine and develop preservice teachers’ beliefs about issues of multiculturalism and diversity to meet the challenge of equal educational opportunity for all students.

**Qualitative Findings**

**Preservice Teachers’ Multicultural Perspectives**

The purpose of research question four was to assess the major multicultural perspectives of preservice teachers in different stages of their teacher preparation program. The qualitative comments substantiated and reinforced the high frequency responses on the Personal and Professional Beliefs About Diversity Scales, indicating positive perspectives held by the preservice teachers regarding their beliefs about multiculturalism and diversity. However, it appeared that the participants held very limited understandings about multicultural education, consistent with previous research (Garmon, 2004; Montecinos & Rios, 1999; Pohan, 1996; Sleeter, 1996).

The majority of preservice teachers at the beginning, intermediate, and advanced stages of their teacher preparation program tended to conceptualize multicultural education from the human relations approach. A “Human Relations” approach (often called intergroup education) is used to help students of different backgrounds get along better and promotes respect for individual differences. The belief is that this approach fosters positive
interpersonal relationships among members of diverse groups by providing information to increase awareness and appreciation of different cultural groups. Sleeter and Grant (2003) view this approach as one “to create positive feelings among students and reduce stereotyping, thus promoting unity and tolerance in a society composed of different people” (p. 79). However, this is not the approach preferred by the researcher or most multicultural teacher educators.

The Human Relations approach is assimilationist in that it emphasizes the acceptance of differences without critically examining which differences are of most value and which are artifacts of historic or present injustices (Leistyna, 2002; Sleeter & Grant, 2003). In critiquing this perspective, Leistyna (2002) argues that the major problem with the Human Relations approach in the classroom is that teachers neglect to view the relationships of power and privilege that create intergroup tensions, poverty, disenfranchisement, and oppression. Built around the ideas of cultural relativism, this approach neglects to help teachers and students adopt more critical beliefs about multiculturalism, associated with consciousness, social critique, and action.

If prospective teachers’ multicultural perspectives are situated within this approach, then they lack an understanding of the critical and sociopolitical context of multicultural education as a movement for equity and social justice. Even though the preservice teachers’ multicultural perspectives addressed multiple approaches of multicultural education (Sleeter & Grant, 2003) their understandings were somewhat simplistic and superficial. One intermediate student said, “This way we can get better knowledge about multicultural education and not to offend anyone.” A comment from one of the advanced students was, “Multicultural education, to me, means educating all students with respect and appreciation
for everyone’s gender, race, and cultural backgrounds.” Prospective teachers’ approaches to multicultural education and how effectively their personal and professional beliefs can be changed are fundamental to multicultural teacher education (Pohan, 1996).

**Multicultural Technology Based Practices**

In addition to the need for assessing preservice teachers’ beliefs about multicultural education is the need to prepare teachers to use technology effectively. The purpose of research question five was to find out if there was a relationship between preservice teachers’ multicultural perspectives and how technology can be used to support their conception of multicultural education. In an effort to better address the issue of multicultural teacher preparation with the use of technology, the students were asked to respond to the question, “In what ways can technology be used to enhance learning about multicultural education?” during the focus group sessions.

Integration of technology into instruction depends a great deal on key factors, such as the contexts in which teachers interact, their beliefs, and their attitudes toward teaching and learning (Cuban, 2001). While factors such as computer hardware and software are important when integrating technology into instruction, other more personal and deeply ingrained factors, such as educators’ beliefs are also important (Ertmer, 1999). While all students spoke very positively about using technology to facilitate learning about multicultural education, they seemed to have a much more difficult time expressing how technology can be incorporated and reconceptualized within a critical multicultural education framework. The preservice teachers’ responses from the focus group interviews were grouped into four themes: availability and access to technology, information resources that support learning
about diversity, instructional strategies and tools that support multicultural education, and virtual distance education in the global context. As noted, the preservice teachers commented on the ways that technology can extend and support multicultural teaching practices.

Unfortunately, the preservice teachers in this study were limited in their understandings about how to integrate technology in critical multicultural education curriculum (McShay, 2005; Wassell & Crouch, 2008). One student’s comment, “Quite honestly, we are not learning how to use that kind of technology in the classrooms that help us teach diverse students,” was representative of this finding. Consistent with Munoz’s (2002) claims, the preservice teachers may find it difficult to use technology to teach multicultural education in authentic, meaningful ways. Munoz (2002) warns, “Relegating the prodigious responsibilities implicated in teaching multiculturalism to machinery alone is tantamount to an act of negation and of silencing of the themes germane to multicultural education” (p. 23). This can be interpreted to mean that the instruction of effective multicultural education cannot be risked at the expense of inadequate uses of technology integration, namely the opportunity to use technology to facilitate critical dialogue. Furthermore, this may limit the preservice teachers’ ability to gain the expertise necessary to transfer multicultural pedagogy knowledge alongside the integration of technology that should be incorporated into their own future diverse classrooms.

Sleeter and Grant (2003) call for advocates of “Education That Is Multicultural and Social Reconstructionist” to help students analyze their own lives in order to develop constructive responses (p.199). Social reconstructionism challenges teachers and students to see learning as a process of constructing knowledge through the interaction of mind and
experience. It also promotes cultural pluralism, along with the democratic ideals to
reconstruct society for equality.

With the exception of the most outspoken student, identified as a Junior elementary
education major, the other participants lacked the personal experiences to make the required
transformation to accommodate new ways of developing their cross-cultural awareness.

Echoing the perspective of social reconstructionism, one student stated,

…what I am saying is that it is our job to teach them how to use it. With technology
advancing as quickly as it is, that is getting more and more difficult. A critical
number of young people are falling further and further behind. I took it upon myself
to learn. It wasn’t my educators’ initiative. And a lot of them couldn’t do it
themselves. Some it keeps so many at a disadvantage if they want to go to college.
Probably 90% of the students who go to college apply online and if they can’t do that,
it’s sad. Now the Iowa Teaching Standards require us to use technology and that’s
great. We can do more with technology but the poorer schools can’t do that. They
have to worry about things like textbooks, the ceiling falling down, water leaks, you
know, things that are …. The biggest issue that some schools are facing now could be
pink eye; technology is just not a concern. It is almost like we have a third world
country in some school districts compared to others. It is truly an economic problem
with one school district having technology and another not. I feel that it’s wrong. You
have to be extremely ambitious to do what I did and step outside of the box. And go
to college because I am the first child in my entire family that I know of that has went
to college. And hopefully will get a degree. There are just not a lot of options for
teachers…

This student’s feedback exemplified the multicultural concepts and awareness that are
germane to the realities of the pervasive digital inequities that plague our schools. She spoke
to how teachers in economically disadvantaged schools are unable to use technology because
of these larger systemic inequities in educational opportunity and access, not simply because
the teacher does not want to integrate technology. Given this sociopolitical context, she was
able to consider technology from an authentic multicultural education framework to facilitate
the desired goals of critical multiculturalism and social commitment.
Developing multicultural technology pedagogy can provide a framework for educators to use as a resource, a model for developing strategies and learning experiences that meet two important educational goals: (a) challenging students cognitively and academically and (b) preparing students for an increasingly diverse society (Ladson-Billings, 1995). The consistency of findings throughout this study on the importance of multicultural education in helping preservice teachers become more informed about their beliefs about diversity and how technology can be used to support their personal and professional multicultural beliefs can serve as the implication for teacher education’s need to provide these transformative learning experiences.

**Implications for Practice**

Implications can be drawn from this study and applied to teacher education programs and the education profession by providing information about the effectiveness of the existing preparation of technology-competent preservice teachers towards multiculturalism and diversity. The research indicates the complexities of studying multicultural education. The difficulties go beyond assessing preservice teachers’ personal and professional beliefs. During the last two decades of our nation’s history, issues of multiculturalism and diversity have gained exceptional importance in our schools. Current demographic changes are producing an increasingly diverse student population. However, the teaching force is becoming more homogeneous. In particular, more than 90% of teachers in the United States are English-speaking, middle-class, European Americans (Gay & Howard, 2000; Sleeter & Grant, 2003; Zeichner, 2003).
Preservice teachers frequently express concern about their lack of preparation to teach in a multicultural sensitive way (Garmon, 2005; Melnick & Zeichner, 1998; Sleeter, 2001; Villegas & Lucas, 2002). Because prospective teachers are an important factor in teaching culturally diverse schools, Delpit (1995) asserts:

…teachers must not merely take courses that tell them how to treat their students as multicultural clients, in other words, those that tell them how to identify differences in interactional or communicative strategies and remediate appropriately. They must learn about the brilliance the students bring with them…Until they appreciate the wonders of cultures represented before them—and they cannot do that without extensive study most appropriately begun in college-level courses—they cannot appreciate the potential of those who sit before them, nor can they begin to link their students’ histories and worlds to the subject matter they present in the classroom (p. 182).

*Socializing Preservice Teachers for Cultural Diversity*

My research has led me to postulate that there may be several key factors critical to fostering the multicultural awareness and sensitivity of technologically proficient preservice teachers, cultivated through teacher preparation socialization experiences. In their discussion of the socialization role of preservice teacher education, Zeichner & Hoeft (1996) provide a compelling argument for teacher education programs to become a model of cultural inclusiveness that permeates the entire curriculum. The role of teacher education in pursing the goal of preparing culturally competent preservice teachers with the necessary skills to integrate technology in the teaching and learning process is apparent. Specifically, this study
provides valuable information to teacher education programs for addressing these concerns in the following ways: (1) admission requirements, (2) teacher education curriculum, (3) field-based experiences, and (4) intercultural experiences.

**Admission Requirements.** Concerned with the unprecedented shortages of effective and equitable educators for our diverse school-aged learners, Zeichner (2003) details a host of specific reforms toward the goal of raising the status of teaching as a profession. Among these measures he reviews more stringent recruitment and admission requirements designed to allow only committed and capable candidates to become teachers. Teacher candidates, upon entering teacher preparation programs, already hold certain educational values and beliefs because of their unique prior socialization experiences (Major & Brock, 2003; Melnick & Zeichner, 1998; Pohan, 1996). Research indicates that prospective teachers benefit most by beginning their study of multicultural education to inform teaching practice before ever setting foot in the classroom as teachers (Major & Brock, 2003; Cruz-Janzen & Taylor, 2004; Garmon, 2004; Rios & Montecinos, 1999), which should be mastered prior to beginning their professional coursework (Gay, 1997).

**Teacher Education Curriculum.** Multicultural education theory suggests that, to achieve equity, the curriculum needs to be responsive to the sociocultural differences among students. A significant body of research has been accumulated on the structure of how multicultural education courses are offered. Taylor and Sobel (2001) pointed out that “one course is not long enough to provide teachers with the knowledge and skills that they need” (p. 489). This assertion has been confirmed by additional researchers (Brown, 2004b; Delany-Barmann & Minner, 1997; Garmon, 2004; Gay, 1997; Zeicher & Hoeft, 1996). This
suggest is consistent with Pohan (1996) and Richardson’s (1996) conclusion that simply adding a course is insufficient for preservice teachers, especially for those who enter teacher education programs lacking the desired beliefs about diversity. Some multicultural education advocates have argued for an infusion strategy whereby issues of diversity are addressed not only in specialized courses but throughout the entire teacher education curriculum (Banks, 2005; Gay, 1997; Middleton, 2002; Zeichner & Hoeft, 1996).

Complicating this demand, Villegas and Lucas (2002) contend that many teacher education programs have interpreted infusion narrowly, resulting in the superficial treatment of multicultural issues throughout the teacher education curriculum. When mainstream models of multicultural education do address the politics of the curriculum, it is usually in a limited fashion through a superficial pedagogy of inclusion, often a romanticization and celebration of differences (Leistyna, 2002). To foster changes toward multicultural education pedagogy, a multicultural curriculum designed to empower students must be transformative in nature and assist students to develop the knowledge, skills, and values needed to become social critics to make reflective decisions and implement their decisions in effective personal, social, political and economic actions (Sleeter, 1989).

Acknowledging the fact that most teacher education programs frequently limit multicultural education to a single course, Brown (2004a) and Schoorman (2002) found the use of technology beneficial in overcoming the challenges associated with a stand-alone multicultural course. For example, Brown (2004a) indicated that the twenty graduate students enrolled in the only cultural diversity course in their teacher education program, *Education in a Culturally Diverse Society*, were able to demonstrate a shift in their cultural diversity awareness and sensitivity and develop effective multicultural instructional and
communication strategies with the integration of technology. The use of technology allowed the students to engage in more facilitated reflective discourse and provided the additional time for in-depth exploration of effective multicultural classroom strategies. Brown (2004a) also noted the added benefit for herself as the instructor; to have an opportunity to model the use of technology as an instructional tool.

Additionally, the pre-service teachers in Schoorman’s (2002) study corresponded by electronic mail with children from diverse racial, ethnic, and economically disadvantaged backgrounds. Schoorman (2002) argued that technologically mediated communication created such moments as contextualized understanding of concepts, awareness of biases and experiential gaps, increased critical reflection and an orientation toward action for greater educational and social equity. The pre-service teachers developed a greater awareness of bilingualism and “questioned the validity of assessments conducted in the students’ second language” (p. 361); identified their own biases; recognized “that their pen pals were smart” (p. 361); became critically reflective of their own beliefs and responses with their pen pals; and moved many of the preservice teachers to action in making positive changes for the school and community of the students with whom they corresponded. It is the view of this researcher that the simultaneous infusion of instructional technology and multicultural education must be purposeful and dynamic. Thus, this double infusion model creates learning experiences that enable preservice teachers to critically reflect through the use of electronic dialogue and gain proficiency in the use of technology (McShay & Leigh, 2005).

Field-Based Experiences. Providing preservice teachers with field experiences in diverse settings is one other way to prepare prospective teachers for an increasingly diverse
student population. The theories of multicultural teacher educators such as Brown (2004b), Gay (1997), Melnick and Zeichner (1998) indicate that effective school based experiences have the power to raise the cross-cultural cognizance of future teachers by exposing them to issues of multicultural awareness in culturally diverse public schools. Field experiences, long recognized as a means of teacher preparation though hands-on experiences, demonstrate promise in development of more positive attitudes to culturally diverse students (Zeichner & Hoeft, 1996). Having prospective teachers involved in field experiences can be valuable, but these experiences may be inadequate unless preservice teachers receive appropriate guidance and support (Garmon, 2004) to think critically about their experiences in historically underserved populations (Sleeter, 2001).

There is also consensus in the educational technology field that preservice teachers should use technology during practicum and student teaching experiences (CEO Forum on Education and Technology, 1999; Moursand & Bielefeldt, 1999; Office of Technology Assessment, 1995). The aspects of the field experiences in diverse contexts that relate to educational technology use can provide teacher education programs an effective means for preservice teachers to understand the importance of multicultural ideas for effective teaching (Phillion, Malewski, & Richardson, 2006).

*Intercultural Experiences.* Given the critical importance of intercultural experiences, teacher education programs need to offer prospective teachers many opportunities for positive intercultural experiences (Garmon, 2004). Villegas and Lucas (2002) declare that to prepare teachers in a multicultural society, those responsible for preparing them must first articulate a vision of teaching and learning in a diverse society,
thus infusing diversity throughout the teacher education curriculum in coursework and
fieldwork so that, collectively, those experiences cultivate the qualities of culturally
responsive teachers. Unfortunately, teacher education faculty are still disproportionately
White; therefore, Zeichner (2003) argued that colleges of education and universities need to
recruit more faculty of color so that students will also have opportunities for intercultural
experiences with diverse faculty.

Furthermore, the widening gap between the teaching force and the growing culturally
diverse K-12 student population in United States is a reality. It has been suggested that
ethnically diverse teachers can enhance the academic and social experiences of culturally
diverse students (Nieto & Bode, 2008; Sleeter, 2001). Some researchers (Garmon, 2004;
Johnson, 2002; Sleeter, 2001; Zeichner, 2003) contend it is important to recruit more students
of color into teacher education programs so that all preservice teachers can gain experiences
with individuals from different racial/cultural/linguistic backgrounds. However, Rios and
Montecinos (1999) cautioned teacher educators not to assume that teachers of color can
automatically translate their cultural knowledge into culturally relevant pedagogy and
content.

Intercultural learning aims to bring about a change in individual perceptions of the
cultural practices of the ‘Other;’ therefore, teachers must learn to “transcend traditional
ethnocentrism and explore new relationships across cultural boundaries” (Bennett, 1993,
p. 21). As the concern grows to connect more geographically dispersed and racially diverse
students, researchers advocate for the intercultural view of educational technology as a
realistic goal. Davis and Cho (2005) promoted the use of technology to link students in
teacher education with the design and application of technology to support and model
intercultural education. Stimulated by the International Leadership for Educational Technology (ILET) initiative, a transatlantic doctoral community between six universities in four countries, these researchers discussed how challenging this work was, but realized their understandings were transformed by the role of technology in intercultural education.

Evidence of the development of intercultural competence was achieved by providing an intercultural learning environment for future educators and educational leaders, in which they gained awareness and sensitivity to other cultures and flexibility and openness in their academic cultures. These rewards were gained through a digitally networked global society.

Understanding the need to provide students with intercultural experiences, Brown (2004a) encourages teacher educators to engage future teachers in multicultural pedagogy using technology-based practices. As suggested by Zhao and Cziko (2001), observing successful others might increase teachers’ perceived need to use technology-based practices as well as assure them that requiring this is not impossible. Additionally, if preservice teachers are going to actually integrate technology in their future classrooms, they will need access to others who can both challenge and support them as they implement these new ideas in their classrooms. According to Ertmer (1999), technology skills are unlikely to be used unless they fit with teachers’ existing pedagogical beliefs, making it imperative that teacher educators increase their understanding of and ability to address teacher multicultural beliefs, as part of their efforts to increase preservice teachers’ technology skills and uses for intercultural learning experiences.
Concluding Thoughts

In addition to the need for the preservice teachers in this study to be socialized as multicultural educators, was the belief that the students’ limited multicultural understandings appeared to be influenced by their geographic locations. Throughout the interviews, comments like the following were stated, “… because I am from a small, rural town in the Midwest,” and “I know very little about other cultures within the U.S., and it is frightening to go into the workforce knowing this. Many of us, especially in Iowa, have very limited experience with diversity.” Banks (2003) calls this influence positionality. This term is used to describe how race, culture, social class, geography, gender, as well as other personal and cultural factors influence one’s views of self and society. Problematizing geographic positionality as a fixed cultural identity marker, the preservice teachers in this study felt inadequate in their multicultural awareness. Critical educators (Martin & Van Gunten, 2002) have called attention to the idea that the identities of students and teachers are mediated through the process of schooling. In addition it is clear that teachers construct their pedagogy and their voices as a function of position.

Secondly, along with their typical lack of preparation in multicultural teacher education, the preservice teachers’ responses in this current study emphasized their own discomfort in the use of multicultural technology pedagogy. Given that some of the students interviewed admitted having limited opportunities to engage with and learn from multicultural education pedagogy in their teacher preparation program, it was not surprising to me that their responses were grounded in popular, socially-acceptable, and safe approaches to multicultural education, as found in other studies (Montecinos & Rios, 1999; Pohan, 1996). Furthermore, the preservice teachers’ beliefs about multiculturalism were generally
not reflected in ways technology can be used to support their conception of critical multicultural education. Accordingly, the interview participants admitted their lack of preparedness in this area.

The findings of this study tell us that these participants were receiving little or no modeling or knowledge about ways technology can be integrated in multicultural education. Consistent with the claims of McShay and Leigh (2005), the preservice teachers’ exposure to this singular, separate infusion of technology and multicultural pedagogy proves insufficient for understanding how to use technology to address multicultural concepts. Without a full acknowledgement and knowledge of the systemic and institutional structures in the teacher preparation program, preservice teachers and their future students will continue to be disenfranchised by this singular, separate infusion model.

While this study points to the favorable perspectives held by these preservice teachers in a technology-enhanced teacher preparation program regarding their beliefs about multiculturalism and diversity, it raises some serious questions regarding the extent to which the university teacher education program (UTEP) endorses these principles with respect to the education of a culturally diverse population. A multicultural teacher education program, one that includes transformative learning experiences regarding issues of diversity and multiculturalism, may hold promise for socializing culturally competent preservice teachers who can successfully implement technology-based practices into the K-12 classroom.
Recommendations for Future Research

In support of the review of research and the findings of this study, the following recommendations are suggested for further research for teacher educators who plan to integrate technology in multicultural teaching.

While the analysis and outcomes from the study found that the preservice teachers in this study have favorable beliefs about multiculturalism and diversity, the initial test of the Preservice Teachers’ Assessment of Multiculturalism and Diversity survey at best establishes a foundation for future analysis and testing. This study should be extended with the participants in this study who hold regular classroom teaching positions. These continued interventions could most likely develop into a longitudinal study. I propose that we reconnect with these study participants periodically and learn about their successes and challenges in integrating technology-based practices at a public school. This would allow for teacher educators to assess whether there is uniformity or disconnect between the applications of multicultural education pedagogy and instructional technology. This continued research should be conducted to further explore and expand the list and description of these topics that establish a relationship between preservice teachers’ multicultural perspectives and how technology can be used to support their conception of multicultural education.

The results from the current investigation might be specific and unique to the sample participants of this study, and limits generalizability of findings to technology-competent preservice teachers at other teacher preparation programs. Consequently, this study should be replicated with additional samples from a number of teacher education programs to increase understanding and applicability to the broader base of teacher education. This would challenge my findings and help us to better understand how preservice teachers assess their
beliefs about issues of diversity across the country. A replication of this study in various sites would provide a comprehensive plan for implementing technology in multicultural teacher education programs.

I also encourage researchers to consider the context of this study as a starting point to reframe false and ill-structured issues from the digital equity debate. Teacher education researchers are recommended to seriously consider the recommendations from the recent reviews of research (McShay & Leigh, 2005; Pittman, 2007; Wassell & Crouch, 2008) to develop a more focused approach to scholarly research about instructional technology and critical multicultural education theoretical frameworks. These reviews explain the need to employ technology in ways to position critical multicultural education strategies into programs and/or courses in teacher education that are more methodologically sound. Ultimately, the double infusion model purports the simultaneous integration of multicultural and technology concepts in an effort to prepare preservice teachers who are culturally responsive practitioners through the use of technology (McShay & Leigh, 2005). An examination of such an explicit approach to multicultural technology pedagogy might provide useful data for instructional technology faculty to evaluate the quality of the multicultural education curriculum and to learn whether or not the preservice teachers’ multicultural views regarding their use of computer technology in teaching and learning is advancing, stagnating or becoming non-existent.
APPENDIX A

SURVEY QUESTIONNAIRE

Preservice Teachers’ Assessment of Multiculturalism and Diversity

On your answer sheet, please mark your responses to the following items with a No. 2 pencil. Do not complete the name, gender, grade, or birthdate sections. The precoded identification number is for matching and follow-up purposes only.

<table>
<thead>
<tr>
<th>I</th>
<th>Personal Beliefs About Diversity Scale</th>
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<tbody>
<tr>
<td></td>
<td>This scale measures your beliefs about diversity. Indicate the degree to which you agree or disagree with each item below by marking the number corresponding to your selection. Please answer every item, and use the following scale to select your answers.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>1 Strongly Disagree</th>
<th>2 Disagree</th>
<th>3 Undecided</th>
<th>4 Agree</th>
<th>5 Strongly Agree</th>
</tr>
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</table>

1. There is nothing wrong with people from different racial backgrounds having/raising children.
2. America’s immigrant and refugee policies have led to the deterioration of America.
3. Making all public facilities accessible to the disabled is simply too costly.
4. Accepting many different ways of life in America will strengthen us as a nation.
5. It is not a good idea for same-sex couples to raise children.
6. The reason people live in poverty is that they lack motivation to get themselves out of poverty.
7. People should develop meaningful friendships with others from different racial/ethnic groups.
8. People with physical limitations are less effective as leaders than people without physical limitations.
9. In general, White people place a higher value on education than do people of color.
10. Many women in our society continue to live in poverty because males still dominate most of the major social systems in America.
11. Since men are frequently the heads of households, they deserve higher wages than females.
12. It is a good idea for people to develop meaningful friendships with others having a different sexual orientation.

13. Society should not become more accepting of gay/lesbian lifestyles.

14. It is more important for immigrants to learn English than to maintain their first language.

15. In general, men make better leaders than women.

---

### II Professional Beliefs About Diversity Scale

This scale measures your beliefs about issues of diversity as they relate to policies and practices within educational settings. Indicate the degree to which you agree or disagree with each item below by marking the number corresponding to your selection. Please answer every item, and use the following scale to select your answers.

1. Strongly Disagree
2. Disagree
3. Undecided
4. Agree
5. Strongly Agree

---

16. Teachers should not be expected to adjust their preferred mode of instruction to accommodate the needs of all students.

17. The traditional classroom has been set up to support the middle-class lifestyle.

18. Gays and lesbians should not be allowed to teach in public schools.

19. Students and teachers would benefit from having a basic understanding of different (diverse) religions.

20. Money spent to educate the severely disabled would be better spent on programs for gifted students.

21. All students should be encouraged to become fluent in a second language.

22. Only schools serving students of color need a racially, ethnically, and culturally diverse staff and faculty.

23. The attention girls receive in school is comparable to the attention boys receive.

24. Tests, particularly standardized tests, have frequently been used as a basis for segregating students.
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<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Undecided</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

**YOU ARE AT 25 ON YOUR ANSWER SHEET**

25. People of color are adequately represented in most textbooks today.

26. Students with physical limitations should be placed in the regular classroom whenever possible.

27. Males are given more opportunities in math and science than females.

28. Generally, teachers should group students by ability levels.

29. Students living in racially isolated neighborhoods can benefit socially from participating in racially integrated classrooms.

30. Historically, education has been monocultural, reflecting only one reality and has been biased toward the dominant (European) group.

31. Whenever possible, second language learners should receive instruction in their first language until they are proficient enough to learn via English instruction.

32. Teachers often expect less from students from the lower socioeconomic class.

33. Multicultural education is most beneficial for students of color.

34. More women are needed in administrative positions in schools.

35. Large numbers of students of color are improperly placed in special education classes by school personnel.

36. In order to be effective with all students, teachers should have experience working with students from diverse racial and ethnic backgrounds.

37. Students from lower socioeconomic backgrounds typically have fewer educational opportunities than their middle-class peers.

38. Students should not be allowed to speak a language other than English while in school.

39. It is important to consider religious diversity in setting public school policy.

40. Multicultural education is less important than reading, writing, arithmetic, and computer literacy.

**Note:** The Personal and Professional Beliefs About Diversity Scales were adopted from Pohan, C.A., and Aguilar, T.E. (1998).
### Open-ended Questions: Illustrates What Multicultural Teacher Education Means to You

I am interested in your feedback about the following questions as they relate to your experiences within the teacher education program.

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
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<tbody>
<tr>
<td>41.</td>
<td>What does multicultural education mean to you?</td>
</tr>
<tr>
<td>42.</td>
<td>In your opinion, why should preservice teachers learn about multicultural education during their training in teacher preparation programs?</td>
</tr>
<tr>
<td>43.</td>
<td>What are your views about preparing preservice teachers for integrating technology into teaching?</td>
</tr>
<tr>
<td>44.</td>
<td>In what ways can technology be used to facilitate learning about multicultural education?</td>
</tr>
</tbody>
</table>
### Demographic Data

I would like to know some background information about you for statistical purposes. You will not be personally identified in any use of these data. Data will be pooled to learn more about the preservice teacher education students at Iowa State University.

---

**YOU ARE AT 45 ON YOUR ANSWER SHEET**

45. What is your undergraduate major?

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<tbody>
<tr>
<td>1</td>
<td>Early Childhood Education</td>
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<tr>
<td>2</td>
<td>Elementary Education</td>
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<tr>
<td>3</td>
<td>Secondary subject area (e.g., English, science)</td>
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<tr>
<td>4</td>
<td>K-12 (Art, Music, PE)</td>
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46. Are you seeking a minor in Educational Computing?

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<tr>
<td>1</td>
<td>Yes</td>
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<td>2</td>
<td>No</td>
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47. How familiar are you with issues related to multiculturalism?

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<tbody>
<tr>
<td>1</td>
<td>Don’t know about issues related to multiculturalism</td>
</tr>
<tr>
<td>2</td>
<td>Know a little about issues related to multiculturalism</td>
</tr>
<tr>
<td>3</td>
<td>Somewhat familiar with issues related to multiculturalism</td>
</tr>
<tr>
<td>4</td>
<td>Familiar with issues related to multiculturalism</td>
</tr>
<tr>
<td>5</td>
<td>Completely familiar with issues related to multiculturalism</td>
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48. What is your race?

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<tbody>
<tr>
<td>1</td>
<td>African-American or Black</td>
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<tr>
<td>2</td>
<td>American Indian</td>
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<tr>
<td>3</td>
<td>Asian or Pacific Islander</td>
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<tr>
<td>4</td>
<td>Caucasian/White</td>
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<tr>
<td>5</td>
<td>Latino/a</td>
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<tr>
<td>6</td>
<td>Other, please specify</td>
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49. What is your gender?

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<tbody>
<tr>
<td>1</td>
<td>Male</td>
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<tr>
<td>2</td>
<td>Female</td>
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50. With regards to admission, at what stage of your teacher preparation program are you currently?

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<tbody>
<tr>
<td>1</td>
<td>Beginning: planning to apply for admission</td>
</tr>
<tr>
<td>2</td>
<td>Intermediate: Meet the requirements for admission and/or have applied</td>
</tr>
<tr>
<td>3</td>
<td>Advanced: Admitted to the University Teacher Education Program</td>
</tr>
<tr>
<td>4</td>
<td>Do not plan to apply to the University Teacher Education Program</td>
</tr>
<tr>
<td>5</td>
<td>Uncertain</td>
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</tbody>
</table>

*Thank you for taking the time to complete the survey. Your responses are very important to this research study.*
APPENDIX B

LETTER GRANTING WRITTEN PERMISSION TO USE THE DIVERSITY SCALES FOR MY RESEARCH

Texas A&M University-Corpus Christi
College of Education
6300 Ocean Drive, Unit 5818, Corpus Christi, Texas 78412-5818

November 202, 2005

Dear Audrey Browser-Brown,

Thank you for your interest in the Personal and Professional Beliefs about Diversity Scales. We hope that you find the enclosed materials useful in determining the reliability and validity of these instruments, as well as how to proceed with using them in your research. We recommend that you use the latest (1998) versions. This letter grants you permission to reproduce the instruments for your own personal research. If other individuals are interested in using these scales, please direct them to me.

If you have any questions once you receive these materials and begin with your research, please do not hesitate to call or email me. This letter also serves as your receipt for the $35.00 fee for purchasing the User’s manual.

Good luck in your research.

[Redacted]
Cathy A. Pohan, Ph.D.
College of Education
Texas A & M-Corpus Christi
(361) 825-2860
cathy.pohan@mail.tamucc.edu

** Receipt of $35.00 for the User’s manual
Dear Instructor,

Your help is needed to obtain information about students’ perspectives about the effectiveness of the teacher education program at Iowa State University. I am conducting a study that assesses preservice teachers’ beliefs about multiculturalism, diversity, and how technology can be used to support these beliefs. This data is being collected from preservice teachers enrolled in a required professional education course. Your assistance is an important part of my dissertation for the PhD degree.

There are no foreseeable risks associated with this research study and student participation is voluntary. I am asking for permission to visit your class within the next few weeks (January and February) and administer the survey instrument to your students. I estimate that it will take approximately 20 minutes to complete the survey, using the answer sheet. Be assured that all responses will be kept confidential and any reporting will be in terms of group summarizations. The answer sheets will have an identification number on them for the purpose of data analysis.

I appreciate your willingness to play this key role in improving our teacher education program. If you have any questions about this study, please call me at (515) 294-1381 or send an email to abowser@mail.adp.iastate.edu. You may also contact my co-major professor, Dr. James McShay at (515) 294-9453 or jmcs@iastate.edu.

Please reply to this email with a date and time that I can come to your class. I would also like to know the number of students enrolled to ensure that I bring the correct number of survey copies.

Thank you so much for assisting me in the data collection of my research study.

Audrey Bowser-Brown
Office of Teacher Education
Research Assistant
E116 Lagomarcino Hall
Iowa State University
Phone: 515 294-1381
APPENDIX D

LETTER TO PRESERVICE TEACHERS ENROLLED IN A PROFESSIONAL EDUCATION COURSE

January 2006

Dear ISU Preservice Teacher:

As part of our on-going efforts to improve the teacher education program at Iowa State University, we are conducting a study that assesses preservice teachers’ beliefs about multiculturalism, diversity, and how technology can be used to support these beliefs. We are collecting data from preservice teachers enrolled in a required professional education course. Therefore, you have been selected as one of the students in preservice teacher education to complete this survey. Please note your participation is voluntary.

We are seeking information about your experiences to gain information about the effectiveness of the teacher education program. Your feedback will help us improve our current teacher education program at Iowa State University. It is very important that your answers reflect your honest opinions. Your participation in this study is greatly needed and appreciated.

Please take about 20 minutes to complete the survey, using the answer sheet. Be assured that all your responses will be kept confidential and any reporting will be in terms of group summarizations. To track your course, an identification number has already been coded on your answer sheet. The completed survey will not be associated in any way to your grade in this class.

We very much appreciate your willingness to play this key role in improving your teacher education program. If you have any questions about this study, please call Audrey Bowser-Brown at (515) 572-4541 or send an email to abowser@iastate.edu. You may also contact my co-major professor, Dr. James McShay at (515) 294-9453 or jmcshey@iastate.edu.

Thank you so much for your participation in this important research study.

Sincerely,

Audrey Bowser-Brown  Niki Davis, Ph.D.  James McShay, Ph.D.
Ph.D. Candidate  Professor  Assistant Professor
APPENDIX E
EMAIL REQUESTS TO FOCUS GROUP PARTICIPANTS

Dear Preservice Teacher:

Thank you for volunteering to participate in a small focus group interview session when you completed the *Preservice Teachers’ Assessment of Multiculturalism and Diversity* survey. Your help is needed to obtain information about your beliefs about multiculturalism, diversity, and how technology can be used to support these beliefs. Your honest opinion counts and your assistance is an important part of my dissertation for the PhD degree.

There are no foreseeable risks associated with this research study and your participation is voluntary. The focus group will be facilitated by me, the researcher and audio taped. I will be hosting two interview sessions: **Wednesday, April 12, 11:30 – 12:45pm** and **Thursday, April 13, 3:30 – 4:45pm**. The sessions will be held in **N045 Lagomarcino Hall**. Be assured that all responses will be kept confidential and any reporting will be in terms of group summarizations.

**Please, choose a session that best fits your schedule and email me a response reply.**

I appreciate your willingness to play this key role in improving our teacher education program. If you have any questions about this study, please call me at (515) 294-1381 or send an email to abowser@iastate.edu. You may also contact my co-major professor, Dr. James McShay at (515) 294-9453 or jmcshay@iastate.edu.

Light refreshments will be served. Thank you so much for assisting me in the data collection of my research study.

*Audrey Bowser-Brown*
Office of Teacher Education
Research Assistant
E116 Lagomarcino Hall
Iowa State University
Phone: 515 294-1381
APPENDIX F

SEMI-STRUCTURED INTERVIEW QUESTIONS

Focus Group Interview Questions

1. What role does multicultural education play in teacher preparation?

2. What aspects or experiences from your teacher education program have most prepared you to deal with culturally diverse classrooms?

3. In what ways can technology be used to enhance learning in the classroom?

4. In what ways can technology be used to enhance learning about multicultural education?

5. Why do you think it is important to assure that all students have equitable access to technology?

6. In your opinion, how can technology be used in the classroom to address issues of multiculturalism?
REFERENCES


Johnson, L. (2002). “*My eyes have been opened*”: *White teachers and racial awareness*. Corwin Press, Inc.


