2000

Sensitivity to cultural diversity of preservice teachers who minor in educational computing

Carline Bradford Phillips

Iowa State University

Follow this and additional works at: https://lib.dr.iastate.edu/rtd

Part of the Bilingual, Multilingual, and Multicultural Education Commons, Communication Technology and New Media Commons, Curriculum and Instruction Commons, Elementary Education and Teaching Commons, and the Instructional Media Design Commons

Recommended Citation


Retrospective Theses and Dissertations. 12306.
https://lib.dr.iastate.edu/rtd/12306

This Dissertation is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

Bell & Howell Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600

UMI
Sensitivity to cultural diversity of preservice teachers who minor in educational computing

by

Carline Bradford Phillips

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

Major: Education (Curriculum and Instructional Technology)

Major Professor: Ann D. Thompson

Iowa State University
Ames, Iowa
2000

Copyright © Carline Bradford Phillips, 2000. All rights reserved.
This is to certify that the Doctoral dissertation of

Carline Bradford Phillips

has met the dissertation requirements of Iowa State University

Signature was redacted for privacy.

Major Professor

Signature was redacted for privacy.

For the Major Program

Signature was redacted for privacy.

For the Graduate College
# TABLE OF CONTENTS

**ABSTRACT**

**CHAPTER 1. INTRODUCTION**
- Background and Rationale
- Statement of the Problem
- Purpose of the Study
- Research Questions
- Limitations
- Definition of Terms
- Summary

**CHAPTER 2. REVIEW OF THE LITERATURE**
- The Need for Multicultural Education
- Technology, Equity, and Access Issues
- Studies of Preservice Teachers and Their Sensitivity Toward Cultural Diversity
- Summary

**CHAPTER 3. METHODOLOGY**
- Subjects
- Educational Computing Minor Students
- Non-educational Computing Minor Students
- Project Opportunity
- Subject Selection Procedure
- Instrumentation
- Data Collection Procedures
- Matching Pairs
- Research Design
- Survey Data Analyses
- Summary

**CHAPTER 4. RESULTS AND FINDINGS**
- Description of the Respondents
- Teaching Experience Information
- Preservice Teachers' Interactions with Minorities
- Comparison of Courses Taken
- Cultural Sensitivity of Educational Computing Minor Students
- Summary
CHAPTER 5. SUMMARY, DISCUSSION, AND RECOMMENDATIONS
Summary of the Background and Methodology of the Study 78
Summary and Discussion of Results 80
Recommendations 90
Conclusions 93

APPENDIX A. COURSE REQUIREMENTS FOR EDUCATIONAL COMPUTING MINOR 95

APPENDIX B. LETTER OF PERMISSION TO USE INSTRUMENT 97

APPENDIX C. CULTURAL DIVERSITY AWARENESS INVENTORY 100

APPENDIX D. LIST OF OPEN-ENDED QUESTIONS 108

APPENDIX E. COVER LETTER AND PILOT STUDY QUESTIONNAIRES 110

APPENDIX F. DOCUMENTATION OF HUMAN SUBJECTS APPROVAL 134

APPENDIX G. PACKET MAILED INCLUDING QUESTIONNAIRE 138

APPENDIX H. REMINDER LETTER 146

APPENDIX I. COVER LETTER TO SECOND GROUP OF STUDENTS 148

APPENDIX J. THE T-TESTS FOR THE CULTURAL DIVERSITY AWARENESS INVENTORY 150

REFERENCES CITED 157

ACKNOWLEDGEMENTS 163
ABSTRACT

Demographic trends indicate that the nation's school population is increasing in its percentage of children of color, while the teacher education students are largely European American women from rural areas. Additionally, these teacher education students have little experience with, or knowledge of diverse cultures. It is against this backdrop that a 1999 federal study revealed that "teaching students from diverse cultural backgrounds" and "using technology in the classroom" were areas for which neither new teachers nor veterans felt well-prepared (U.S. Department of Education, 1999). These major revelations highlight the need for teacher education programs to implement program changes that will prepare preservice teachers who are knowledgeable, sensitive to cultural diversity and able to use technology effectively in the classroom.

The purpose of this study was: a) to investigate the cultural sensitivity of preservice teachers who were minoring in educational computing, b) to compare the cultural sensitivity of students who minor in educational computing with a matched group of students who were not minoring in educational computing, and c) to find factors that contribute to high levels of cultural sensitivity as measured by the Cultural Diversity Awareness Inventory (CDAI).

The subjects for the study were drawn from two groups of preservice teachers enrolled in a teacher preparation program at a predominantly white, Midwestern university. One group consisted of students who were minoring in educational computing and the second group consisted of students who were not minoring in educational computing (non-minor students).
Results indicated that both groups had cultural sensitivity levels in the positive range, but neither group had an average response at the agree level. Further, the following factors were found to contribute to higher levels of cultural sensitivity as measured by the CDAI: a) living in an urban setting, b) the required curriculum courses for the educational computing minor, c) level of interaction with ethnic minorities, and d) participation in a Multicultural Nonsexist Education class. The findings in this study support the need for preservice teacher programs to implement changes that help prepare teachers who will be culturally sensitive and able to use technology effectively to promote academic success and equity for all students.
CHAPTER 1. INTRODUCTION

The National Center for Education Statistics (1996) reported that 36% of the students enrolled in public elementary and secondary schools were considered children of color. Students of color are the majority in the 25 largest school districts in the United States. It is projected that by the year 2010, these students will be the largest group in over 50 major states (Olmedo, 1997). While the nation's school children are becoming increasingly children of color, the prospective teachers continue to be White, from middle and lower middle class and from rural areas (Olmedo, 1997). This graphic shift creates a need to educate and employ teachers who will be effective in diverse settings. Such settings necessitate effective...teachers who are able to use cultural sensitivity and instructional strategies that ensure that all students will achieve excellence as well as equity. (Larke, 1990. p. 133)

These facts have contributed to the recognition of the importance of multicultural education in teacher education. They have, also, contributed to the new impetus multicultural education has received in the last number of years. Practitioners, accrediting agencies and researchers from a variety of academic disciplines have begun to view a multicultural approach to education as essential for teachers to be effective in a culturally diverse society (Barry & Lechner, 1995). Therefore, the need arises for teachers to become knowledgeable of the diverse cultural backgrounds of learners and the implications for teaching students from differing cultures.

Further intensifying this need were the results from a federal survey, which were released in January 1999. The results showed that new teachers and veterans as well, do not
feel well prepared for what Secretary of Education Richard Riley called "the four fastest changing aspects of the nation's schools."

Those four aspects are as follows: (a) demands for raising standards for students, (b) teaching students from diverse cultural backgrounds, (c) helping students with special needs, and (d) using technology in the classroom (U.S. Department of Education, 1999). It is significant that "teaching students from diverse cultural backgrounds" and "using technology in the classroom" are areas for which neither new teachers nor veterans feel well prepared. This further supports the need for teacher preparation institutions to look carefully at their teacher preparation program and requirements to include appropriate resources, curriculum and experiences that will lead to improving the cultural awareness of new and experienced teachers.

In addition to the need for multicultural education is the need to prepare teachers to use technology effectively. The effort to address the issue of better teacher preparation and the use of technology in the classroom has contributed to a rapid infusion of computers and related technology into the learning environment of children. This infusion has brought with it the challenging and too often neglected issues of technology—including, but not limited to, equity, access and quality of access to exemplary educational resources, including effective teachers. These issues, which are key in promoting democratic ideals, can and should be addressed on many fronts and in meaningful contexts throughout the preparation of preservice teachers. Multicultural education can be one of several approaches wherein preservice teacher education can (a) develop learning environments that raise students' awareness of moral and ethical issues and (b) raise the awareness of biases in educational technology (Willis, 1998). Multicultural education can also be a context wherein a teacher
can learn to understand the ways diverse groups of students process and link information in learning situations. "Such factors as gender and ethnic background have to be considered since they may significantly affect the ways students learn" (Harrell, 1998, p. 46).

Clearly, we are in error to assume that everyone, regardless of characteristics such as ethnic background, socioeconomic class and gender, can and should learn the same materials in exactly the same way (Harrell, 1996). The task for teacher preparation institutions is to provide opportunities for preservice teachers to become more sensitive to cultural diversity and to use technology to the fullest to accommodate diverse student populations.

Educators working with educational technologies have the potential to either ameliorate or exacerbate the issues of equity and access between the advantaged and disadvantaged depending on how they are used (President’s Committee of Advisors on Science and Technology [PCAST], 1997). The ways in which teachers manage classroom computers and how they are used, determines to a great extent children’s learning and computers access (Chisholm, 1995). With so much being dependent on educators, their knowledge and ability, the importance of the preparation of our future teachers remains key to enhancing their levels of sensitivity towards diverse cultures, as well as, using technology effectively with all students.

Faced with this compelling data from numerous sources regarding the current trends in student populations and other relevant information, colleges of education and other teacher preparation institutions must re-evaluate their teacher preparation programs in order to meet the demands and challenges of the 21st century student population. To assist in the ongoing effort of universities to evaluate and improve teacher preparation programs, this research
study will assess the cultural sensitivity of this group of preservice teachers with extensive preparation in educational computing.

**Background and Rationale**

In preservice teacher education, one of the primary debates centers around the need for teachers to develop sensitivity, skills, attitudes, and knowledge to work effectively with diverse student populations (Banks, 1991; Cochran-Smith, 1995; Gomez, 1996; Zeichner, 1996). Studies have indicated that educators who are not sensitive to the needs of minority students often are unaware of the cultural conflicts that cause barriers in their learning processes (Fuller, 1992; Larke, 1990). Further, incomplete cultural information can complicate the learning of even fundamental skills (Slapin, 1992; Zaslasky, 1996). Other researchers found that a high correlation exists among educators' sensitivity toward students of other cultures, knowledge, and cultural literacy and the students' successful academic performance (Banks, 1987; Gollnick & Chinn, 1986; Sleeter, 1992). Effective teachers in diverse settings were found to exhibit high levels of cultural sensitivity while using multicultural curriculum and instructional designs that they incorporated (Larke, 1991; see also Campbell & Farrell, 1985; Cruikshank, 1986). It becomes an issue of vital importance, then, that this nation's universities and colleges of education provide preservice teachers with the necessary experiences, knowledge, and skills to develop multicultural awareness and sensitivity toward diverse populations.

Another issue of importance for universities and colleges of education is that of preparing its preservice teacher students to use technology in the teaching and learning process in competent, yet sensitive ways. Students who are highly steeped in technological
experiences are aggressively sought after to fill positions as technology coordinators for schools and school districts. They will become future leaders and decision-makers in the areas of curriculum and teaching strategies related to technology and teaching. Participation in districtwide planning committees to set the course for where the district will go, how it will get there, and how it will measure its progress will be but one of the duties these students will likely encounter as leaders in their field. Leaders such as these are described as "educator first and technologist second" (Dyrli & Kinnaman, 1994, p. 50). Those who choose to become classroom teachers are more apt to be the ones who make curriculum adaptations to technology based materials and instruction. Utilizing relevant learning theory such as constructivism, and having been immersed in a technology-rich program, the students being assessed in this study will acquire skills that will assist them in becoming competent and capable teachers. This increased knowledge will enhance their ability to make informed decisions regarding classroom practices relating to technology, how it is used, and how it relates to student learning and curriculum. Therefore, this study may provide useful information regarding the cultural diversity sensitivity level of this unique group of preservice teachers.

In addition to the aforementioned rationale for this study, the College of Education at Iowa State University, with the help of a federal grant, is beginning a program involving the simultaneous infusion of technology use by college faculty of preservice teachers, preservice teachers and classroom teachers. One of the many participants in the program is a cohort of preservice teachers who are obtaining minors in educational computing. This cohort of preservice teachers will be involved in a contextual program whereby they will be placed in classrooms with culturally diverse student populations throughout their teacher preparation
and course of study. Uniquely, these experiences will take place before the cohort's student teaching experience. As part of the assessment of this program, the data gathered in this research will be useful as baseline information for evaluating the changes in the sensitivity of this cohort of students. Additionally, the results of this study will allow the researcher to make recommendations regarding the issues of equity and access relating to technology. These recommendations are needed to assist in completing one of the goals of the program, which is to include multicultural guidelines and insure that issues of diversity that relate to equity and access are kept in the forefront throughout this technology infusion and integration process.

In response to these key issues, this study will investigate the cultural sensitivity level of students who minor in educational computing.

**Statement of the Problem**

There are numerous studies in the literature wherein researchers have examined the issue of preservice teachers and their level of sensitivity toward cultural diversity (Barry & Lechner, 1995; Boutte & DeFlorimonte, 1998; Davis, 1993; DeVoe, McMillan, Zimmerman, & McGrew, 1996; Ladson-Billings, 1994; Larke, 1990; Schultz, Neyhart, & Reck, 1996; Stanley, 1996). Some studies have even focused on specific groups of preservice teachers such as physical education teachers (Stanley, 1996; DeVoe et al. 1996).

This researcher, however, found no literature assessing preservice teachers who minor in educational computing and their level of sensitivity toward cultural diversity. Specifically, no research was found that delved into the question of whether students who are more technologically oriented have more or less sensitivity toward cultural diversity. Therefore,
the results of this study can improve or fill a void in the literature and enhance the programs in colleges and universities, involving this group of students. At present, the investigators of this kind of current research have no baseline information concerning this targeted population and their sensitivity toward cultural diversity.

The results of this research will provide baseline data for the investigators to use in the evaluation and analysis portion of their project. Additionally, the outcomes will enable the researcher to make recommendations to those who are currently involved in this undertaking involving educational computing minor students as part of the target population. In doing so, this study will also add to the general body of knowledge on preservice teachers and their level of sensitivity toward cultural diversity.

An additional benefit for educators will be the increased understanding of factors that contribute to sensitivity towards cultural diversity by preservice teachers. Obtaining evidence that supports present research regarding such factors or obtaining evidence that identifies these factors will assist those who develop curriculum in teacher preparation programs, providing experiences that take into account the inclusion of said factors or experiences. Additionally, a review of the literature revealed varied and conflicting findings. Further, no research was found that compares matched groups such as the two groups targeted in this study. In this study, one group will consist of preservice teachers in a technology-rich program that leads to a minor in educational computing and the other group is one without benefit of the curriculum of the educational computing minor. The problems detailed herein provide the impetus for the present research study.
Purpose of the Study

The question that drives this study is “What is the level of sensitivity of preservice teachers who minor in educational computing towards cultural diversity?” Thus, the purpose of this study is to obtain information about students who minor in educational computing and students who are not minoring in educational computing. Based on the literature and the need to address preservice teachers, whose subject emphasis is technology, this study sought to address the following research questions.

Research Questions

Question One

Are elementary preservice teachers who minor in educational computing culturally sensitive in the following areas as measured by the Cultural Diversity Awareness Inventory?
(a) cultural awareness
(b) the culturally diverse family
(c) cross-cultural communication
(d) assessment
(e) creating a multicultural environment using multicultural methods and materials

Question Two

How does the level of sensitivity towards cultural diversity compare between elementary preservice teachers who minor in educational computing and a matched group of students who are not minoring in educational?
Question Three

What factors contribute to a high level of sensitivity towards cultural diversity as measured by the Cultural Diversity Awareness Inventory?

Limitations

This study was conducted with acknowledgment of the following limitations:

1. The data are from one institution.

2. The sample population of educational computing minors included only elementary preservice teachers. Secondary education majors with educational computing minors were not included in the sample population group.

3. The initial survey was mailed to the first group of students, one week before the fall vacation break. The second group of matched non educational computing minor students received their surveys one week prior to finals and semester break.

Definition of Terms

A. Culture as used in the inventory encompasses five areas identified by Aragon (1973) which are values and beliefs, communication, social relationships of mother/child, woman/man, uncle/niece, and so on, basic diet and food preparation and dress or common costume.

B. Ethnic as used in the inventory pertains to the racial/ethnic identification of people.
Summary

This chapter introduced the subject of cultural sensitivity. Additionally, it outlined the relationship between cultural sensitivity, multicultural education and technology. The background and rationale for this study were also set forth. A statement of the problem, the purpose of the study and the research questions were delineated. The chapter ended by listing the limitations of this study.

The next chapter will review the literature on the cultural sensitivity of preservice teachers and related topics.
CHAPTER 2. REVIEW OF THE LITERATURE

This chapter will focus on three topics that provide background for this study on educational computing minor preservice teachers and their sensitivity towards cultural diversity. These topics are (a) the need for multicultural education, (b) equity and technology issues, and (c) studies of preservice teachers and their sensitivity towards cultural diversity.

The Need for Multicultural Education

Demographic trends in the public schools are changing for students and teachers. Over a decade has passed since this trend was noted. National and regional reports indicated then that the racial/ethnic makeup of teachers was European American while the minority student population was increasing (Hodgkinson, 1985, 1986; National Educational Association, 1987). In 1995, 67% of U.S. children aged 5-17 were White, 15% Black, 13% Hispanics, 5% Asian/Pacific Islander, American Indian, and Alaskan Native (Education Digest, February 1998). School children today are more diverse in language and culture than in the recent past as immigration to the U.S. from Spanish speaking countries as well as Europe, Asia, and the Middle East continues at an unprecedented rate (Conaway, Sharp, & Schafer, 1997). Teacher education students are largely European American women from rural areas, small town, or suburban communities with little experience or knowledge of diverse cultures and prefer to teach children similar to them (Liston & Zeichner, 1990).
Statistics recently released in the state of Iowa highlight the declining number of minorities entering the teaching profession. The Iowa Department of Education (1999) stated the following:

The lack of minority students at Iowa's universities is especially acute in the teacher-training programs . . . Only 4.3% of students in the teacher-training program in 1997-1998 at UNI,-the largest such program in the state-were minorities. And 1.8% were African-American. The numbers of minorities in teacher training are lower at ISU and the U of I, and figures at both universities declined from the year before. Minority students made up only a small percentage of all students in teacher-training programs at the state's three universities in 1997-1998, and that proportion declined from the year before. (p. 5)

Compounding the situation is the fact that university instructors are also homogeneous; 93% are European Americans and 65% are European American males who also hold 85% of the full professorships in teacher education (Liston & Zeichner, 1990). Cognizant of these projections and trends, Locke (1990) declared that the demographic imbalance between non-minority teachers and minority students indicates that teachers will be working with students whose cultural backgrounds are different from their own.

Another dimension of this issue is seen at the administrative level of educational institutions. The majority of those in decision making positions in the public schools and colleges are those who believe the purpose of education is to assimilate the various cultures into the majority Anglo-Saxon Protestant culture. This belief presents problems when students are forced to give up their own culture and values for those of the majority culture. Multicultural education and its tenets need to be at the center of the decisions made by those leading the public schools and colleges (Banks, 1994). Multicultural education can promote educational 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, 1994). “There is a need now, more than ever before, for teachers to become culturally sensitive to the needs of all students, especially to students from culturally diverse backgrounds (p. 23).”

With numerous warnings regarding the demographic disparities between non-minority teachers and minority students and other inherent problems of the educational system, McCall (1995) still contends that education can have a powerful effect and that it (can) or has the power to refute stereotypes, disrupt discrimination, and create a more equal society. “The school system is the most logical existing structure in which students can encounter multicultural ideas” (p. 347). Further emphasizing the effect of education, Willis (1998) pointed to the work of those in higher education. He insisted that it was because of the work of educational researchers, who showed how cultural stereotypes and prejudices are repeated in the educational software we use in schools, that he had been able to point out the subtle and not so subtle biases built into some software programs. Further, he was able to help preservice teachers develop their own skills for seeing and dealing with bias and prejudice in software. “If preservice teachers become aware of biases inherent in some educational software, they will be better able to make informed choices when they begin their teaching careers” (Willis, 1998, p. 26). However, the view of Wham, Barnhart, & Cook (1996) is that people cannot be expected to develop a sensitive attitude towards others merely because they are told to do so and that attitudes are difficult to change. It becomes even more evident that preservice teachers need to be provided with numerous opportunities in diverse student classroom settings (Wham et al., 1996).
This need is compounded by the fact that historically teacher education programs have educated preservice teachers to work effectively with one socioeconomic group (middle class) and one culture, the dominant culture. Major curriculum changes came about partially due to the adoption of policies by the American Association of Colleges of Teacher Education (AACTE) such as “No One Model American” (1973). With the adoption of this policy, teacher education institutions seeking NCATE accreditation began to include multicultural education within the educational program (Larke, 1990).

The legislative bodies in many states have passed requirements that multicultural education courses be included in teacher education programs. Researchers found that only 19 states reported having a set of multicultural education requirements in their teacher education programs (Evans, Torrey and Newton, 1997). Those states were, Alaska, California, Delaware, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New York, North Dakota, Oregon, South Dakota and Washington. Though multicultural education is increasing in the curriculum in schools and in colleges, it is still not the central curriculum (Banks, 1993; Hu-DeHart, 1993). Preservice teachers do not consider multicultural education classes very important and thus taking a multicultural education class may have little effect on their attitudes, contended McCall (1995). Locke (1990) and Deering and Stanutz (1995)

Some researchers agree that a challenging task facing teacher education programs is that of educating teachers to be culturally sensitive (Locke, 1990; Deering and Stanutz, 1995). Emphasizing the situation and its complexity, Cross (1993) decried that even when teacher educators explicitly try to prepare students to teach in racially diverse schools, students are frequently uncomfortable discussing race and draw conclusions from their field
experiences in urban settings that confirm their initial prejudices and misunderstandings. This fact underscores the increased need for teacher preparation institutions to educate their preservice teachers regarding the importance of equity and access issues relating to technology. Sadly, numerous disparities already exist for disadvantaged groups of students (Chisholm, 1997; PCAST, 1997). Therefore, “[t]he ways in which educational technologies are actually deployed and used will determine whether they serve to narrow these historical disparities or widen them even further” (PCAST, 1997, p. 67).

**Technology Equity and Access Issues**

Technology has become ubiquitous in American classrooms and society has increased its demands for teachers who are technologically competent. At the same time there is increasing cultural, linguistic and economic diversity among school-age children, (Kitano, Lewis, Lynch and Graves, 1996). Classrooms with a diversity in income, ethnicity, language, and culture are becoming the American norm (Chisholm, 1997) as fewer than 15% of teachers represent diverse backgrounds (Lewis, 1996). “Moreover, being a person of color does not in itself prepare one to teach effectively in today’s classrooms, which may have students from as many as 15 different language and cultural groups” (Kitano et al. 1996, p. 70). Faced with these growing concerns, Chisholm (1994) insisted that the key to effective computer use within culturally diverse classrooms remains the teacher. “Teachers plan for and manage educational technology use as well as provide access to available technology. Developing technologically literate and competent teachers is crucial to equitable technology access and the integration of technology in urban multicultural classrooms” (Chisholm, 1997, p. 295). Given these compelling facts, preservice teachers, whose classrooms will likely be
filled with more technology than ever before, must be knowledgeable regarding the issues of equity and access surrounding technology. The following discourse delineates only some of these pertinent and challenging issues.

The issue of accessibility to various technologies has several dimensions both at school and within a student's home (PCAST, 1997). A number of metrics has been used to ascertain the accessibility of technology to various segments of the American student population. One such metric is that of the density or number of computers installed in schools populated by different groups of students. Studies have shown that access to technology correlates to race membership or socioeconomic status (Becker & Sterling, 1987; Becker, 1992; Leigh, 1999). Survey data gathered in a later report by Becker (1992), indicated that though gains were made that lessened the gap between students in high socioeconomic status schools and students in low socioeconomic status schools, there was still a difference of 10 to 12 percent fewer computers in schools in poor districts or schools with a majority-Black student enrollment. This was down from Becker's initial survey, which showed a 33 % average difference between the two groups (Becker & Sterling, 1987).

Further, the number of hours of computer use by students is strongly correlated with computer density. Closely associated to this issue is the access and level of access to the Internet. Quality Internet access can be of benefit in supporting students as they utilize "higher order" thinking skills to problem solve and analyze the most current data available (PCAST, 1997; Sandholtz, Ringstaff and Dwyer, 1997). In a recent publication, Leigh (1999) concluded, "This study clearly demonstrates that, when measured by telecommunications distribution and use, inequalities in educational opportunities exist and most markedly among schools varying in the socioeconomic status of the student bodies" (p. 20).
Another dimension of access is the type of usage afforded to groups along socioeconomic, racial, ethnic and geographic lines. Students from low socioeconomic status households, when given access are more likely to engage in drill and practice (DeVillar and Faltis, 1991; PCAST, 1997) than constructivist applications or other "higher-order" learning and problem-solving activities (PCAST, 1997).

Access to quality computers, related technologies and technologically competent teachers are other areas of concern. The absence of technologically competent teachers leads to inequitable computer access in inner-city schools (Chisholm, 1997). This disparity may be attributable in part by the differences in teacher preparation and the ability of districts from higher socioeconomic groups to afford better prepared teachers (PCAST, 1997).

Software selection and availability of high caliber software that appropriately represents groups along racial, ethnic and gender lines remains a prime issue to be dealt with as more and more software applications become part of today’s school curriculum. Not until the 1990’s was attention given to include cultural diversity in the evaluation literature. “It is not surprising since most of the evaluation authorities have been White males steeped in Western philosophy, psychology and research methodology” stated Reeves (1997, p. 27). Cultural diversity was defined by Reeves (1997) as sensitivity and attention to the values, orientation, learning styles, language factors, and traditions of learners from diverse backgrounds. Thomas Reeves, well known in his field as an evaluator of instructional systems, made the following comment regarding the importance of sensitivity to cultural diversity in curriculum materials. “Sensitivity to cultural diversity and pluralism is a ‘meta-value’ that should influence virtually every aspect of human activity, including instructional systems design and evaluation” (Reeves, 1997, p. 30).
Some of the challenges of teaching and learning in this new century will be: to know how to seek information efficiently, how to ask relevant questions, how to use appropriate information to express new ideas, and how to find effectively the resources available to each user. The most disadvantaged in the twenty-first century will be those for whom easy access to interactive information systems is limited or totally nonexistent (Withrow, 1990).

This discourse is only a brief overview of the issues of access and equity as they relate to technology. However, it supports the premise that it is not just necessary, but urgent that preservice teachers become aware and sensitive to the issues of equity and access relating to technology. Moreover, it is incumbent upon colleges of education to include dialogue in their teacher preparation that sensitizes preservice teachers to these crucial issues.

Studies of Preservice Teachers and Their Sensitivity Towards Cultural Diversity

A search of the literature revealed a number of studies, which have sought to assess the cultural sensitivity of preservice teachers. Following are detailed reviews of a sampling of such studies, specifically those which have used the Cultural Diversity Awareness Inventory (CDAI) developed by Gertrude Henry (1985). These studies are of particular interest in that the author used the instrument in her data acquisition. The inventory was initially developed by Henry in 1985, and later modified in 1991 (Deering and Stanutz, 1995). Because of the difficulty in reporting results on each of the 28 items on the inventory, only noteworthy and overall results will be given in this review, though each researcher cited herein reported responses to each item in the individual reports of his or her findings.

Larke (1990) conducted research to assess the cultural sensitivity levels of a selected
group of preservice teachers, upon the completion of a required multicultural education class. The subjects, totaling 51, were all female, including 46 European Americans and 5 Mexican Americans from middle to upper socioeconomic status backgrounds. The preservice teachers were given the CDAI (Henry, 1985), a self-administered questionnaire. The instrument was designed to measure an individual's attitudes, beliefs and behavior towards children of culturally diverse backgrounds. The 28-item agree/disagree questionnaire addressed general cultural awareness, the family, communication, assessments and multicultural methods and materials (Larke, 1990). The categories of responses were adapted and modified by prior research by Henry (1985) and were as follows: 1) general cultural awareness, 2) the culturally diverse family, 3) cross-cultural communication, 4) assessment, and 5) the multicultural environment.

The results of the study indicated that after taking a multicultural education course, the preservice teachers still showed a great deal of discomfort in working with children of different cultures and accepting differences such as language and relating to the parents of those children. Only one-fifth expressed a preference for working with students from different cultures. Larke (1990) concluded, "...[t]his group of preservice teachers is sensitive to issues that do not directly involve working with culturally diverse students or their parents" (p. 25). However, overall, 68.7% believed classroom displays and instructional materials should reflect at least three cultural groups, indicating they do believe in developing ethnic displays. The data revealed about 90% of the teachers felt parents should have input in program planning. Of this group of teachers, 78% felt parents know little about assessing their own children. The preservice teachers expressed a preference for working with students from cultural backgrounds similar to their own and over 90% identified
students by ethnic group. An alarming 76.5% of the preservice teachers were in agreement with "accepts the use of ethnic jokes/phrases by children (Larke, 1990). The investigator concluded that, "...one course is insufficient to change the attitudes and behaviors of preservice teachers to appreciate, accept and respect the diversity of students facing them in future classrooms" (p. 29).

However, the findings of DeVoe, McMillen, Zimmerman and McGrew (1996) contrasted those of Larke (1990). In addition, DeVoe et al. (1996) added another dimension to his research by including a control group for comparison. The subjects of DeVoe et al. (1996) consisted of 69 males and 32 females, of which 57 served as the treatment group, while 44 served as the control group. Ninety-one percent of the subjects were White, similar to the sample in Larke's (1990) study. The treatment group was a group of preservice coaches registered in a coaching methods class and the control group was from a measurement and evaluation course during the same semester. During the first class meeting, each group was given the Student Opinion Survey designed by MacPhee, Kreutzer, and Fritz (1994) to assess their attitudes toward minority groups and poverty. The results of a 2 x 2 repeated measures of analysis of variance (ANOVA) indicated that no significant differences were found between groups at the pre-test nor between groups after the post-test as a result of the treatment. Specifically, both groups "responded with non-racial orientations" DeVoe et al. (1996 p. 16). The CDAI, developed by Henry (1985), was, also administered to the coaching students as well as the aforementioned Student Opinion Survey (MacPhee et al., 1994) during the last class meeting after the treatment to assess their sensitivity towards diversity issues.

During the course of the semester, the treatment group, the coaching students, were
given “a wide variety of diversity perspectives in the form of films, literature, a guest speaker, and numerous discussions were presented as to try to incorporate all possible learning styles” DeVoe et al. (1996, p.15). Results of the analysis of the data for the Cultural Diversity Inventory (Henry, 1985) generally contrasted those of Larke (1990). Of note, 71.9% of the preservice coaching teachers would not feel uncomfortable with athletes who have different values. A majority of the subjects, 59.6%, would not prefer to work with athletes who share their own culture and a majority, 59.6%, would not be surprised at the participation of athletes in traditionally “non-minority” school activities (p. 16). Again contrasting Larke (1990), 54.4% of the preservice teachers did not believe in the importance of identifying athletes by ethnic groups. In response to the item regarding frustrations with parents of students with differing cultural backgrounds during conferences, 70.2% believed they would not experience frustrations while 21.1% remained neutral. The responses were split on the item regarding whether coaches believed they should ask parents of their preferred ethnic identification with 38.6% believing they should ask and 36.8% believing they should not ask parents of their preferred ethnic identification. However, 24.6% responded neutral on the item. A resounding 80.7% of the respondents would not accept the use of ethnic jokes as opposed to 76.5% in Larke’s (1990) research who believed they would accept the use of ethnic jokes. Results indicated that “this group of mostly White individuals is ready to work with people from diverse backgrounds” (DeVoe et al., 1996, p. 20).

Deering and Stanutz (1995) attempted to expand on the work of Larke (1990) by assessing the sensitivity of preservice teachers toward cultural diversity after a field experience in a multicultural setting to see what effect it had. The sample size was much smaller than those of Larke (1990) and DeVoe et al. (1996) and consisted of 16 subjects, ten
male and six female secondary preservice teachers. All had completed at least two years of undergraduate work; most had completed three years (Deering and Stanutz, 1995). The sample of 16 also included two persons who had degrees and were completing certification requirements only. None of the subjects’ course work included a multicultural education class. The subjects were given the CDAI (Henry, 1991) “prior to a 10-week (approximately 50 hours) field experience in a middle school with a predominately Hispanic and Black student population” (Deering and Stanutz, 1995, p. 391). The inventory used was the latest edition, updated and modified by Henry (1991). The subjects were given the CDAI again after completion of the 10-week field experience. Results overall were mixed. The researchers noted that “significant changes in attitude occurred in some areas, but the field experience seemed not to have impact on the subjects in other areas, perhaps a negative impact in a few” (Deering and Stanutz, 1995, p. 392). They also cited that only 6% of the posttest respondents preferred to work with students with the same culture they have. However, the results showed 70% of the respondents still identified students by ethnic groups. The researcher concluded that one field experience did not significantly increase the cultural sensitivity of this group of preservice teachers, but it can be a component of a successful program, concluded Deering and Stanutz (1995).

The results of these three studies are mixed. Larke (1990) concluded that one multicultural education course was not enough to change the attitudes of preservice teachers toward cultural diversity and that there is a feeling of discomfort by White teachers with teaching in a culturally diverse classroom. Additionally, “...Larke uncovered a great deal of prejudice and a general unwillingness to adjust to the needs of persons from different cultures on the part of pre-service teachers” (DeVoe, 1996, p. 20). However, different and
contrasting results were found by DeVoe et al., (1996). Results of their investigation "demonstrated a lack of strong bias against racial or ethnic minorities" (p. 20). A lack of need for diversity training among the preservice coaches was indicated (DeVoe et al., 1996). Yet, the findings of Deering and Stanutz (1990) revealed mixed and surprising results, as there were negative impacts in some areas, after a culturally diverse field experience. Overall, the field experience had little impact on the cultural sensitivity of preservice teachers.

Davis (1993) also used the Cultural Diversity Awareness Inventory in her study of elementary preservice teachers and their sensitivity toward cultural diversity. However, the Davis study differed from studies reviewed heretofore in that Davis analyzed the results by using inferential statistical procedures. Other studies reviewed in the literature, which used the CDAI (Henry, 1991), reported results by using frequencies only. Davis stated, "The Cultural Diversity Awareness Inventory (Henry, 1991) was created using ordinal data. A limitation of this study was the assignment of number values to replace word values in order to create interval/ratio data. This method allowed inferential statistical procedures to be performed in this study" Davis. (1993, p. 6). Davis' study was limited to elementary preservice teachers in NCATE accredited colleges of education located within the southern region of the United States.

The purpose of Davis' (1993) study was to determine if higher education institutions were preparing elementary preservice teachers to be culturally sensitive. Therefore Davis conducted research to find out if elementary preservice teachers were culturally sensitive to diverse groups of children (Davis, 1993). Further, Davis sought to determine the areas in which the preservice teachers were sensitive. Additionally the 1993 study attempted to
determine if significant differences existed between race, participation in multicultural programs and prior high school attendance at a private, public, or parochial institution among elementary preservice teachers (Davis, 1993).

The causal comparative research method was used as the research design for the study. The dominant theme in Davis' study was multicultural education within teacher education and the relationship of the attitude and perceptions of preservice teachers and teachers in school settings toward a culturally diverse population of children (Davis, 1993).

The population came from the colleges of education in one predominantly White state institution and one predominantly Black institution from the following states: Louisiana, Arkansas, Tennessee, Mississippi, Alabama, and Georgia. The student populations in these states closely resembled each other. The target population was 637 preservice teachers. These preservice teachers were enrolled in student teaching at the time of the study. The sample consisted of 471 returned questionnaires (Davis, 1993).

The investigator in the Davis study mailed the packets to the directors of student field experiences for each of the universities after they had been contacted by telephone. The directors of field experiences issued the packets to the preservice teachers who were instructed to complete and return the questionnaires. The completed questionnaires were then returned to the investigator by the director of field experiences (Davis, 1993).

In the Davis (1993) study, the data obtained were analyzed by comparative analysis using descriptive statistics. The available answer choices were assigned numbers as follows: "5" strongly agree, "4" agree, "3" neutral, "2" disagree, or "1" strongly disagree. Negatively phrased questions were statistically reversed so that a culturally sensitive answer would be
reflected with a high score. Means were calculated for each of the subscale areas.

The method Davis used to analyze her data is described as follows:

Any mean score greater than one standard error above neutral, established at 3.00, indicated that the subject tended to be more culturally sensitive. Any mean score less than one standard error below neutral indicated that the subject tended not to be culturally sensitive (Ary, Jacobs, & Razavieh, 1985; Babbie, 1992) (Davis, 1993, p. 45).

The respondents in the Davis study consisted of the following ethnic backgrounds: 77.7% European American, 15.9% African American, 1.3% Native American, and 1.3% other. There was a small (0.4%) number of Mexican Americans represented in the group of respondents and 0.2% Asian Americans. There were 3.2% who did not answer the ethnicity question (Davis, 1993).

The results showed that the elementary teachers were culturally sensitive in the area of "Cultural Awareness" (M = 3.72). The item with the highest mean sensitivity was "Surprised at minority participation in traditional non-minority school activities (M = 4.04). The survey item with the lowest mean sensitivity was "Prefer to work with students who share my culture" (M = 3.25) (Davis, 1993).

Data also showed that the preservice teachers in the study were sensitive in the area of the Culturally Diverse Family (M = 3.62). The item with the highest mean sensitivity was "Necessary to include parent input in program planning (M = 4.27). The item with the lowest mean score for sensitivity was "during initial meetings, teachers should ask families their preferences for ethnic identification" (M = 2.91) which indicated the preservice teachers were not culturally sensitive with this item on the instrument.

Further analysis indicated the elementary preservice teachers were culturally sensitive
in the area of "Cross-Cultural Communication" ($M = 3.57$). The item with the lowest mean sensitivity was "Students' spoken language should be corrected by modeling without further explanation" ($M = 3.0$). This indicated the preservice teachers were neutral on this item on the instrument (Davis, 1993).

In the area of "Assessment", Davis, (1993) found that the preservice teachers in her study were culturally sensitive ($M = 3.27$). The highest mean sensitivity was "Give standardized or intelligence tests in the child’s dominant language" ($M = 3.43$). The item with the lowest mean sensitivity was "Adaptations in standardized assessments" ($M = 2.99$). Davis (1993) stated "this indicated the preservice teachers were neutral on this particular item on the instrument."

In the area of "Creating a Multicultural Environment Using Multicultural Methods and Materials", the data showed that the preservice teachers in the Davis (1993) study were culturally sensitive ($M = 3.85$). Further, the item with the highest mean sensitivity was "Student job assignment should rotate regularly and equally in job assignments" ($M = 3.30$).

The subscale with the highest overall mean average was "Creating a Multicultural Environment Using Multicultural Methods and Materials" ($M = 3.85$). The area with the lowest overall mean score was "Assessment" ($M = 3.27$). The overall mean score for the inventory was 3.60 indicating overall cultural sensitivity on the Cultural Diversity Awareness Inventory.

Additionally, the results from the Davis (1993) study showed that there was no statistical differences in the cultural diversity sensitivity between European Americans and African Americans preservice teachers, ($F = 0.913$, $p = .172$).

Davis’ results indicated that having taken a multicultural education course or not
having taken a multicultural education course made no statistically significant difference in the cultural diversity sensitivity of preservice and teachers. ($F = 0.917, p = .232$) (Davis, 1993).

The results of this study, also, indicated that the ethnicity of preservice teachers made no difference on the CDAI. This was contrary to Rashid's (1990) study, which found that African Americans and European Americans differed in their teacher perception and attitudes toward multicultural education.

The results from the research studies reviewed herein, have been varied and even contrasting in their outcomes. This may indicate the need for further study.

**Summary**

In this chapter, literature on the need for multicultural education, equity and technology issues, and studies of preservice teachers and their sensitivity towards cultural diversity was reviewed. Studies which used the Cultural Diversity Awareness Inventory (Henry, 1991) have been reviewed and contrasting results have been outlined. Additionally, two methods of analyzing data obtained from the inventory have been described. This chapter has also, highlighted the fact that various population groups have been the focus of past research that used the CDAI.

The focus of this study will deal with educational computing minor preservice teachers and their sensitivity towards cultural diversity. The next chapter will describe the methodology used in this study.
CHAPTER 3. METHODOLOGY

This chapter will delineate and describe the procedures and research methods used in this study. Topics included are (a) subjects, (b) instrumentation, (c) data collection procedures, (d) research design, and (e) data analysis.

Subjects

The subjects of the research were preservice teachers who were currently enrolled in a teacher preparation program at a predominantly white, Midwestern university. Subjects for the study were drawn from two groups of these preservice teachers. One group consisted of educational computing minor students and the second group consisted of students who were not minoring in educational computing (non-minor students). All identified educational computing minor students received a survey and a similar group of non-minor students received the survey. Both groups had the opportunity to use either the hard copy survey or the web based survey. Details of the sampling process are provided in the data collection section.

The sample was selected from the population and totaled 64 students. Each group contained 32 preservice teachers, who were matched by grade point averages (GPAs). These two groups of preservice teachers were typical undergraduate students who were majoring in education at the university and had a minimum grade point average between 2.5 and 4.0 on a 4.0 scale. Of the 64 students in this study, 21.9% (14) were, also, participants in Project
Opportunity, the university’s contextual teacher preparation program. (Project Opportunity is described in-depth below.) Further, each of the two groups contained 21.9% (7) Project Opportunity participants.

**Educational Computing Minor Students**

This study focused on a group of preservice teachers who were obtaining minors in educational computing. The following is background information regarding the educational computing minor program and curriculum at the college where this study took place.

In response to the need to prepare preservice teachers to use and integrate computer-related technology throughout the curriculum, a minor in educational computing was designed for undergraduate students at this university. Established in 1984, this minor is offered by the Department of Curriculum and Instruction in the College of Education. Each year approximately 75 students are admitted into the educational computing minor program. Among those 75 students are preservice teachers majoring in early childhood, elementary, and secondary education. Because students usually declare their minors later in their college career, the larger groups tend to be juniors and seniors. All students in the educational computing minor program are required to take at least 5 credit hours of coursework in educational computing and related areas (see Appendix A). It should be noted that 9 of the credit hours within the educational computing minor may not be used to meet any other college or university requirement. The curriculum for the educational computing minor was designed under the leadership of the Associate Director of the Center for Technology in
Learning and Teaching at the university. Some of the students who graduate from this program obtain positions as classroom teachers and technology coordinators, while others secure positions in business training and development.

**Non-educational Computing Minor Students**

The second group was a matched group sample of undergraduate preservice teachers. This group was similar to the educational computing minor students in all respects. For example, the students in this group, also, had the same majors as the educational computing minor group such as early childhood and elementary education. However, the students in this group were not earning minors in educational computing.

**Project Opportunity**

Project Opportunity is an alternative teacher preparation program at the university in which this study took place. In this contextual teacher preparation program, a cohort group of approximately 30 preservice students (education majors), travel through their sophomore, junior, and senior years together taking selected courses and participating in expanded field experiences (Connor & Killmer, 1998). Members of these cohorts include elementary and early childhood education students. The placement sites, for the student cohorts in this study, included a variety of school locations and student populations. One school had a student population described as predominately White. Its student population came from middle to upper socioeconomic households. Another school was described as rural, with a predominately White student population. There was, in addition, an inner city, magnet
school used as a cohort location. Its student population was predominantly African American and came from lower socioeconomic households.

Subject Selection Procedure

A list of the 1999-2000 educational computing minor students was obtained from the Student Services Specialist in the College of Education. The initial list contained 68 students. From the beginning list of 68 students, eight were eliminated. Initially the researcher sent 60 questionnaires to a matched selected group of non-educational computing minors. In order to insure matches for the educational computing minors, the researcher mailed 90 additional questionnaires to non-educational computing minors. This increased the number of questionnaires sent to 210.

Seventy-four preservice teachers returned the questionnaires, including 32 educational computing minor preservice teachers and 42 non-computing minors. Though one survey was returned partially completed, data from this survey were included in the results. Four students omitted one or more items on the CDAI. Upon the recommendation of a faculty statistician from the university, mean scores for the corresponding subscale items were used to replace the missing data. A small number of replacements has little influence on the outcome of the analyses (George & Mallery, 2000).

Instrumentation

Two methods of administering the questionnaire were used to gather data, a hard copy of the questionnaire and an electronic copy. An electronic copy was posted and made available on ClassNet, a web site monitored and secured by the university where this
research took place. Included in the questionnaire packet was information regarding how to access the web site. Each student was assigned a password for entry. They were also assigned an identification number for the researcher to be able to monitor which students had responded to the questionnaire.

**Cultural Diversity Awareness Inventory**

The Cultural Diversity Awareness Inventory (CDAI), was originally developed and validated by Dr. Gertrude B. Henry, Hampton University, in 1985, and later modified by Henry in 1991 (Henry, 1991). (See Appendix B.) The CDAI measures an individual's attitudes, beliefs, and behavior towards children of culturally diverse backgrounds (Larke, 1990).

The instrument addresses: (a) cultural awareness (how one feels toward teaching in a culturally diverse classroom and teaching children who share a different value system from the teacher). (b) the culturally diverse family (acceptance of parental participation in the educational process). (c) cross-cultural communication (attitude toward the use of non-standard English and ESL in the curriculum). (d) assessment (accommodating the child's needs concerning testing instruments), and (e) creating a multicultural environment using multicultural methods and materials (adjusting the classroom environment). The inventory is a Likert-type 5-point scale. The individual expresses his or her attitude by responding strongly agree, agree, neutral, disagree, or strongly disagree, to each statement (Davis, 1993).

The inventory consists of a 28-item agree/disagree self-administered questionnaire. A panel of professionals in the fields of multicultural education, elementary education, test construction, and human behavior appraised the content validity (Henry, 1993). Construct
validity was also established. Using the test-retest method, Henry established reliability. The correlation between the first and second score on the same test then yielded the reliability coefficient of .71. According to Borg, Gall and Borg (1996, p. 254), “In classical test theory, the reliability of a test refers to how much measurement error is present in the scores yielded by the test.” The test–retest reliability of .71 yielded on the Cultural Diversity Awareness Inventory indicates that 71% of the observed variance is true variance and 29% is error variance. The reported .71 coefficient is within the range (.47 - .98) of generally accepted standard attitude scales (Borg & Gall, 1989). “Content validity was appraised by a panel of five experts for clarity and the significance of each statement” (Henry, 1995). The CDAI was then field tested for content validity and subjective evaluation for face validity with the potential users. Results of Cronbach’s test for internal consistency reliability evidenced an overall alpha coefficient of 0.90, and 26 of the 28 statements correlated at 0.52 or better with the whole of the test (Henry, 1995).

The CDAI has been modified and used in numerous research investigations (Davis, 1993; DeVoe et al., 1996; Larke, 1990). Henry’s 1991 version of the CDAI was amended by the researcher with six items to assess preservice teachers on their knowledge and skills relating to diversity and equity issues in technology (Appendix C). After meeting with the Program of Study Committee members, six items relating to technology and equity were added and interspersed throughout the inventory to address these issues. The six items were as follows:
1. I believe that some computer software presents information or uses graphics that is sensitive to ethnic or minority groups.

2. I believe I need more educational experiences to be able to identify and evaluate culturally diverse software for use in the classroom.

3. I believe that I am aware of equity issues related to technology.

4. I believe that all students have equal opportunities to use technology in schools.

5. I believe I am adequately prepared to evaluate/critique educational computer software in terms of sensitivity to diverse ethnic or minority groups.

6. I believe I am adequately prepared to create or adapt educational computer software to meet the needs of diverse ethnic or minority students.

A committee member recommended using open-ended questions for other items.

Other suggestions regarding demographics were implemented.

A class of preservice teachers who were enrolled in Curriculum and Instruction 201, Instructional Technology for Teachers, during the summer 1999 session piloted the researcher's modified version of the CDAI. Based on verbal and written feedback from the 16 student participants, minor modifications were made to enhance the clarity of the instrument, simplify the formatting and revise items in Part III. Respondent Information. The committee also recommended changing the order of the questionnaire sections by putting the Respondent Information section last. These final recommendations and changes were implemented after the researcher met with the committee in October 1999.

The complete questionnaire contained 54 items. Respondents answered all the questions directly on the survey. The three main parts of the questionnaire were as follows:

Section I Checklist, which contained the Cultural Diversity Awareness Inventory items;
Section II Questions, which contained five open-ended questions on knowledge of technology equity issues and use of technology in classrooms; and Section III Respondent Information, which contained 15 personal information items.

The first 34 items were a Likert scale. Part I Checklist items 1-34, included the 28 items from the original survey. Interspersed were 6 items that addressed the students' awareness and skills regarding technology equity or assessed the skills regarding the use of technology to provide for educational equity. These items included 8, 9, 18, 27, 33, and 34.

Part II Questions solicited information regarding the respondent's preservice teacher observation of classroom technology use and perceived technology skills.

Part III Respondent Information of the questionnaire gathered personal demographic information on each respondent and information pertaining to their preservice teacher education. Questions were included that dealt with the number of completed technology-specific courses and courses relating to multiculturalism. Other questions probed the respondents' level of interaction with ethnic minorities.

These demographic data were used to determine which factors contributed to “higher” score on the CDAI. Based on the literature, a number of possible contributing factors were investigated. They included the following; frequency and level of interaction/experiences with ethnic minorities, participation in CI 406, Multicultural Nonsexist Education, CI 450, Ethnicity and Learning, participation in Project Opportunity, Project Opportunity placement, type of hometown, size of hometown, ethnic background, frequency of interaction with ethnic minorities and required courses (curriculum) for the educational computing minor.
**Data Collection Procedures**

The university committee on the use of Human Subjects in Research evaluated and approved the questionnaire prior to the researcher sending it to the subjects. A copy of the approved human subjects form can be found in Appendix D. A local printing facility printed the questionnaire and cover letter.

The questionnaire packet (Appendix E) included the “Cultural Diversity Awareness Inventory” (Appendix C) along with a cover letter, a direction sheet for accessing ClassNet, a university secured web site, and a postage-paid, business reply envelope. The questionnaire packets were sent to 120 subjects on November 10, 1999. Sixty questionnaires were sent to educational computing minor students and 60 questionnaires were sent to non-educational computing minor students. An identification number was assigned to each questionnaire for the purpose of monitoring the rate of return. The student respondents were asked to answer the questions on the questionnaire and return the questionnaire in the business reply envelope provided.

Ten days after the first wave of questionnaire packets were mailed, 90 additional questionnaire packets were sent to the subjects along with a reminder letter (Appendix F). These packets were mailed before the usual 14-day waiting period to arrive when students returned from fall break. Reminder calls were made to students when phone numbers were available.

A second wave of questionnaires was sent to 90 non-educational computing minor students on November 24, 1999 (Appendix G). Two additional non-educational computing minor students with matching GPAs and grade levels, when possible, for each educational
computing minor student, were sent questionnaires on December 6, 1999. This was done in an effort to secure matches for the educational computing minor questionnaires that had been received.

Six questionnaire packets were returned marked "undeliverable" for various reasons. Thirty-six percent (75) of the 210 preservice teachers who were mailed questionnaire packets completed the questionnaires. Sixteen percent (12) of the 75 completed questionnaires were completed electronically on the ClassNet web site. The remaining 84% (63) questionnaires were completed using the hard copies received in the mail. Of the 58 undergraduate educational computing minors, 55% (32) returned valid questionnaires.

The non-educational computing minor group returned 29% (43) of the total 150 questionnaires mailed to the group. Of the 43 questionnaires completed by the non-educational computing minor students, 11.6% (5) were completed using the web-based version on the ClassNet web-site. Of the 58 educational computing minors, 12% (7) completed the questionnaire using the web-based form.

Matching Pairs

Initially one non-educational computing minor student was matched with one educational computing minor student according to his/her GPA and year in school. The students were later regrouped as pairs by GPAs only. This was done in an effort to use all the questionnaires received from the educational computing minor students. The non-educational computing minor students were then paired by GPA, as closely as possible, to match each of the educational computing minor students who had returned a questionnaire. Twenty of the
32 returned questionnaires, or 87% of the pairs, were matched by GPA within 0.04 of a grade point leaving only four pairs that were matched within ranges that did not exceed 0.11 of a grade point. During the regrouping process, however, nine of the 32 educational computing minor students could not be matched by year in school.

Data analyses were completed using the two groups, of which 32 were educational computing minor preservice teachers and 32 were a matched group of non-educational computing minor preservice teachers.

**Research Design**

This survey research included one dependent and multiple independent variables. The dependent variable was the total score on the Cultural Diversity Awareness Inventory. The CDAI has five subcategories and contains 28 total items.

The independent variables were the respondent's preservice education factors and personal factors that the literature suggests might be related to sensitivity to cultural diversity. The independent variables included the following: (a) year in school, (b) population of hometown, (c) type of hometown, (d) participation in Project Opportunity, (e) Project Opportunity cohort placement, (f) frequency of interaction with ethnic minorities, (g) level of interaction with ethnic minorities, (h) participation in CI 406, Multicultural Nonsexist Education, (i) participation in CI 450, Ethnicity and Learning and, (j) participation in the classes, CI 406, Multicultural Nonsexist Education and CI 450, Ethnicity and Learning.
Survey Data Analyses

The data from the completed questionnaires were entered into the statistical analysis program, SPSS, (Statistical Package for the Social Sciences) for analysis. A number of inconsistencies were found and corrected. For example, two respondents who had been on the initial list of educational computing minors checked that they were not in the program. Upon checking with Student Services, it was learned that one of the students had marked the answer in error and was, indeed, an educational computing minor student. However, it was discovered that another student had been listed as an educational computing minor on the original list in error by Student Services. In yet another case, a student was deleted from the initial list of educational computing minors when the student respondent notified the researcher that she had changed her major to one other than education. Two respondents listed cohort 4 as their Project Opportunity placement. Therefore, cohort 4 was added to the list of cohorts.

Input from various committee members was sought regarding categorizing and coding questionable respondent answers. Upon the recommendations of the committee members, respondents who checked “other” for the ethnic background item, and listed ethnic background as “Caucasian,” “White Anglo,” “White Anglo-Saxon,” “White,” “Caucasian (American) German, Swede mix,” were all coded by the researcher as European American. Also an additional ethnic category, biracial, was added as one responded listed biracial as ethnic background.

Necessary corrections were made when the researcher discovered that the ClassNet version of the questionnaire was found to have a default for a scroll box that produced erroneous information. The default caused cohort 5 to be entered for students who had
identified themselves as not being in the Project Opportunity program. This error was corrected by cross checking a listing of the students who were in Project Opportunity.

Upon the recommendation of statisticians, the subscale mean score of the item replaced missing data from the CDAI for four cases. Before the data were analyzed, some of the items were reverse coded statistically for the following reasons: (a) to insure that the negatively phrased items would be reversed and (b) to insure that higher numerical scores reflected greater levels of cultural sensitivity (Deering & Stanutz, 1995; Larke, 1990; DeVoe, McCall et al. 1996). The items that were statistically reversed are listed below.

- Item 2 "I believe it is important to identify immediately the ethnic groups of the children I will teach."
- Item 3 "I believe I would prefer to work with children and parents whose cultures are similar to mine."
- Item 4 "I believe I would be uncomfortable in settings with people who speak a different English dialect than I."
- Item 5 "I believe I am uncomfortable with people who exhibit values or beliefs different from my own."
- Item 7 "I believe I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra)."
- Item 12. "I believe I would experience frustration when conducting conferences with parents whose culture is different from my own."
- Item 13 "I believe children are responsible for solving communication problems that are caused by their ethnic identity."
• Item 15 “I believe when correcting a child's spoken language, one should role model without any further explanation.”

• Item 19 “I believe that in a society with as many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children.”

• Item 20 “I believe that there are times when racial statements should be ignored.”

• Item 21 “I believe a child should be referred “for testing” if learning difficulties appear to be due to cultural differences and/or language.”

• Item 22 “I believe that translating a standardized assessment from English to another language to be questionable since it alters reliability and validity.”

• Item 24 “I believe parents know little about assessing their own children.”

• Item 25 “I believe that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.”

Nine new variables were calculated to facilitate answering some of the research questions. A group of experts from statistics, and multicultural education were asked for input in the creation of these variables. The panel included three faculty members from the Statistics Department and four faculty members from the multicultural education area at Iowa State University.

Input was sought from statistics faculty and multicultural education faculty regarding the calculation of new variables. New variables were calculated from the data set. They included: cultural awareness mean, culturally diverse family mean, cross-cultural communication mean, assessment mean, creating a multicultural environment mean, total cultural diversity awareness mean, total required classes for the educational computing minor, and total cultural diversity classes. The variable, total required classes for the
educational computing minor, was used to help determine if the curriculum required for the educational computing minor contributed to high scores on the CDAI. The variable, total cultural diversity classes, was used to help determine whether taking both Multicultural Nonsexist Education and Ethnicity and Learning contributed to high scores on the CDAI.

Additionally, the new variable, interact, was calculated. This variable was created to help determine if the level of interaction with ethnic minorities contributed to a high score on the CDAI. This variable was created by ranking the following areas/situations of interaction with ethnic minorities by degree of intimacy: field experience, practicum, student teaching, hometown, work, group organization, church, neighborhood, school, class, roommate, friends, and dating. A higher ranking was assigned to areas/situations as they increased in intimacy.

The data from the questionnaire responses were analyzed in several ways. To help answer question one, which asked whether the educational computing minor group was sensitive towards cultural diversity, descriptive statistics such as mean, standard deviation and standard error were calculated for each inventory item, subscale and the total CDAI score.

Question two concerned comparing the level of sensitivity towards cultural diversity between elementary preservice teachers who minor in educational computing and the matched group of non-educational computing minors. A t-test for independent groups was used to calculate the difference of the means between the two groups.

Question three asked which factors contributed to a high score on the CDAI. An ANCOVA helped to determine predictors for high scores on the CDAI. The independent variables used in the ANCOVA included the following: (a) year in school, (b) population of
hometown, (c) type of hometown, (d) participation in Project Opportunity, (e) Project Opportunity cohort placement, (f) frequency of interaction with ethnic minorities, (g) level of interaction with ethnic minorities, (h) participation in CI 406 Multicultural Nonsexist Education, (i) participation in CI 450 Ethnicity and Learning and, (j) participation in CI 450 Multicultural Nonsexist Education and CI 450 Ethnicity and Learning.

Summary

Survey methodology was used to answer the research questions for this study. This chapter included descriptions of the subjects, the instrumentation, data collection, research design, and data analyses procedures.

On November 10, 1999, a questionnaire containing 54 items was sent to 120 preservice teachers. The final group consisted of 58 preservice teachers who were educational computing minor students and 58 non-educational computing minor students. On December 6, 1999, an additional 90 questionnaires were sent to another set of matching non-educational computing minor students. The total number of questionnaires sent was 210. This questionnaire included questions concerning the cultural awareness of preservice and issues of technology and equity and general information about the respondents.

After the data were collected, it was analyzed in a number of ways in order to help answer the research questions. The research questions dealt with the cultural sensitivity of educational computing minors and non-educational computing minors. Additionally, one of the research questions asked what factors contributed cultural sensitivity as measured by the Cultural Diversity Awareness Inventory. This study was designed to describe and compare two groups and find predictors of sensitivity towards cultural diversity.
CHAPTER 4. RESULTS AND FINDINGS

An analysis of the data gathered from the questionnaire, "Preservice Teacher Survey," is presented in this chapter. The chapter begins with a discussion of the demographic data and is followed by the findings that address the research questions presented in Chapter 1. The responses from the respondents of the survey were used to compute statistical analyses that describe and search for predictors of sensitivity toward cultural diversity as measured by the Cultural Diversity Awareness Inventory.

Description of the Respondents

One of the purposes of Part III of the questionnaire was to obtain descriptive information about the respondents. Information used in the analyses came from 64 of the total 75 preservice teachers who returned the questionnaires. The 64 respondents consisted of two groups of 32 each. As stated previously, the groups were matched by GPAs. The educational computing minor students comprised the first group and the non-educational computing minor students comprised the second comparison group.

The data indicated that there were slightly more males in the educational computing minor group than the non-educational computing minor group. Specifically, demographic information revealed that 80.6% of the educational computing minor students were female and 19.4% were male. Of the non-educational computing minor students, 84.4% were female and 15.6% were males. Most of the preservice teachers (80.6%) in the educational computing minor group were 19 to 23 years old, with the remaining 19.4% reporting an age between 24 and 34. Similarly,
most (81.3%) of the non-educational computing minors were 18 to 24 years old, with the remaining 18.7% reporting an age between 25 to 45. It should be noted that a typical college student would be a person who graduated from high school at age 18 or 19, and would spend four to five years in college. The age range for the seniors would accordingly be from 22 to 24. Therefore, the educational computing minor group and the non-educational computing minor group contained 12.9% and 15.6% students, respectively, who could be considered “non-traditional” students. The educational computing minor group consisted of 68.8% seniors, 21.9% juniors, 9.4% sophomores and no freshmen. In comparison, the non-educational computing minor group consisted of 74% seniors, 12.5% juniors, 9.4% sophomores, and 3.1% freshmen.

Figure 1 depicts the ethnic background of the respondents. Of the educational computing minors, 96.7% reported European American as their ethnic background. Similarly, 90.6% of the non-educational computing minor group reported European American as their ethnic background. However, the computing minor group tallied 3.1% (one student) with a biracial ethnic background. Small percentages, 6.3% (two students), in the educational computing minor group and 3.1% (one student) in the non-educational computing minor group, did not answer the ethnic background question. Demographic data indicated that 90.4% of the educational computing minor students had been admitted to the teacher education program while 81.3% of the non-educational computing minor students had been admitted to the program.
Figure 1. Ethnic background of the educational computing (edcom) minors and the non-educational computing minors

No student reported a GPA less than 2.50 on a 4.00 scale. There were 36.7% of the educational computing minor students who reported that their GPAs were in the 3.50 to 4.00 range. In contrast, 31.2% of the non-educational computing minor students reported that their GPAs were in the 3.50 to 4.00 range (Figure 2). While 22.6% of the educational computing minors were involved in Project Opportunity, the university's contextual teacher education program, a near equivalent percentage of 21.9% of the non-educational computing minor
students reported being members of Project Opportunity. Both groups reported having students in each of the four cohorts. Each group, also, had one student in Cohort 4, whose school population placement was predominantly African American.

Two items on the questionnaire addressed the respondents’ hometown and community. As Figure 3 indicates, the largest majority (46.9% and 43.8%) of the students grew up in communities with populations from 1,000 to 50,000. Further, over half (53.1%
Figure 3. **Hometown population of the educational computing (edcom) minors and the non-educational computing minors**

and 56.3%) the students in both groups classified the communities in which they spent most of their lives as rural. (Figure 4.)

**Teaching Experience Information**

The preservice teachers reported three main areas of experience in teaching. A total of 81.3% of the educational computing minor students had completed field experience, and 83.9% of the non-educational computing minor students had completed field experience. Of the educational computing minor students, 90% reported that they had completed practicum, and 80.6% of the non-educational computing minor group reported having completed practicum. Of the non-educational computing minor students, 19.4% reported student
teaching experience. At least 25% of the students in both groups reported other teaching experiences. Those experiences included camp counselor, daycare worker, workshop facilitator, teacher assistant, and tutor.

Preservice Teachers' Interactions with Minorities

Figure 5 depicts the frequency of interaction with ethnic minorities. The largest percentage (43.8%) of the educational computing minor group indicated they interacted with ethnic minorities “often,” while the largest percentage (56.3%) of the non-educational computing minor group indicated they “rarely” interacted with ethnic minorities.
Figure 5. Frequency of interaction with ethnic minorities by the educational computing (edcom) minors and the non-educational computing minors

Item 14 of the questionnaire solicited information from the two groups of preservice teachers regarding 13 areas and or situations in which the preservice teachers had interacted with ethnic minorities. The data showed that the educational computing minor students reported more instances of interaction with ethnic minorities than the comparison group of students in eight of the 13 areas or situations listed. Those areas included: (a) field experience (81.3% compared to 65.6%), (b) practicum (80.0% compared to 75%), (c) work (84.4% compared to 59.4%), (d) group organizations (65.6% compared to 49.6%), (e) church (43.8% compared to 40.6%), (f) school (96.9% compared to 90.6), (g) class (93.8% compared to 90.6%), and (g) dating (21.9% compared to 18.8%). In each group, 18.8% reported having participated in student teaching. However, in the four areas or situations where the
non-educational computing minor students reported more contact with minorities than the
educational computing minors, the differences were small (3.1% to 6.3%). Percentages of
15.6% and 18.8% were tallied for the computing minor group and the non-computing minor
group, respectively. The following is a combined list of other areas of interaction, with ethnic
minorities for both groups. It included the following: (a) “tutoring African American
children.” (b) “having an African American babysitter at a young age.” (c) “casual visiting
with strangers on the bus,” and (d) “siblings.”

Comparison of Courses Taken

Item 15 on the questionnaire directed the preservice teachers to indicate specific
classes they had taken thus far. Among the classes listed were required courses for the
educational computing minor, (Appendix A) Multicultural Nonsexist Education, and
Ethnicity and Learning. The data indicated the differences in the number of classes taken by
the two groups. Specifically, Figure 6 shows that 47% of the educational computing minor
students had taken five of the required classes for the minor and 13% had taken six classes
required for the minor. Eighty-eight percent of the non-educational computing minor students
had taken at least one of the classes required for the minor in educational computing. Nine
percent of the non-educational computing minor groups had taken three of the classes
required for a minor in educational computing.

The data indicated that 78.1% of the educational computing minor students took CI
280B Pre-Student Teaching Experience Educational Computing while only 9.4% of the non-
educational computing minor students reported taking the class. None (0%) of the students in
Figure 6. Educational computing (edcom) minors and non-educational computing minors who participated in Ethnicity and Learning class

The non-educational computing minor group indicated they had taken CI 403 Design and Development of Computer Assisted Instruction, CI 405 Applications of the Internet in Education or CI 407 Theory and Practice of Distance. However, the educational computing minor students reported 62.5%, 25%, and 59.4% respectively, as having taken these classes. The majority (90.6%) of the educational computing minor students had completed CI 302 Using Microcomputers in the Classroom compared to only 12.5% of the non-educational computing minor students. Figure 7 reveals that 75% of the educational computing minor students took CI 406 Multicultural Nonsexist Education compared to 59.4% of the non-educational computing minor students.
Figure 7. Educational computing minors (edcom) and non-educational computing minors who took Multicultural Nonsexist Education

Of the educational computing minor students, 3.1% (one student) reported participating in CI 450 Ethnicity and Learning. Of the non-educational computing minor group, 6.3% (two students) reported having participated in CI 450 Ethnicity and Learning. Of the educational computing minor students, 3.1% (one student) reported having participated in both Multicultural Nonsexist Education and Ethnicity and Learning. Of the non-educational computing minor students 6.3% (two students) reported having participated in both classes, Multicultural Nonsexist Education and Ethnicity and Learning. This is shown in Figure 8.
Cultural Sensitivity of Educational Computing Minor Students

As stated previously, the Cultural Diversity Awareness Inventory uses a Likert-type scale to obtain information from respondents. The respondent expresses his or her belief by responding to each statement with one of the following: "strongly agree," "agree," "neutral," "disagree." or "strongly disagree." The researcher statistically reversed the negatively phrased items in the CDAI so that a culturally sensitive answer reflected a high score. A mean score greater than one standard error above neutral, established at 3.00, indicated that the subject tended to be more culturally sensitive. A mean score less than one standard error below neutral indicated that the subject tended not to be culturally sensitive (Ary, Jacobs, & Razavieh, 1985; Babbie, 1992). Neutral responses by the respondents were coded as 3.00.

Question one. Research question number one was stated as follows: Are elementary preservice teachers who minor in educational computing culturally sensitive in the following areas: (a) cultural awareness, (b) the culturally diverse family, (c) cross-cultural communication, (d) assessment, and (e) creating a multicultural environment as measured by the Cultural Diversity Awareness Inventory? The data shown in Table 1 indicate that the elementary preservice teachers who minor in educational computing were slightly closer to neutral than agree in the area of cultural awareness with an overall mean score of 3.38. The highest mean in this subscale was 3.88 for the item, "I believe my culture to be different from some of the children I will teach". This mean score is nearer to agree than neutral and indicates that the group tended to be more culturally sensitive on this inventory item.
Further analysis showed an additional item, "I believe I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra)," was also closer to agree than neutral with a mean score of 3.72 and indicated the group tended to be more culturally sensitive on this inventory item.

Two items, "I believe I would prefer to work with children and parents whose cultures are similar to mine" and "I believe it is important to identify immediately the ethnic groups of children I will teach," had mean sensitivity scores that were below neutral. These scores, 2.97 and 2.84 respectively, indicated that the preservice teachers tended not to be
Table 1. Cultural Awareness Descriptive Data for the Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe my culture to be different from some of the children I will teach.</td>
<td>3.88</td>
<td>0.25</td>
<td>1.43</td>
<td>32</td>
</tr>
<tr>
<td>I believe I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra).</td>
<td>3.72</td>
<td>0.21</td>
<td>1.20</td>
<td>32</td>
</tr>
<tr>
<td>I believe I am uncomfortable with people who exhibit values or beliefs different from my own.</td>
<td>3.47</td>
<td>0.22</td>
<td>1.27</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would prefer to work with children and parents whose cultures are similar to mine.</td>
<td>2.97</td>
<td>0.18</td>
<td>1.03</td>
<td>32</td>
</tr>
<tr>
<td>I believe it is important to identify immediately the ethnic groups of children I will teach.</td>
<td>2.84</td>
<td>0.21</td>
<td>1.17</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cultural Awareness Score</td>
<td>3.38</td>
<td>0.13</td>
<td>0.71</td>
<td>32</td>
</tr>
</tbody>
</table>

Culturally sensitive on these two inventory items. The lowest mean sensitivity score in this subscale was 2.84 on “I believe it is important to identify immediately the ethnic groups of children I will teach.” The mean score for overall cultural awareness was 3.38, which is closer to neutral than agree.

The next area, the “Culturally Diverse Family,” contained seven items. Data shown in Table 2 indicated that the educational computing minor students were slightly closer to neutral than agree with an overall mean sensitivity score of 3.48 for the subscale, “Culturally Diverse Family.”
The highest score in this subscale was 3.81 on "I believe it is necessary to include ongoing parent input in program planning." This item was closer to agree than any other item in this subscale. This score indicated that the educational computing minor students tended to be culturally sensitive on this item. Three other items were slightly nearer to agree than neutral and had mean sensitivity scores of 3.59, 3.51, and 3.51. These items were "I believe cultural views of a diverse community should be included in the school's yearly program planning", "I believe I would experience frustration when conducting conferences with parents whose culture is different from mine", and "I believe Individualized Educational Program meetings or program planning should be scheduled for the convenience of the parent." Three items, "I believe parents know little about assessing their own children", "I believe other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers) or telephone conversations" and "I believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction," had scores nearer to neutral than agree with mean sensitivity scores of 3.45, 3.28, and 3.20 respectively. The lowest mean for this subscale was on "I believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction" with a mean score of 3.20.

The information in Table 3 shows that the educational computing minor students were closer to neutral than agree with an overall cross-cultural communication mean score of 3.38. The highest score in this subscale was 3.60 on the item, "I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum." This score, 3.60, was slightly closer to agree than neutral. The lowest score in
this subscale was on the item, “I believe I would be uncomfortable in settings with people who speak a different English dialect than I” with a mean sensitivity score of 3.28 which is closer to neutral than agree. Three items in this subscale had mean scores of 3.33, 3.32, and 3.28 which were also closer to neutral than agree. These items were “I believe that there are times when the use of ‘non-standard’ English should be accepted,” “I believe when correcting a child’s spoken language, one should role model without further explanation,” and “I believe I would be uncomfortable in settings with people who speak a different English dialect than I,” respectively.

Table 4 contains data that show the educational computing minor students were slightly above neutral in the area of “Assessment” with an overall mean of 3.04. A mean score of 3.35 for “I believe a child should be referred ‘for testing’ if learning difficulties appear to be due to cultural differences and/or language” was the highest mean score in this subscale. The lowest mean score of the three items in this subscale was 2.53 for “I believe translating a standardized achievement or intelligence test to the child’s dominant language gives the child an added advantage and does not allow for peer comparison.” This mean score was below neutral for cultural sensitivity, though slightly closer to neutral than disagree.

Data in Table 5 show the mean scores for the last subscale, “Creating a Multicultural Environment.” The overall mean score of 3.46 indicates that the educational computing minor students were slightly nearer to neutral than agree in the area of creating a multicultural environment. The item, “I believe each child should be involved in a regular
Table 2. The Culturally Diverse Family Descriptive Data for the Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe it is necessary to include on-going parent input in program planning.</td>
<td>3.81</td>
<td>0.21</td>
<td>1.18</td>
<td>32</td>
</tr>
<tr>
<td>I believe cultural views of a diverse community should be included in the school's yearly program planning.</td>
<td>3.59</td>
<td>0.20</td>
<td>1.13</td>
<td>32</td>
</tr>
<tr>
<td>I believe Individualized Education Program meetings or program planning should be scheduled for the convenience of the parent.</td>
<td>3.51</td>
<td>0.15</td>
<td>0.88</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would experience frustration when conducting conferences with parents whose culture is different from mine.</td>
<td>3.51</td>
<td>0.20</td>
<td>1.10</td>
<td>32</td>
</tr>
<tr>
<td>I believe parents know little about assessing their own children.</td>
<td>3.45</td>
<td>0.12</td>
<td>0.66</td>
<td>32</td>
</tr>
<tr>
<td>I believe other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers) or telephone conversations.</td>
<td>3.28</td>
<td>0.23</td>
<td>1.28</td>
<td>32</td>
</tr>
<tr>
<td>I believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.</td>
<td>3.20</td>
<td>0.12</td>
<td>0.69</td>
<td>32</td>
</tr>
<tr>
<td>Overall Culturally Diverse Family Score</td>
<td>3.48</td>
<td>0.11</td>
<td>0.61</td>
<td>32</td>
</tr>
</tbody>
</table>

rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly, or monthly)”, had the highest mean score of 3.84. This score was closer to agree than neutral on cultural sensitivity and indicated that the group tended to be more culturally sensitive on this item. Two other items, “I believe that in a society with as many racial
Table 3. Cross-Cultural Communication Descriptive Data for the Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum.</td>
<td>3.60</td>
<td>0.18</td>
<td>1.03</td>
<td>32</td>
</tr>
<tr>
<td>I believe that there are times when the use of “non-standard” English should be accepted.</td>
<td>3.33</td>
<td>0.17</td>
<td>0.96</td>
<td>32</td>
</tr>
<tr>
<td>I believe when correcting a child’s spoken language, one should role model without any further explanation.</td>
<td>3.32</td>
<td>0.13</td>
<td>0.74</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would be uncomfortable in settings with people who speak a different English dialect than I.</td>
<td>3.28</td>
<td>0.23</td>
<td>1.28</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cross-Cultural Communication Score</td>
<td>3.38</td>
<td>0.14</td>
<td>0.77</td>
<td>32</td>
</tr>
</tbody>
</table>

groups as the USA, I would accept the use of ethnic jokes or phrases by some children” and “I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life, and/or beliefs” had mean sensitivity scores that were closer to agree than neutral. The scores reported for these two items were 3.77 and 3.74 respectively and indicated that the group tended to be culturally sensitive on these two inventory subscale items. “I believe one’s knowledge of a particular culture should affect one’s expectations of the children’s performance” had the lowest mean score at 2.81. Additionally, this score was below 3.00, which indicated that the educational computing minor students were less than neutral on this inventory item and tended not to be culturally sensitive. This was the only item in this section below 3.00, neutral.
The data in Table 6 show the overall CDAI score was 3.35. This score indicated that the educational computing minor group was closer to neutral on overall cultural sensitivity. The subscales with the highest overall mean for the educational computing minor group were “Culturally Diverse Family” and “Creating a Multicultural Environment” which had mean scores of 3.48 and 3.46 respectively. The subscale with the lowest total mean score was “Assessment” with a mean of 3.05. This mean score which was slightly over 3.00, indicated that the educational computing minors were closer to neutral than agree on this subscale.
Table 5. Creating a Multicultural Environment Descriptive Data for the Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly, or monthly).</td>
<td>3.84</td>
<td>0.23</td>
<td>1.30</td>
<td>32</td>
</tr>
<tr>
<td>I believe that in a society with as many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children.</td>
<td>3.77</td>
<td>0.20</td>
<td>1.13</td>
<td>32</td>
</tr>
<tr>
<td>I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.</td>
<td>3.74</td>
<td>0.23</td>
<td>1.24</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would make adaptations in programming to accommodate the different cultures as my enrollment changes.</td>
<td>3.48</td>
<td>0.21</td>
<td>1.19</td>
<td>32</td>
</tr>
<tr>
<td>I believe children are responsible for solving communication problems that are caused by their ethnic identity.</td>
<td>3.47</td>
<td>0.19</td>
<td>1.08</td>
<td>32</td>
</tr>
<tr>
<td>I believe that there are times when racial statements should be ignored.</td>
<td>3.45</td>
<td>0.18</td>
<td>1.04</td>
<td>32</td>
</tr>
<tr>
<td>I believe my displays and frequently used materials should reflect at least three different ethnic groups or customs.</td>
<td>3.35</td>
<td>0.18</td>
<td>1.00</td>
<td>32</td>
</tr>
<tr>
<td>I believe that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.</td>
<td>3.20</td>
<td>0.21</td>
<td>1.18</td>
<td>32</td>
</tr>
<tr>
<td>I believe one's knowledge of a particular culture should affect one's expectations of the children's performance.</td>
<td>2.81</td>
<td>0.16</td>
<td>0.90</td>
<td>32</td>
</tr>
<tr>
<td>Overall Creating a Multicultural Environment Score</td>
<td>3.46</td>
<td>0.14</td>
<td>0.80</td>
<td>32</td>
</tr>
</tbody>
</table>
Table 6. Summary of Overall Descriptive Data for the Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Subscale Areas</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Culturally Diverse Family</td>
<td>3.48</td>
<td>0.61</td>
<td>32</td>
</tr>
<tr>
<td>Overall Creating a Multicultural Environment</td>
<td>3.46</td>
<td>0.80</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cross-Cultural Communication</td>
<td>$3.38^a$</td>
<td>0.76</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cultural Awareness</td>
<td>3.38</td>
<td>0.71</td>
<td>32</td>
</tr>
<tr>
<td>Overall Assessment</td>
<td>3.04</td>
<td>0.44</td>
<td>32</td>
</tr>
<tr>
<td>Overall CDAI Score</td>
<td>3.35</td>
<td>0.52</td>
<td>32</td>
</tr>
</tbody>
</table>

$^a$The actual figure for Overall Cross-Cultural Communication was 3.3842 and the actual figure for Overall Cultural Awareness was 3.3750.

**Question two.** Research question two was stated as follows: How does the level of sensitivity towards cultural diversity compare between elementary preservice teachers who minor in educational computing and a matched group of non-educational computing minor preservice teachers? The data in Tables 7 through 13 show comparisons of the two groups on each inventory item and the subscales.

As shown by the data in Table 7, the educational computing minors had an overall cultural awareness score of 3.38, which was closer to neutral than agree. The non-educational computing minors had a slightly higher overall cultural awareness mean score of 3.55 which is slightly nearer to agree than agree.
Table 7.  Cultural Awareness Descriptive Data for the Educational Computing (Edcom) Minor Group and the Non-Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>Group</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe my culture to be different from some of the children I will teach.</td>
<td>Edcom Minors</td>
<td>3.72</td>
<td>0.21</td>
<td>1.20</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.81</td>
<td>0.18</td>
<td>1.00</td>
<td>32</td>
</tr>
<tr>
<td>I believe that I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra).</td>
<td>Edcom Minors</td>
<td>3.88</td>
<td>0.25</td>
<td>1.43</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>4.25</td>
<td>0.19</td>
<td>1.08</td>
<td>32</td>
</tr>
<tr>
<td>I believe I am uncomfortable with people who exhibit values or beliefs different from my own.</td>
<td>Edcom Minors</td>
<td>3.47</td>
<td>0.22</td>
<td>1.27</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.72</td>
<td>0.16</td>
<td>0.92</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would prefer to work with children and parents whose cultures are similar to mine.</td>
<td>Edcom Minors</td>
<td>2.97</td>
<td>0.18</td>
<td>1.03</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.38</td>
<td>0.16</td>
<td>0.91</td>
<td>32</td>
</tr>
<tr>
<td>I believe it is important to identify immediately the ethnic groups of children I will teach.</td>
<td>Edcom Minors</td>
<td>2.84</td>
<td>0.21</td>
<td>1.17</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>2.59</td>
<td>0.18</td>
<td>1.04</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cultural Awareness Score</td>
<td>Edcom Minors</td>
<td>3.38</td>
<td>0.13</td>
<td>0.71</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.55</td>
<td>0.10</td>
<td>0.54</td>
<td>32</td>
</tr>
</tbody>
</table>

The highest score for the non-educational computing minors in this subscale was 4.25 on the item, "I believe that I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra.)" This mean score was slightly above agree. Further, this was the
highest score for any of the inventory items for both groups. The non-educational computing minors had two items, "I believe my culture to be different to be different from some of the children I will teach" and "I believe I am uncomfortable with people who exhibit values or beliefs different from my own" with mean sensitivity scores closer to agree than neutral. The scores for these items were 3.81 and 3.72 respectively. The lowest score (2.59) in this subscale for the non-educational computing minors was for the item, "I believe it is important to identify immediately the ethnic groups of children I will teach". This score of 2.59 was below neutral.

The educational computing minor group had two items with scores that were below neutral compared to the non-educational computing minor group which had one score below neutral. The educational computing minor group had no score in the agree range whereas the non-educational computing minor group had one score of 4.25, which was slightly above agree.

The t-tests for independent samples indicated there were no significant differences between the mean scores of the two groups on any of the overall subscale mean scores. (See Appendix K) For the overall cultural awareness subscale score, the t statistic was -1.11 and the significance value for the 2-tailed t-test was .27, which indicated there was no significant difference between the two groups.

The data in Table 8 shows that the mean score for the overall culturally diverse family for the educational computing minors was lower (3.48) than the score for the non-educational computing minors which was 3.65. The score of 3.48 for the educational computing minors was slightly closer to neutral than agree. The score of 3.65 for the non-educational computing
Table 8. The Culturally Diverse Family Descriptive Data for the Educational Computing (Edcom) Minor Group and the Non-Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>Group</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe it is necessary to include on-going parent input in program planning.</td>
<td>Edcom Minors</td>
<td>3.81</td>
<td>0.21</td>
<td>1.18</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.99</td>
<td>0.18</td>
<td>1.02</td>
<td>32</td>
</tr>
<tr>
<td>I believe cultural views of a diverse community should be included in the school's yearly program planning.</td>
<td>Edcom Minors</td>
<td>3.59</td>
<td>0.20</td>
<td>1.13</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.84</td>
<td>0.18</td>
<td>1.02</td>
<td>32</td>
</tr>
<tr>
<td>I believe Individualized Education Program meetings or program planning should be scheduled for the convenience of the parent.</td>
<td>Edcom Minors</td>
<td>3.51</td>
<td>0.15</td>
<td>0.88</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.63</td>
<td>0.19</td>
<td>1.07</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would experience frustration when conducting conferences with parents whose culture is different from mine.</td>
<td>Edcom Minors</td>
<td>3.51</td>
<td>0.20</td>
<td>1.10</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.81</td>
<td>0.16</td>
<td>0.86</td>
<td>32</td>
</tr>
<tr>
<td>I believe parents know little about assessing their own children.</td>
<td>Edcom Minors</td>
<td>3.45</td>
<td>0.12</td>
<td>0.66</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.28</td>
<td>0.18</td>
<td>0.99</td>
<td>32</td>
</tr>
<tr>
<td>I believe other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers) or telephone conversations.</td>
<td>Edcom Minors</td>
<td>3.28</td>
<td>0.23</td>
<td>1.28</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.74</td>
<td>0.16</td>
<td>0.88</td>
<td>32</td>
</tr>
<tr>
<td>I believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.</td>
<td>Edcom Minors</td>
<td>3.20</td>
<td>0.12</td>
<td>0.69</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.22</td>
<td>0.12</td>
<td>0.71</td>
<td>32</td>
</tr>
<tr>
<td>Overall Culturally Diverse Family Score</td>
<td>Edcom Minors</td>
<td>3.48</td>
<td>0.11</td>
<td>0.61</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.65</td>
<td>0.10</td>
<td>0.57</td>
<td>32</td>
</tr>
</tbody>
</table>
minors was nearer to agree than neutral. The non-educational computing minor group had
five items with mean sensitivity scores that were nearer to agree than neutral. Those scores
were, 3.99, 3.84, 3.81, and 3.74, and 3.63. The non-educational computing minor group also
had two mean scores that were closer to neutral than agree with scores of 3.28 and 3.22. The
educational minor group had three items that had scores that were nearer to neutral than
agree, 3.45, 3.28, and 3.20. The item with the lowest score by the non-educational computing
minor was “I believe in asking families of diverse cultures how they wish to be identified
(e.g., White, Anglo) at the beginning of the interaction” with a mean sensitivity score of 3.22
which was nearer to neutral than agree.

The t-tests for independent samples indicated there were no significant differences
between the mean scores of the two groups on any of the inventory items or the overall
“Culturally Diverse Family” mean score. (Appendix K) For the overall “Culturally Diverse
Family” subscale score, the t statistic was -1.11 and the significance value for the 2-tailed
t-test was .27, p < .05, which indicated there was no significant difference between the scores
of the two groups.

Table 9 shows that the non-educational computing minors had a higher overall mean
score for cross-cultural communication with a score of 3.62 which is slightly closer to agree
than neutral. The educational computing minors had an overall mean score of 3.38, which is
closer to neutral than agree. The highest score (3.91) for the non-educational computing
minor groups was for the item, “I believe I would be uncomfortable in settings with people
who speak a different English dialect than I.” This score of 3.91 was much closer to agree
than neutral. The non-educational computing minor group had one item for which the score
was nearer to neutral than agree. This item, “I believe that there are times when the use of
Table 9. Cross-Cultural Communication Descriptive Data for the Educational Computing (EdCom) Minor Group and the Non-Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>Group</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum.</td>
<td>Edcom Minors</td>
<td>3.60</td>
<td>0.18</td>
<td>1.03</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.66</td>
<td>0.18</td>
<td>1.00</td>
<td>32</td>
</tr>
<tr>
<td>I believe that there are times when the use of &quot;non-standard&quot; English should be accepted.</td>
<td>Edcom Minors</td>
<td>3.33</td>
<td>0.17</td>
<td>0.96</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.41</td>
<td>0.14</td>
<td>0.80</td>
<td>32</td>
</tr>
<tr>
<td>I believe when correcting a child's spoken language, one should role model without any further explanation.</td>
<td>Edcom Minors</td>
<td>3.32</td>
<td>0.13</td>
<td>0.74</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.50</td>
<td>0.17</td>
<td>0.95</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would be uncomfortable in settings with people who speak a different English dialect than I.</td>
<td>Edcom Minors</td>
<td>3.28</td>
<td>0.23</td>
<td>1.28</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.91</td>
<td>0.18</td>
<td>1.00</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cross-Cultural Communication Score</td>
<td>Edcom Minors</td>
<td>3.38</td>
<td>0.14</td>
<td>0.76</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.62</td>
<td>0.12</td>
<td>0.68</td>
<td>32</td>
</tr>
</tbody>
</table>

"non-standard" English should be accepted" had a mean of 3.41. The educational computing minor group had three items in the subscale that had scores that were closer to neutral than agree. Those scores were 3.33, 3.32, and 3.28.

The t-tests for independent samples in Appendix J indicate there were no significant differences between the mean scores of the two groups on the overall "Cross-cultural Communication" mean score. For the overall "Cross-cultural Communication" subscale score, the t statistic was —1.29 and the significance value for the 2-tailed t test was .20, which indicated there was no significant difference between the scores of the two groups.
The t-test showed, however, there was a significant difference between the two groups on the item. "I believe I would be uncomfortable in settings with people who speak a different English dialect than I." The t statistic was -2.19 and the significance value for the 2-tailed t-test was .03, which indicated there was a significant difference between the two groups, with $p < .05$.

Table 10 shows that for the subscale, "Assessment", the two groups had nearly the same overall mean scores. The mean scores were 3.04 and 3.02 respectively for the educational computing minors and the non-educational computing minors. These scores were very close to neutral for cultural sensitivity. The lowest mean score for both groups was on the item, "I believe translating a standardized achievement or intelligence test to the child's dominant language gives the child an added advantage and does not allow for peer comparison." The lowest score recorded for the educational computing minors was 2.53 which was less than neutral. The lowest score for the non-educational computing minors was 2.38, which was lower than neutral and closer to disagree than neutral.

The t-tests for independent samples indicated there were no significant differences between the mean scores of the two groups on any of the inventory items or the overall "Culturally Diverse Family mean score. (Appendix J) For the overall "Assessment" subscale score, the t statistic was .13 and the significance value for the 2-tailed t-test was .90 with $p < .05$ indicating there was no significant difference between the scores of the two groups.
Table 10. Assessment Descriptive Data for the Educational Computing (Edcom) Minor Group and the Non-Educational Computing Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>Group</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe a child should be referred “for testing” if learning difficulties appear to be due to cultural differences and/or language.</td>
<td>Edcom Minors</td>
<td>3.35</td>
<td>0.15</td>
<td>0.82</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.38</td>
<td>0.16</td>
<td>0.91</td>
<td>32</td>
</tr>
<tr>
<td>I believe that translating a standardized assessment from English to another language to be questionable since it alters reliability and validity.</td>
<td>Edcom Minors</td>
<td>3.20</td>
<td>0.12</td>
<td>0.69</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.31</td>
<td>0.16</td>
<td>0.90</td>
<td>32</td>
</tr>
<tr>
<td>I believe translating a standardized achievement or intelligence test to the child’s dominant language gives the child an added advantage and does not allow for peer comparison.</td>
<td>Edcom Minors</td>
<td>2.53</td>
<td>0.15</td>
<td>0.87</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>2.38</td>
<td>0.18</td>
<td>1.01</td>
<td>32</td>
</tr>
<tr>
<td>Overall Assessment Score</td>
<td>Edcom Minors</td>
<td>3.04</td>
<td>0.08</td>
<td>0.44</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.02</td>
<td>0.08</td>
<td>0.46</td>
<td>32</td>
</tr>
</tbody>
</table>

For the last subscale, “Creating a Multicultural Environment”, the non-educational computing minors had a slightly higher overall mean score of 3.67 which was nearer to agree than neutral. The educational computing minor group tallied an overall mean sensitivity score of 3.46 which was closer to neutral than agree for “Creating a Multicultural Environment.”

The t-tests for independent samples indicated there was no significant differences between the mean scores of the two groups on any of the inventory items or the overall “Assessment” mean score. (Appendix K) For the overall “Assessment” subscale score, the
the t statistic was $-1.23$ and the significance value for the 2-tailed t-test was $0.22$, with $p < 0.05$, which indicated there was no significant difference between the scores of the two groups.

Data shown in Table 11 shows that the non-educational computing minor group had an overall mean score of 3.67 for "Creating a Multicultural Environment," which was closer to agree than neutral. This score was slightly higher than the overall mean score of 3.46 scored by the educational computing minors. The 3.46 was slightly closer to neutral than agree. The t-tests for independent samples indicated there was no significant differences between the mean scores of the two groups on any of the inventory items or the overall "Creating a Multicultural Environment" mean score. (Appendix K) For the overall "Creating a Multicultural Environment" subscale score, the t statistic was $-1.23$ and the significance value for the 2-tailed t-test was $0.22$, $p < 0.05$, which indicated there was no significant difference between the scores of the two groups.

The non-educational computing minors had a score of 4.06 on the item, "I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly, or monthly)," which was the highest for both groups on this subscale. This score was slightly more than agree and indicated that the group was culturally sensitive on this item. The non-minors had three items for which the mean scores were 4.00 or slightly above, indicating they were culturally sensitive. These items were, "I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly, or monthly)," "I believe that in a society with as many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children," and "I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or
beliefs.” The mean scores for these items were 4.06, 4.03, and 4.00 respectively. The item, “I believe one’s knowledge of a particular culture should affect one’s expectations of the children’s performance,” had the lowest score for the non-minors with a mean sensitivity of 2.44, which was less than neutral. This indicated that the group tended not to be sensitive on this item. The educational computing minors, likewise, recorded their lowest score on this item. Their mean score for this item was 2.81 which was less than neutral and indicated that the educational computing minors tended not to be culturally sensitive on this inventory item.

The educational computing minors had three items for which they had scores that were closer to agree than neutral. These items were, “I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly, or monthly),” “I believe that in a society with as many racial groups as the USA. I would accept the use of ethnic jokes or phrases by some children” and “I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.” The mean scores for these inventory items were 3.84, 3.77, and 3.74 respectively and indicated that the minors tended to be culturally sensitive on the items.

Table 12 shows the overall mean scores for each subscale and the total overall CDAI score for each group. All of the overall mean subscale scores for the educational computing minor group were closer to neutral than agree. The scores for the computing minors were 3.48, 3.46, 3.38, 3.38, and 3.04. The subscale, “Culturally Diverse Family,” had the highest overall mean score with 3.48. The subscale, “Assessment,” had the lowest score for the educational computing minor group with a mean score of 3.04 which was closer to neutral than agree.
Table 11. Creating a Multicultural Environment Descriptive Data for the Educational Computing (Edcom) Minor Group

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>Group</th>
<th>M</th>
<th>SE</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly, or monthly).</td>
<td>Edcom Minors</td>
<td>3.84</td>
<td>0.23</td>
<td>1.30</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>4.06</td>
<td>0.18</td>
<td>1.05</td>
<td>32</td>
</tr>
<tr>
<td>I believe that in a society with as many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children.</td>
<td>Edcom Minors</td>
<td>3.77</td>
<td>0.20</td>
<td>1.13</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>4.03</td>
<td>0.18</td>
<td>1.03</td>
<td>32</td>
</tr>
<tr>
<td>I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.</td>
<td>Edcom Minors</td>
<td>3.74</td>
<td>0.22</td>
<td>1.24</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>4.00</td>
<td>0.16</td>
<td>0.88</td>
<td>32</td>
</tr>
<tr>
<td>I believe I would make adaptations in programming to accommodate the different cultures as my enrollment changes.</td>
<td>Edcom Minors</td>
<td>3.48</td>
<td>0.21</td>
<td>1.19</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.84</td>
<td>0.14</td>
<td>0.81</td>
<td>32</td>
</tr>
<tr>
<td>I believe children are responsible for solving communication problems that are caused by their ethnic identity.</td>
<td>Edcom Minors</td>
<td>3.47</td>
<td>0.19</td>
<td>1.08</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.78</td>
<td>0.17</td>
<td>0.97</td>
<td>32</td>
</tr>
<tr>
<td>I believe that there are times when racial statements should be ignored.</td>
<td>Edcom Minors</td>
<td>3.45</td>
<td>0.18</td>
<td>1.04</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.78</td>
<td>0.19</td>
<td>1.07</td>
<td>32</td>
</tr>
<tr>
<td>I believe my displays and frequently used materials should reflect at least three different ethnic groups or customs.</td>
<td>Edcom Minors</td>
<td>3.35</td>
<td>0.18</td>
<td>1.00</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.47</td>
<td>0.17</td>
<td>0.98</td>
<td>32</td>
</tr>
<tr>
<td>I believe that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.</td>
<td>Edcom Minors</td>
<td>3.20</td>
<td>0.21</td>
<td>1.18</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.63</td>
<td>0.20</td>
<td>1.13</td>
<td>32</td>
</tr>
<tr>
<td>I believe one's knowledge of a particular culture should affect one's expectations of the children's performance.</td>
<td>Edcom Minors</td>
<td>2.81</td>
<td>0.16</td>
<td>0.90</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>2.44</td>
<td>0.16</td>
<td>0.88</td>
<td>32</td>
</tr>
<tr>
<td>Overall Creating a Multicultural Environment Score</td>
<td>Edcom Minors</td>
<td>3.46</td>
<td>0.14</td>
<td>0.80</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.67</td>
<td>0.10</td>
<td>0.56</td>
<td>32</td>
</tr>
</tbody>
</table>
Table 12. Summary of Overall Descriptive Data for the Educational Computing (Edcom) Minors and the Non-Educational Computing Minors

<table>
<thead>
<tr>
<th>Inventory Item</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Culturally Diverse Family</td>
<td>Edcom Minors</td>
<td>3.48</td>
<td>0.61</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.65</td>
<td>0.57</td>
<td>32</td>
</tr>
<tr>
<td>Overall Creating a Multicultural Environment</td>
<td>Edcom Minors</td>
<td>3.46</td>
<td>0.80</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.67</td>
<td>0.56</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cross-Cultural Communication</td>
<td>Edcom Minors</td>
<td>3.38</td>
<td>0.76</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.62</td>
<td>0.68</td>
<td>32</td>
</tr>
<tr>
<td>Overall Cultural Awareness</td>
<td>Edcom Minors</td>
<td>3.38</td>
<td>0.71</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.55</td>
<td>0.54</td>
<td>32</td>
</tr>
<tr>
<td>Overall Assessment</td>
<td>Edcom Minors</td>
<td>3.04</td>
<td>0.44</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.02</td>
<td>0.46</td>
<td>32</td>
</tr>
<tr>
<td>Overall CDAI Score</td>
<td>Edcom Minors</td>
<td>3.35</td>
<td>0.52</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Non-Edcom Minors</td>
<td>3.50</td>
<td>0.40</td>
<td>32</td>
</tr>
</tbody>
</table>

The non-educational computing minor group had four subscales scores (3.67, 3.65, 3.62, and 3.55) for which the overall mean scores were closer to agree than neutral. Those subscales included “Creating a Multicultural Environment,” the “Culturally diverse Family,” “Cross-cultural Communication,” and “Cultural Awareness.” The lowest overall subscale
score for the non-educational computing minor group was on the subscale, "Assessment," which had a mean score of 3.02. The "Assessment" subscale score was the lowest for both groups.

The non-educational computing minor group had a total overall CDAI mean score of 3.50, which was exactly midpoint between, agree and neutral. This score was higher than the overall mean score of the CDAI for the educational computing minor group. The overall mean score on the CDAI for the educational computing minors was 3.35 which was closer to neutral than agree.

The t-tests for independent samples indicated there was no significant differences between the overall mean scores of the two groups on the five overall subscale mean scores or the total overall mean score for the CDAI. (Appendix K) For the total overall CDAI, score, the t statistic was -1.33 and the significance value for the 2-tailed t-test was .19, which indicated there was no significant difference between the scores of the two groups.

**Question three.** Question three asked the following: What factors contribute to a high level of sensitivity towards cultural diversity as measured by the Cultural Diversity Awareness Inventory?

An ANCOVA was used to find which factors contribute to a high score on the CDAI, the dependent variable. The following independent variables contributed significantly to a higher score on the CDAI; (1) living in an urban setting, \( F = 9.78, p < .05 \) (2) courses required for the educational computing minor, \( F = 6.35, p < .05 \) (3) level of interaction with ethnic minorities, \( F = 5.13, p < .05 \), and (4) participation in Multicultural Nonsexist Education, \( F = 2.46, p = < .05 \). (See Figure 13).
Table 13. **ANCOVA Dependent Variable: CDAI**

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig. *</th>
<th>Eta Squared</th>
<th>Noncent. Parameter</th>
<th>Observed Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>3.77</td>
<td>5</td>
<td>.75</td>
<td>4.38</td>
<td>.00</td>
<td>.27</td>
<td>21.91</td>
<td>.95</td>
</tr>
<tr>
<td>Intercept</td>
<td>41.76</td>
<td>1</td>
<td>41.76</td>
<td>242.84</td>
<td>.00</td>
<td>.81</td>
<td>242.84</td>
<td>1.00</td>
</tr>
<tr>
<td>Q15G</td>
<td>.84</td>
<td>1</td>
<td>.83</td>
<td>4.88</td>
<td>.03*</td>
<td>.08</td>
<td>4.87</td>
<td>.58</td>
</tr>
<tr>
<td>COMM1</td>
<td>1.60</td>
<td>1</td>
<td>1.60</td>
<td>9.28</td>
<td>.00*</td>
<td>.14</td>
<td>9.28</td>
<td>.85</td>
</tr>
<tr>
<td>Q14B</td>
<td>.42</td>
<td>1</td>
<td>.42</td>
<td>2.46</td>
<td>.12</td>
<td>.04</td>
<td>2.46</td>
<td>.33</td>
</tr>
<tr>
<td>INTERACT</td>
<td>.88</td>
<td>1</td>
<td>.88</td>
<td>5.13</td>
<td>.03*</td>
<td>.08</td>
<td>5.13</td>
<td>.61</td>
</tr>
<tr>
<td>ECMCURRT</td>
<td>1.14</td>
<td>1</td>
<td>1.14</td>
<td>6.62</td>
<td>.01*</td>
<td>.10</td>
<td>6.62</td>
<td>.72</td>
</tr>
<tr>
<td>Error</td>
<td>9.97</td>
<td>58</td>
<td>.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>763.92</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Corrected Total 13.74 63

a Computed using alpha = .05
b R Squared = .274 (Adjusted R Squared = .212)
* p = < .05

Q15G = Participation in Multicultural Nonsexist Education
COMM1 = Urban community (Type of hometown)
INTERACT = Interaction with ethnic minorities
ECMCURRT = Total required courses for educational computing minor
Q14B = Dating ethnic minorities

**Summary**

This chapter has described the results and findings of this research study. The responses from the questionnaire, "Preservice Teacher Survey", were used to compute statistical analyses that described, searched for relationships and looked for contributing predictors. The educational computing minors were found to be closer to neutral (3.35) on their sensitivity towards ethnic minorities as measured by the Cultural Diversity Awareness Inventory.
The non-educational computing minor students were found to be exactly midway between neutral and agree (3.50) on their sensitivity towards ethnic minorities as measured by the Cultural Diversity Awareness Inventory. No significant difference was found between the scores of the two groups.

Although both groups indicated cultural sensitivity levels in the positive range, neither group had an average response at the agree level.

Four variables, living in an urban community, participation in the required classes for the educational computing minor, level of interaction with ethnic minorities, and participation in Multicultural Nonsexist Education class were found to contribute to greater cultural sensitivity as measured by the CDAI.
CHAPTER 5. SUMMARY, DISCUSSION, AND RECOMMENDATIONS

This chapter begins with a summary of the background and methodology for the study. A summary and discussion of the essential findings follow. Recommendations evolving from the study will then be outlined.

Summary of the Background and Methodology of the Study

Results from a federal survey in 1999 showed that new teachers nor veterans feel well prepared for what Secretary of Education Richard Riley calls "the four fastest changing aspects of the nation's schools." Those four aspects are as follows: (1) demands for raising standards for students; (2) teaching students from diverse cultural backgrounds; (3) helping students with special needs, and (4) using technology in the classroom (U.S. Department of Education, 1999).

The effort to address the issues of better teacher preparation and the use of technology in the classroom has contributed to a rapid infusion of computers and related technology into the learning environment of children. This infusion has brought with it the challenging and too often neglected issues of technology—including, but not limited to, equity, access and quality of access to exemplary educational resources, including effective teachers. Chisholm (1995) suggested that some of the issues of access to classroom materials, including technology, are directly related to the classroom teacher's decisions in the use of technology and other curriculum materials. PCAST (1997) reiterated the need for teachers to become
exemplary users of technology and aware of the imbalances that exist in the access and types of use of technology by minority groups as well as students from lower socioeconomic groups.

Further, demographic data continue to emphasize that most of the nation’s future teachers will be White females who come from rural backgrounds and that the student population will be from diverse ethnic backgrounds. It becomes evident that a need exists to provide our future teachers with increased knowledge and skills to become exemplary technology users, as well as teachers who are knowledgeable and sensitive to cultural diversity and the issues connecting these topics. Teachers who are highly steeped in technology will be prime decision-makers as district technology coordinators and leaders in the classroom on technology use. Therefore, looking at the sensitivity of educational computing minors is extremely relevant and needed.

The purpose of this study was to investigate preservice teachers who minor in educational computing and their sensitivity towards cultural diversity. This study also sought to find predictors for high levels of sensitivity towards cultural diversity as measured by the Cultural Diversity Awareness Inventory (Henry, 1991). Data were collected from results of a questionnaire that was completed by 64 elementary preservice teachers.

The researcher-designed questionnaire, “Preservice Teacher Survey” was divided into three sections. Part I contained the Cultural Diversity Awareness Inventory (CDAI) with five additional items that addressed technology equity issues.
The CDAI was used to measure the level of sensitivity of the preservice teachers and addressed the following areas:

(a) cultural awareness
(b) the culturally diverse family
(c) cross-cultural communication
(d) assessment
(e) creating a multicultural environment using multicultural methods and materials

The respondents were asked to use the likert-type instrument to answer questions relating to sensitivity towards cultural diversity.

Part II contained five open-ended questions. These questions solicited information from the preservice teachers regarding the use of technology in school settings during their field experience, practicum and student teaching assignments.

Part III contained questions about the respondent, such as gender, age, and respondent's interaction with ethnic minorities.

**Summary and Discussion of Results**

**Description of the respondents**

The subjects in this study were two groups of preservice teachers. Each group contained 32 preservice teachers. The focus group consisted of preservice teachers who were specializing in technology. These students were obtaining minors in educational computing. They were referred to as the educational computing minor group. The comparison group was a matched group of preservice teachers who were not as technologically oriented and were
not earning minors in educational computing. They were referred to as the non-educational computing minor group in this study. These two groups of students were matched by GPAs.

There were equally high percentages (96.7% and 96.9%) from both groups who reported European American as their ethnic background. However, one student from the computing minors listed biracial for ethnic background. Over half (53.1% and 56.3%) the students in both groups classified the communities in which they spent most of their lives as rural.

The majority of both groups were females. However, there were 19.4% males in the educational computing minor group, which was slightly higher than the 15.6% males in the non-educational computing minor group.

When asked to describe the frequency of interaction with ethnic minorities, close to half (43.8%) of the educational computing minor group and 38% of the non-educational computing minor group indicated they interacted with ethnic minorities “often.” However, over half (56.3%) of the non-educational computing minor group and 31% of the educational computing minor group indicated they “rarely” interacted with ethnic minorities.

These findings suggest the need for preservice teachers to have more opportunities to interact with ethnic minorities to facilitate learning about people from cultures other than their own.

Data showed that the educational computing minor students reported more instances of interaction with ethnic minorities than the comparison group of students in eight of the thirteen areas or situations listed. Those areas included, field experience, work, group organizations, church, school, class and dating. Seventy-five percent of the educational
computing minor students reported taking Multicultural and Nonsexist Education compared to 59.4% of the non-educational computing minor students.

**Educational computing minor students and sensitivity to cultural diversity**

Research question one asked whether elementary preservice teachers who minor in educational computing were culturally sensitive in areas measured by the CDAI.

The data indicated that the elementary preservice teachers minoring in educational computing were closer to neutral than agree on the overall CDAI with a mean score of 3.35. On the subscale, "Cultural Awareness," the educational computing minors scored 3.38, which was closer to neutral than agree on sensitivity. The item with the highest score (3.88) was "I believe my culture to be different from some of the children I will teach." The item with the lowest score (2.84) was "I believe it is important to identify immediately the ethnic groups of children I will teach." This item was one of 14 that was statistically reversed so high scores reflected culturally sensitive response (Davis, 1993). Two items had mean scores below neutral. These items were "I believe I would prefer to work with children and parents whose cultures are similar to mine" and "I believe it is important to identify immediately the ethnic groups of children I will teach." The scores were for these items were 2.97 and 2.84 respectively. For the inventory item, "I believe it is important to identify immediately the ethnic groups of children I will teach," Deering & Stanutz (1995) also found that preservice teachers were less than neutral. This score suggests that the preservice teachers were not culturally sensitive on this item. DeVoe et al., (1996), however, found contrasting results as only 19% of the preservice teachers in their study were less than neutral on this item.
The data indicate that, similar to Larke’s 1990 study, the educational computing
students acknowledged there will be cultural differences between themselves and some of the
students they will teach. However, they were less than neutral regarding working with
students and parents from different cultural backgrounds. It is likely that there is a feeling of
discomfort with teaching children and working with parents whose cultures differ from the
their own. These students, like those in similar studies (Larke, 1990; Davis, 1993; Pohan),
come from backgrounds that did not provide the opportunities for students to interact with
people from diverse cultural backgrounds. Further, the changing demographics indicate that
most of our future teachers will be White females from rural areas and that the nation’s
school population will be more people of color (Larke, 1990; Davis, 1993; Pohan, 1996).
Therefore, it is imperative that today’s preservice teacher programs increase the number of
opportunities for its preservice teachers to experience working with diverse student
populations. Opportunities such as these would aid the preservice teachers in becoming more
comfortable with students from other cultures. Perhaps, this would lead to increased
sensitivity in working with others from cultures different from their own.

On the subscale, “Culturally Diverse Family”, the overall score for sensitivity was
3.48, which was slightly closer to neutral than agree. The item with the highest mean score
(3.81) in this subscale was “I believe it is necessary to include on-going parent input in
program planning”. This mean score was closer to agree than neutral for sensitivity. The
item with the lowest mean score (3.20) was “I believe in asking families of diverse cultures
how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.” The
score for this item was also closer to neutral than agree.
Though the preservice teachers in this group approach agreement that parental input should be included in program planning, there needs to be improvement in this area. Parents can provide valuable input to teachers that would assist in the teaching and learning process (Larke, 1990). Teachers must become sensitive to this issue and involve parents as valuable partners in the teaching and learning process of their children. Without parents, valuable assets are lost.

For the subscale, “Cross-cultural Communication,” the overall mean score for the educational computing preservice teachers was 3.38 which was closer to neutral than agree. The item, “I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum” had a score (3.60) that was closer to agree than neutral. The remaining three items of the four in this subscale had scores of 3.33, 3.32 and 3.28 that were nearer to neutral than agree. The lowest mean score for this subscale was the inventory item “I believe I would be uncomfortable in settings with people who speak a different English dialect than I.” The mean score for this item was 3.28, which was closer to neutral than agree.

Communication is central to the learning process. Therefore, ways must be found to provide preservice teachers with opportunities to interact with students who speak different English dialects. This is necessary if teachers are to become comfortable with students who speak different English dialects and be able to communicate freely and easily with their students. Further, students must feel comfortable expressing themselves without feeling that their language or culture is devalued when teachers show signs of being uncomfortable with other English dialects (Larke, 1990).
The data for the subscale, "Assessment," showed that the educational computing minor students had an overall mean score of 3.04, which was close to neutral. Of the three items, "I believe a child should be referred 'for testing' if learning difficulties appear to be due to cultural differences and/or language" and "I believe translating a standardized assessment from English to another language to be questionable since it alters reliability and validity" had scores that were nearer to neutral than agree for sensitivity. The scores for these two items were 3.35 and 3.20 respectively. The lowest score (2.53) was less than neutral on the item. "I believe translating a standardized achievement or intelligence test to the child's dominant language gives the child an added advantage and does not allow for peer comparison."

Students must be provided with more than one way to communicate what they know and what they have learned. While standardized and intelligence tests have a role in assessment, caution must be exercised in using them. Of the preservice teachers in the DeVoe et al (1996) study, 75% agreed that standardized or intelligence tests should be given in a student's dominant language. However, the students in this group, similar to those in the Deering and Stanutz (1995) study, were not agreeable to allowing students the opportunity to communicate, in their dominant language, what they know and what they have learned on standardized or intelligence tests. More precisely, the data show the students were less than neutral on this item. Certainly, issues of reliability and validity are necessary to test construction. However, ways must be found that allow equal opportunities for all students to be assessed accurately. The importance of this issue increases as classrooms become more even more diverse (Larke, 1990). Other forms of assessment such as portfolios and daily observational assessments can provide input that standardized achievement tests cannot.
provide. Deering and Stanutz (1995) suggest that a course in tests and measurement might facilitate preservice teachers' understanding of assessment, surrounding issues and implications.

On the final subscale, "Creating a multicultural environment," the overall mean score was 3.46 which was nearer to neutral than agree. Three items with mean scores of 3.84, 3.77, 3.74 were closer to agree than neutral. The item with the highest score (3.84) in this subscale was "I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly, or monthly)." This score was closer to agree than agree. The item with the lowest mean score (2.81) for this subscale was "I believe one's knowledge of a particular culture should affect one's expectations of the children's performance." This score was below neutral.

The need for teachers to create a multicultural environment cannot be overemphasized. If students from diverse populations do not feel comfortable and accepted in the classroom, it may well have a negative effect on their learning. In addition, the benefits to the European American students are vast. Multicultural education benefits all students (Banks, 1994). Teachers must be knowledgeable of this and make accommodations in their classrooms to make all students feel welcome, accepted and comfortable (Chisholm, 1995).

Comparison of matched groups

The total mean CDAI score for the educational computing minor group was 3.35, which was closer to neutral than agree. The total mean CDAI score for the non-educational computing minors was 3.50, which is exactly midway between neutral and agree. Statistical analyses, t-tests for independent samples, indicated there were no significant differences
between the overall mean scores of the two groups on the five subscales and the total CDAI score. For the total overall CDAI score, the t statistic was −1.327 and the significance value for the 2-tailed t-test was .189, which indicated there was no significant difference between the scores of the two groups.

The educational computing minors had subscale scores that were nearer to neutral on each of the subscales with scores of 3.48, 3.46, 3.38, 3.32 and 3.04. The subscale, “Culturally Diverse Family,” had the highest mean score of 3.48. The non-educational computing minors had four subscale scores of 3.67, 3.65, 3.62, and 3.55 that were closer to neutral than agree. The subscale with the highest mean score was “Creating a multicultural environment” with a mean score of 3.67, which was closer to agree than neutral. Though this mean score was closer to agree than neutral, it indicates that additional work needs to be done by teacher education programs to stress the importance of creating a multicultural environment. Multicultural education should help preservice teachers learn to create environments that facilitate and empower, rather than repress and discriminate (Liston & Zeichner, 1990).

The lowest item recorded by both groups was “I believe knowledge of a particular culture should affect one’s expectations of the children’s performance.” The educational computing minors had a mean sensitivity score of 2.81 which was less than neutral and the non-educational computing minors had a mean score of 2.44 which was even less and closer to disagree than neutral. The purpose of multicultural education is to increase the sensitivity of preservice teachers by increasing their cultural knowledge base Larke (1990). This point must be emphasized by college faculty throughout the teacher education program.

Additionally, colleges and universities must design an approach to teacher education
whereby multicultural education is pervasive throughout the teacher education curriculum (Conaway, et al., 1997 and Garcia & Pugh, 1992.)

The subscale with the lowest mean score was “Assessment” (3.02), which indicated that the non-educational computing minor group was closer to neutral. The non-educational computing minor group scored the lowest mean for both groups on any of the inventory items with a mean score of 2.38 on the item. “I believe translating a standardized achievement or intelligence test to the child’s dominant language gives the child an added advantage and does not allow for peer comparison.”

It is clear from the data that both groups are less than neutral (2.53 and 2.38) when it comes to assessing students in their dominant language. The implications are strong that students whose dominant language is not English may not be assessed accurately with standardized and/or intelligence tests. Further, more needs to be done to enlighten preservice teachers regarding this issue. The issue of assessment has far reaching effects as students are “tracked” often by only the outcome of standardized tests.

Another issue related to assessment has to do with the disproportionate number of African Americans, especially African American males, who are categorized and assigned to special education classes based on standardized and intelligence tests. Standardized assessment tests have often come under attack as being biased, resulting in misrepresentation of the abilities of ethnic minorities (Council for Exceptional Children, 1997; Ford, 1998; Patton, 1998). Additionally, African Americans are disproportionately underrepresented in gifted programs, based on standardized and intelligence tests (Patton, 1998). Much needs to be done to enlighten and sensitize preservice teachers on this critical subject. When teachers become more knowledgeable of the subject of assessment and related issues, they can
become advocates for finding and using alternate forms of assessment. Additionally, they may become more sensitive to the need for finding appropriate ways to assess their students.

Predictors of cultural sensitivity

An ANCOVA revealed that the following variables contributed to a high score on the CDAI: 1) living in an urban setting, $F = 9.78, p < .05$ and 2) the required curriculum courses for the educational computing minor, $F = 6.35, p < .05$. Participation in the class. Multicultural Nonsexist Education approached significance, $F = 3.60$, significance level of .06.

It is highly probable that students who live in urban settings have more opportunities to interact with ethnic minorities and thereby have increased opportunities for positive interactions. Living in an urban setting also provides for opportunities for students to learn, first hand, about cultures different from their own. Therefore, it is not surprising that “living in an urban setting” is a predictor of high cultural sensitivity. However, the fact that the curriculum required for the educational computing minor is a significant predictor was surprising. Upon further investigation, it was suggested that the content of many of the classes required for the educational technology minor included issues of access and equity. Perhaps, this accounts for the significance of this factor. Addressing the issues of access and equity throughout the technology curriculum serves to enhance the knowledge base of preservice teachers.

This study, contrary to Larke’s 1990 study, found that taking a multicultural education class was significant in increasing sensitivity to cultural diversity. This may well be due to the variety of approaches in teaching multicultural education and the content of the
Studies have shown there is no one model used to teach multicultural education (Banks, 1994). However, teaching practices that include scenarios that cause the learner to reflect have greater impact upon effecting change in attitude and behavior. Continual reflection is characteristic of an exemplary teacher.

Finding that the variable, level of interaction with ethnic minorities, is significant further supports the need for preservice teachers to have opportunities to work in diverse classrooms throughout their teacher education programs. A contextual teaching program, such as Project Opportunity, discussed in this study, is one such alternative. However, preservice teachers must first gain foundational knowledge via courses in multicultural education, exceptionalities, gender issues, and language (Banks and Banks, 1993; Nieto, 1996; and Sleeter, 1993). A knowledge base is the foundation for enabling students to alter their attitudes (Barry and Lechner, 1995).

**Recommendations**

The following section of this chapter will outline recommendations based on the findings of this research.

**Preservice teacher education**

The analyses of data collected for this study indicated that further research studies should be conducted in the following areas:

1. Preservice teacher programs need to give further attention to the cultural sensitivity of preservice teachers. Just as researchers have found that one course is not enough, one
study that highlights existing needs is not enough. Continued studies with follow-up action plans must follow if teacher education programs are to be successful in making needed attitude changes with preservice teachers. Attitudes are difficult to change and require meaningful, positive interactions with others if change is to take place.

2. A similar study should be conducted before preservice teachers enter the teacher education program and after they complete the program. Conducting such a study would assist teacher education programs in determining the needs and strengths of beginning preservice teachers. This would provide teacher preparation institutions with baseline data from which to start. They would be better able to detect any significant changes in the sensitivity of preservice teachers toward cultural diversity. Such a study would also help colleges of education evaluate the effectiveness of their existing programs.

3. A similar study should be conducted to assess the effects of student teaching in diverse settings and cultural sensitivity. For example, studies should be done with students from contextual teaching programs such as Project Opportunity, but specifically, in settings where students are placed in predominately minority schools. This would help determine if four years of contextual experiences in diverse classrooms contribute to greater sensitivity towards cultural diversity.

4. Preservice teacher programs need to seek additional early field and student teaching sites that have diverse ethnic student populations. The importance of personal interaction cannot be overemphasized. However, taking advantage of technological advances that
allow classroom interaction from distant facilities can help bridge the gap when diverse ethnic populations are not nearby. Public schools will gain better qualified teachers as preservice teachers are provided with opportunities and exposure to diverse school populations that they would otherwise not have.

5. Preservice teacher programs should incorporate multicultural education throughout the program. Multicultural education should permeate the curriculum of preservice teachers. College instructors must model and teach strategies that would exemplify what it means to be a “multicultural teacher.” Students are more apt to model strategies when they see their instructors throughout the college of education incorporating them into their teaching. This obviously, means that faculty and staff must be committed as well as knowledgeable regarding multicultural education.

6. Preservice teacher institutions must aggressively seek to recruit and retain students and faculty of color. Ongoing relationships must be established with high schools for colleges and universities to be able to recruit minority students. Working with established organizations dedicated to encouraging students to enter the field of education is but one example of what can be done. Such an organization is Sigma Delta Theta, which begins at the middle school level encouraging students to consider teaching as a profession.
Conclusions

In conclusion, this study found that while preservice teachers in both groups were in the positive range and closer to neutral in their sensitivity towards cultural diversity, it suggests that additional work needs to be done to address this issue. Additionally, this research found there was no significant difference in the level of sensitivity towards cultural diversity between the educational computing minor group and the non-educational computing minor group. These results suggest that more needs to be done to improve the cultural awareness of preservice teachers. There is a great need to help preservice teachers to develop the needed knowledge, skills, awareness and cultural sensitivity necessary to accommodate the needs of an ever-increasing diverse student population. One multicultural education class is not enough. Teacher educators must respond to this need and meet the challenge by taking strong positive steps to increase needed educational experiences that will provide for increased opportunities for students to interact with diverse student populations. Through positive contact between preservice teachers and culturally diverse students, the discomfort level will be lessened and facilitate the sensitivity level moving from neutral to stronger positive levels of sensitivity (Larke, 1990).

This study also found that living in an urban setting contributed to higher sensitivity to cultural diversity. It also discovered, that like other studies, most preservice teachers came from backgrounds where they have not interacted with ethnic minorities often. This presents a challenge to teacher education programs to find meaningful ways to provide opportunities for preservice teachers to work in diverse school settings.
Teacher preparation institutions such as the one in this study, which are located in areas where few people of color reside, must look for novel ways to provide meaningful situations wherein their preservice teachers can work in classrooms with diverse student populations. Some institutions with similar challenges have developed partnerships with school districts outside their immediate areas. With these partnerships in place, colleges and universities have ongoing access to not only diverse student populations, but, hopefully exemplary teachers who use strategies that enhance the success of all students. Just as teacher preparation institutions have developed programs for its student teachers to go abroad for their student teaching experience, similar programs can be established whereby students are able to student teach in settings with diverse student populations.

Though life-long living experiences obviously outweigh exposure in college, exposure to diverse student populations in college are needed even more since most of the nation's teachers are coming from backgrounds with little exposure to ethnic minorities as found in this study and others (Larke, 1990; Davis, 1993).
APPENDIX A

COURSE REQUIREMENTS FOR EDUCATIONAL COMPUTING MINOR
# Educational Computing Minor

**Department of Curriculum and Instruction**
**College of Education**
**Iowa State University**
**8/98**

The following is a list of required courses for the Educational Computing Minor offered by the Department of Curriculum and Instruction in the College of Education.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Name</th>
<th>Credits</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>El. Ed./Sec. Ed.</td>
<td>Introduction to Instruction Technology</td>
<td>3</td>
<td>F,S,SS*</td>
</tr>
<tr>
<td>201</td>
<td>Pre-Student Teaching Experience Teacher Aide</td>
<td>1**</td>
<td>F,S</td>
</tr>
<tr>
<td>El. Ed./Sec. Ed.</td>
<td>Pre-Student Teaching Experience Educational Computing</td>
<td>1-2***</td>
<td>F,S,SS</td>
</tr>
<tr>
<td>280A</td>
<td>Using Microcomputers in the Classroom</td>
<td>3</td>
<td>F,S</td>
</tr>
<tr>
<td>Sec. Ed. 302</td>
<td>Design and Devel. of Multimedia Based Instruction</td>
<td>3</td>
<td>F,S</td>
</tr>
<tr>
<td>Sec. Ed. 403</td>
<td>Theory and Practice of Distance Education</td>
<td>2</td>
<td>F, SS</td>
</tr>
<tr>
<td>or El. Ed./Sec. Ed. 405</td>
<td>Applications of the Internet in Education</td>
<td>3</td>
<td>F,S</td>
</tr>
<tr>
<td>Com. Sci. 107</td>
<td>Applied Computer Programming</td>
<td>3</td>
<td>F,S</td>
</tr>
<tr>
<td>or Com. Sci. 207</td>
<td>C Programming I</td>
<td>3</td>
<td>F,S</td>
</tr>
<tr>
<td>or MSE 370 or CPR E 370</td>
<td>Toying with Technology</td>
<td>3</td>
<td>F,S</td>
</tr>
</tbody>
</table>

*Please check a schedule of classes each semester as the times listed here are tentative.

**El. Ed./Sec. Ed. 280A must be either a prerequisite or taken concurrently with El. Ed./Sec. Ed. 280B. Two-hour blocks of time (per 1 hour of credit) are needed in student's schedule, as field experiences are offered in area educational settings.

***9 credits of courses listed for this minor can not be used to meet any other college or university requirement. Some students may need to take an additional credit of 280B for this requirement.

Please contact your advisor for a Request for Minor form and instructions.

If you have any questions about the educational computer minor please contact:
Denise Schmidt
N031B Lagomarcino
dschmidt@iastate.edu
(515) 294-9141
APPENDIX B

LETTER OF PERMISSION TO USE THE INVENTORY
June 2, 1999

Carline Phillips
582 Chardonnay Point
Waukee, Iowa 50263

Dear Phillips:

I Dr. G.B. Henry give Carline Phillips permission to use the Cultural Diversity Awareness Inventory Instrument for her doctoral research at Iowa State University.

I have one requirement, that you send me the results of your study.

If you have any questions, please feel free to give my secretary a call.

Sincerely,

Dr. Gertrude B. Henry

Dr. Gertrude B. Henry
DATE: June 2, 99
TO: Carlene Phillips
FROM: Dr. G.B. Heney DEPT: Education

9 PAGES - IF ANY - TO FOLLOW THIS SHEET. PLEASE NOTIFY SENDER OF ANY MISSING PAGES.

CALL (757) 727-5773 or FAX (757) 727-5084

MESSAGE:
Give me a call if you have any question.

[Signature]

FAX NUMBER (515) 987-4012
APPENDIX C

CULTURAL DIVERSITY AWARENESS INVENTORY
Cultural Diversity Awareness Inventory (CDAI)

developed by
Gertrude B. Henry

July 1991

This self-examination questionnaire is designed to assist the user in looking at his/her own attitudes, beliefs and behavior towards elementary children of culturally diverse backgrounds. There are no "right" answers, only what you believe. Please be sure to answer each item by checking strongly agree, agree, neutral, disagree or strongly disagree. The intended users are elementary educators, classroom teachers, paraprofessionals, therapists, specialists) involved in direct services to elementary children of culturally diverse backgrounds.

Definitions:

The word Culture as used in this inventory encompasses the five areas identified by Aragon (1973) as follows:

1. values and beliefs
2. communication
3. social relationships of mother/child, woman/man, uncle/niece, etc.
4. basic diet and food preparation
5. dress or common costume

The word Ethnic as used in this inventory pertains to the racial and ethnic identification of people.
Checklist

I believe...

1. ...my culture to be different from some of the children I serve.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

2. ...it is important to identify immediately the ethnic groups of the children I serve.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

3. ...I would prefer to work with children and parents whose cultures are similar to mine.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

4. ...I would be uncomfortable in settings with people who speak a different English dialect from myself.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

5. ...I am uncomfortable with people who exhibit values or beliefs different from my own.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

6. ...other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers), or telephone conversations.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree
I believe...

7. ...I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra).

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. ...cultural views of a diverse community should be included in the school's yearly program planning.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. ...it is necessary to include on-going parent input in program planning.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. ...I sometimes experience frustration when conducting conferences with parents whose culture is different from my own.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. ...children are responsible for solving communication problems that are caused by their racial/ethnic identity.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. ...English should be taught as a second language to non-English speaking children as a regular part of the school curriculum.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Neutral</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I believe...

13. ...when correcting a child's spoken language, one should role model without any further explanation.

   _____strongly agree  _____neutral  _____strongly disagree
   _____agree  _____neutral  _____disagree

14. ...that there are times when the use of "non-standard" English should be accepted.

   _____strongly agree  _____neutral  _____strongly disagree
   _____agree  _____neutral  _____disagree

15. ...in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.

   _____strongly agree  _____neutral  _____strongly disagree
   _____agree  _____neutral  _____disagree

16. ...that in a society with as many racial groups as the U.S.A., I would accept the use of ethnic jokes or phrases by some children.

   _____strongly agree  _____neutral  _____strongly disagree
   _____agree  _____neutral  _____disagree

17. ...that there are times when racial statements should be ignored.

   _____strongly agree  _____neutral  _____strongly disagree
   _____agree  _____neutral  _____disagree

18. ...a child should be referred "for testing" if learning difficulties appear to be due to cultural differences and/or language.

   _____strongly agree  _____neutral  _____strongly disagree
   _____agree  _____neutral  _____disagree

19. ...that translating a standardized assessment from English to another language to be questionable since it alters reliability and validity.

   _____strongly agree  _____neutral  _____strongly disagree
   _____agree  _____neutral  _____disagree
I believe...

20. ...translating a standardized achievement or intelligence test to the child's dominant language gives the child an added advantage and does not allow for peer comparison.

____ strongly agree  ____ neutral  ____ strongly disagree
____ agree  ____ disagree

21. ...parents know little about assessing their own children.

____ strongly agree  ____ neutral  ____ strongly disagree
____ agree  ____ disagree

22. ...that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.

____ strongly agree  ____ neutral  ____ strongly disagree
____ agree  ____ disagree

23. ...it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.

____ strongly agree  ____ neutral  ____ strongly disagree
____ agree  ____ disagree

24. ...Individualized Education Program meetings or program planning should be scheduled for the convenience of the parent.

____ strongly agree  ____ neutral  ____ strongly disagree
____ agree  ____ disagree

25. ...I make adaptations in programming to accommodate the different cultures as my enrollment changes.

____ strongly agree  ____ neutral  ____ strongly disagree
____ agree  ____ disagree
I believe...

26. ...the displays and frequently used materials within my settings show at least three different ethnic groups or customs.

_____ strongly agree  _____ neutral  _____ strongly disagree
_____ agree  _____ neutral  _____ disagree

27. ...each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly or monthly).

_____ strongly agree  _____ neutral  _____ strongly disagree
_____ agree  _____ neutral  _____ disagree

28. ...one's knowledge of a particular culture should affect one's expectations of the children's performance.

_____ strongly agree  _____ neutral  _____ strongly disagree
_____ agree  _____ neutral  _____ disagree
Last four digits of S.S.#

The following items will provide information about you which will be used in the study. We are not asking for your name in this study. Please answer by circling one answer for each item or writing in an answer where appropriate.

29. gender (circle one)
   1. female
   2. male

30. ethnicity/race (circle one)
   1. African American/Black
   2. Anglo American/White
   3. Mexican American/Hispanic
   4. Native American
   5. Asian American
   6. Other___________ (please specify)

31. present position (circle one)
   1. regular educator/classroom teacher
   2. administrator (principal, assistant principal)
   3. paraprofessional (instructional aide)
   4. counselor
   5. special education teacher
   6. other____________________ (please specify)

32. present grade level (circle all that apply)
   P preK
   K kindergarten
   1 1st
   2 2nd
   3 3rd
   4 4th
   5 5th
   6 6th

33. number of years taught in the classroom:___________

34. number of years involved in education outside the classroom:___________

35. highest degree earned (circle one)
   1. less than high school
   2. high school graduate
   3. two years of college or trade school
   4. bachelor's
   5. master's
   6. doctorate

36. age range (circle one)
   1. 21-30
   2. 31-40
   3. 41-60
   4. 51-60
   5. over 61
APPENDIX D

LIST OF OPEN-ENDED QUESTIONS
List of Open-Ended Questions in the Questionnaire

How often did you see technology used with students during your field experience and/or practicum?

Describe how technology was being used with students during your field experience and/or practicum.

Define educational equity or educational equality.

List the issues or challenges pertaining to educational equity or educational equality in the use of technology in schools today.

List or describe any cultural or ethnic biases that may exist in educational computer software.
APPENDIX E

COVER LETTER AND PILOT STUDY QUESTIONNAIRES
July 1999

To: Survey Respondents

From: Graduate Researcher

You are being asked to help pilot this survey. It is part of research being done by a doctoral student at Iowa State University. Your candid answers, input and suggestions are extremely valuable to the researcher and the research being done. Please read and respond to each item that is applicable to you. As you complete the survey, direct any questions to the graduate student administering this instrument. Additionally, you may write any questions, comments or suggestions next to any item regarding its format, clarity etc. Also, feel free to include any suggestions that you believe would make the item/s easier to understand and respond to.

Your participation is greatly appreciated. Thank you.
PRESERVICE AND FIRST YEAR TEACHER SURVEY

Your participation in this study is appreciated. This survey is being used to help identify teaching strategies and experiences that contribute to improved teacher education programs. Your responses are very important. The identities of all respondents are anonymous to the researcher. Please complete the front and back of each page of this survey, answering all items that are applicable to you. Thank you in advance for your cooperation.

Part 1. Respondent Information

1. Gender
   ____ Female   ____ Male

2. Age
   ____ 18   ____ 19   ____ 20   ____ 21
   ____ 22   ____ 23   ____ 24   ____ 25 or over

3. Year in school
   ____ Freshman   ____ Sophomore   ____ Junior   ____ Senior
   ____ Graduate Student   ____ Not Applicable

4. Teaching experience/s (Check all applicable):
   ____ Field Experience   ____ Practicum   ____ First year teacher   ____ 1 year or more

5. If you are presently a student, indicate whether you have been formally admitted to the teacher education program at Iowa State University.
   ____ Yes   ____ No   ____ Not Applicable

6. If you are presently a student, indicate your approximate cumulative Grade Point Average on a 4.0 scale.
   ____ Between 2.50 and 2.74   ____ Between 3.25 and 3.49
   ____ Between 2.75 and 2.99   ____ Between 3.50 and 3.74
   ____ Between 3.00 and 3.24   ____ Between 3.75 and 4.00

7. If you are presently enrolled at Iowa State University, indicate whether you are an Educational Computing Minor student.
   ____ Yes   ____ No

8. If you are presently enrolled at Iowa State University, mark whether you are participating in Project Opportunity and indicate your cohort number and location.
   ____ Yes   ____ No
   ____ Cohort 5 (Ankeny)   ____ Cohort 6 (Ballard-Huxley, Madrid)
   ____ Cohort 7 (NE Des Moines)
9. Racial or ethnic background

   ____ European American          ____ Asian American
   ____ African American           ____ Pacific Islander
   ____ Latino/a American          ____ Native American Indian

10. Up until the point you enrolled in college, what was the population of the community in which you spent most of your life?

   ____ Fewer than 1,000
   ____ 1,001 to 50,000
   ____ 50,001 to 100,000
   ____ 100,001 to 300,000
   ____ Over 300,000

11. How would you classify the community in which you spent most of your life?

   ____ Rural          ____ Suburban          ____ Urban

12. What frequency of interaction have you had with ethnic minorities?

   ____ Very often          ____ Often          ____ Rarely          ____ Never

13. Check all applicable areas/situations in which you have interacted with ethnic minorities.

   ____ friends          ____ classes
   ____ dating           ____ field experiences
   ____ roommate         ____ student teaching
   ____ neighborhood     ____ group organizations
   ____ hometown         ____ church
   ____ school           ____ work
   ____ other ____________
                        (Please specify)
14. Check all classes you have taken to date or in which you are currently enrolled.

- Curr 201 Introduction to Instructional Technology for Teachers
- Curr 204 Social Foundations of Education
- Curr 280B Pre-Student Teaching Experience Educational Computing
- Curr 302 Using Microcomputers in the Classroom
- Curr 403 Design and Development of Computer Assisted Instruction
- Curr 405 Applications of the Internet in Education
- Curr 406 Multicultural Awareness and Nonsexism in the Classroom
- Curr 407 Theory and Practice of Distance Education
- Curr 450 Ethnicity and Learning

Preservice teachers, please skip to Part II. Checklist on page 5.

FIRST YEAR TEACHERS ONLY

If you are a first year teacher, please complete this section before continuing to Part II. Checklist on page 5.

15. Did you earn a minor in Educational Computing at Iowa State University?

- Yes
- No

16. Mark whether you participated in Project Opportunity and check your cohort.

- Yes
- No

- Cohort 3 (Ames)
- Cohort 4 (King-Perkins)

17. What was your approximate cumulative Grade Point Average on a 4.0 scale?

- Between 2.50 and 2.74
- Between 2.75 and 2.99
- Between 3.00 and 3.24
- Between 3.25 and 3.49
- Between 3.50 and 3.74
- Between 3.75 and 4.00

18. What is your current teaching status/position?

| School Name | Grade Level and/or Subject | City and State |
19. What is the approximate percentage of ethnic minority students in your classroom where you presently teach?

   ____ 1%  ____ 2-5%  ____ 6-10%  ____ 11-24%  ____ 25-49%
   ____ 50%  ____ 51-74%  ____ 75-89%  ____ 90-100%

20. What opportunities for inservice on issues of diversity are available to you in your present position?

21. What opportunities for inservice on technology skills and/or integration are available to you in your present position?
Part II. Checklist

Cultural Diversity Awareness Inventory (CDAI)
Developed by Dr. Gertrude B. Henry, Hampton University

This self-examination questionnaire is designed to assist the user in looking at his/her own attitudes, beliefs and behavior towards children of culturally diverse backgrounds. There are no "right" answers, only what you believe.

Directions: Please be sure to answer each item by checking strongly agree, agree, neutral, disagree or strongly disagree.

Definitions:
The word culture as used in this inventory encompasses the five areas identified by Aragon (1973) as follows:
1. values and beliefs
2. communication
3. social relationships of mother/child, woman/man, uncle/niece, etc.
4. basic diet and food preparation
5. dress or common costume

The word ethnic as used in this inventory pertains to the racial and ethnic identification of people.

---

1. I believe my culture to be different from some of the children I will teach.
   ____ strongly agree   ____ neutral   ____ strongly disagree
   ____ agree            ____ disagree

2. I believe it is important to identify immediately the ethnic groups of the children I will teach.
   ____ strongly agree   ____ neutral   ____ strongly disagree
   ____ agree            ____ disagree

3. I believe I would prefer to work with children and parents whose cultures are similar to mine.
   ____ strongly agree   ____ neutral   ____ strongly disagree
   ____ agree            ____ disagree

4. I believe I would be uncomfortable in settings with people who speak a different English dialect than I.
   ____ strongly agree   ____ neutral   ____ strongly disagree
   ____ agree            ____ disagree
5. I believe I am uncomfortable with people who exhibit values or beliefs different from my own.

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree

6. I believe other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers) or phone conversations.

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree

7. I believe I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra).

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree

8. I believe that some computer software presents information or uses graphics that is sensitive to ethnic or minority groups.

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree

9. I believe I need more educational experiences to be able to identify and evaluate culturally diverse software for use in the classroom.

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree

10. I believe cultural views of a diverse community should be included in the school's yearly program planning.

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree

11. I believe it is necessary to include on-going parent input in program planning.

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree

12. I believe I would experience frustration when conducting conferences with parents whose culture is different from my own.

___ strongly agree
___ neutral
___ strongly disagree
___ agree
___ neutral
___ disagree
13. I believe children are responsible for solving communication problems that are caused by the racial/ethnic identity.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree

14. I believe ethnic minority students have equal opportunities as other students to use technology to enhance their thinking skills.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree

15. I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree

16. I believe when correcting a child’s spoken language, one should role model without any further explanation.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree

17. I believe that there are times when the use of “non-standard” English should be accepted.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree

18. I believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree

19. I believe I am aware of equity issues related to technology.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree

20. I believe that in a society with as many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children.

___ strongly agree ___ neutral ___ strongly disagree
___ agree ___ neutral ___ disagree
21. I believe that there are times when racial statements should be ignored.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

22. I believe a child should be referred “for testing” if learning difficulties appear to be due to cultural differences and/or language.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

23. I believe that translating a standardized assessment from English to another language to be questionable since it alters reliability and validity.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

24. I believe translating a standardized achievement or intelligence test to the child’s dominant language gives the child an added advantage and does not allow for peer comparison.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

25. I believe parents know little about assessing their own children.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

26. I believe that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

27. I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree

28. I believe that all students have equal opportunities to use technology in schools.
   ____ strongly agree  ____ neutral  ____ strongly disagree
   ____ agree  ____ disagree
29. I believe Individualized Education Program meetings or program planning should be scheduled for the convenience of the parent.

- strongly agree
- agree
- neutral
- strongly disagree
- disagree

30. I believe I would make adaptations in programming to accommodate the different cultures as my enrollment changes.

- strongly agree
- agree
- neutral
- strongly disagree
- disagree

31. I believe I would make adaptations to educational computer software to meet the needs of diverse ethnic or minority students.

- strongly agree
- agree
- neutral
- strongly disagree
- disagree

32. I believe one’s knowledge of a particular culture should affect one’s expectations of the children’s performance.

- strongly agree
- agree
- neutral
- strongly disagree
- disagree

33. I believe the displays and materials should reflect at least three different ethnic groups.

- strongly agree
- agree
- neutral
- strongly disagree
- disagree
Part III. Questionnaire

Please share your thoughts on the following.

34. How often did you see technology used with students during your field experience and/or practicum?

35. Describe how technology was being used with students during your field experience and/or practicum.

36. Define educational equity or educational equality.

37. What are some of the issues or challenges pertaining to educational equity or educational equality in the use of technology in schools today?
38. What are some cultural or ethnic biases that may be identified in educational computer software?

This is the conclusion of the survey. Thank you for your time and responses.

THANK YOU FOR YOUR HELP AND COOPERATION
PRESERVICE TEACHER SURVEY

I appreciate your participation in this study. This survey is being used to help identify teaching strategies and experiences that contribute to improved teacher education programs. Your responses are very important. The identities of all respondents are anonymous to the researcher. Please complete each item in this survey that is applicable to you. Thank you in advance for your cooperation.

Part I Respondent Information

1) Gender:
   - Female
   - Male

2) Age: [18] [X]

3) Year in school:
   - Freshman
   - Sophomore
   - Junior
   - Senior
   - Graduate Student
   - Not Applicable

4) Teaching experience/s (Check all applicable):
   - Field Experience
   - Practicum
   - First year teacher
   - 1 year or more

5) Have you been formally admitted to the teacher education program at Iowa State University?
   - Yes
   - No

6) My approximate cumulative Grade Point Average is between: [2.50 - 2.74]

7) Are you an Educational Computing Minor student?
   - Yes
8) Are you participating in Project Opportunity?
- Yes
- No

9) If you are participating in Project Opportunity, indicate your cohort number and location.
- Cohort 5 (Ankeny)
- Cohort 6 (Ballard-Huxley, Madrid)
- Cohort 7 (NE Des Moines)

10) What is your ethnic background?
- [ ] European American

11) Up until the point you enrolled in college, what was the population of the community in which you spent most of your life?
- [ ] Fewer than 1,000

12) How would you classify the community in which you spent most of your life?
- Rural
- Suburban
- Urban

13) What frequency of interaction have you had with ethnic minorities?
- Very Often
- Often
- Rarely
- Never

14) Check all applicable areas/situations in which you have interacted with ethnic minorities.
- [ ] friends
- [ ] dating
- [ ] roommate
- [ ] neighborhood
- [ ] hometown
- [ ] school
- [ ] classes
- [ ] field experience
- [ ] student teaching
- [ ] group organizations
- [ ] church
- [ ] work
- [ ] other

15) If you checked "other" for the last question, number 14, specify other areas/situations in which...
16) Check all class you have taken to date or in which you are currently enrolled.

- Curr 201 Introduction to Instructional Technology for Teachers
- Curr 204 Social Foundations of Education
- Curr 280B Pre-Student Teaching Experience Educational Computing
- Curr 302 Using Microcomputers in the Classroom
- Curr 403 Design and Development of Computer Assisted Instruction
- Curr 405 Applications of the Internet in Education
- Curr 406 Multicultural Awareness and Nonsexism in the Classroom
- Curr 407 Theory and Practice of Distance Education
- Curr 450 Ethnicity and Learning

Part II.

Cultural Diversity Awareness Inventory (CDAI)
Developed by Dr. Gertrude B. Henry, Hampton University

This self-examination questionnaire is designed to assist the user in looking at his/her own attitudes, beliefs and behavior towards children of culturally diverse backgrounds. There are no "right" answers, only what you believe.

Directions: Please be sure to answer each item by checking strongly agree, agree, neutral, disagree or strongly disagree.

Definitions:
The word culture as used in this inventory encompasses the five areas identified by Aragon (1973) as follows:
1. values and beliefs
2. communication
3. social relationships of mother/child, woman/man, uncle/niece, etc.
4. basic diet and food preparation
5. dress or common costume

The word ethnic as used in this inventory pertains to the racial and ethnic identification of people.

17) I believe my culture to be different from some of the children I will teach.

- Strongly Agree
- Agree
18) I believe it is important to identify immediately the ethnic groups of the children I will teach.

Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

19) I believe I would prefer to work with children and parents whose cultures are similar to mine.

Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

20) I believe I would be uncomfortable in settings with people who speak a different English dialect than I.

Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

21) I believe I am uncomfortable with people who exhibit values or beliefs different from my own.

Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

22) I believe other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers) or phone conversations.

Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
23) I believe I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra).

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

24) I believe I need more educational experiences to be able to identify and evaluate culturally diverse software for use in the classroom.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

25) I believe cultural views of a diverse community should be included in the school's yearly program planning.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

26) I believe it is necessary to include on-going parent input in program planning.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

27) I believe I would experience frustration when conducting conferences with parents whose culture is different from my own.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

28) I believe children are responsible for solving communication problems that are caused by the racial/ethnic identity.
29) I believe ethnic minority students have equal opportunities as other students to use technology to enhance their thinking skills.

30) I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum.

31) I believe when correcting a child's spoken language, one should role model without any further explanation.

32) I believe that there are times when the use of "non-standard" English should be accepted.

33) I believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.
34) I believe I am aware of equity issues related to technology.

35) I believe that in a society with as many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children.

36) I believe that there are times when racial statements should be ignored.

37) I believe a child should be referred "for testing" if learning difficulties appear to be due to cultural differences and/or language.

38) I believe that translating a standardized assessment from English to another language to be questionable since it alters reliability and validity.
39) I believe translating a standardized achievement or intelligence test to the child's dominant language gives the child an added advantage and does not allow for peer comparison.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

40) I believe parents know little about assessing their own children.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

41) I believe that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

42) I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

43) I believe that all students have equal opportunities to use technology in schools.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

44) I believe Individualized Education Program meetings or program planning should be scheduled for the convenience of the parent.
45) I believe I would make adaptations in programming to accommodate the different cultures as my enrollment changes.

46) I believe I would make adaptations to educational computer software to meet the needs of diverse ethnic or minority students.

47) I believe one's knowledge of a particular culture should affect one's expectations of the children's performance.

48) I believe the displays and materials should reflect at least three different ethnic groups.

Part III. Questionnaire

Please share your thoughts on the following:

49) How often did you see technology used with students during your field experience and/or practicum?

http://classnet3.cc.iastate.edu/cgi-bin/editor 10/19/1999
S0) Describe how technology was being used with students during your field experience and/or practicum?

S1) Define educational equity or educational equality.

S2) What are some of the issues or challenges pertaining to educational equity or educational equality in the use of technology in schools today?

S3) What are some cultural or ethnic biases that may be identified in educational computer software?
This is the conclusion of the survey. Thank you for your time and responses.

Questions?
APPENDIX F

DOCUMENTATION OF HUMAN SUBJECTS APPROVAL
Information for Review of Research Involving Human Subjects

(Please type and use the attached instructions for completing this form)

1. Title of Project: Sensitivity To Cultural Diversity of Preservice Teachers Who Minor in Educational Computing

2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are protected. I will report any adverse reactions to the committee. Additions to or changes in research procedures after the project has been approved will be submitted to the committee for review. I agree to request renewal of approval for any project continuing more than one year.

Carline Bradford Phillips
Typed name of principal investigator
Curriculum and Instruction
Department
515-987-4017
Phone number to report results

Oct. 25, 1999
Date
Signature of principal investigator

3. Signatures of other investigators:

Oct. 25, 1999
Date
Relationship to principal investigator

4. Principal investigator(s) (check all that apply)

- Faculty
- Staff
- Graduate student
- Undergraduate student

5. Project (check all that apply)

- Research
- Thesis or dissertation
- Class project
- Independent Study (490, 590, Honors project)

6. Number of subjects (complete all that apply)

- # adults, non-students:
- # minors under 14:
- # minors 14 - 17:
- # ISU students:
- other (explain):

7. Brief description of proposed research involving human subjects: (See instructions, item 7. Use an additional page if needed.)

This research study will assess the level of cultural sensitivity of preservice teachers who minor in educational computing. A matched group, obtained from a stratified random sample, will be used as a comparison group. All students who are educational computing minors will receive the questionnaire as will the 85 students in the matched group. The instrument used to gather data for this study will be a modified version of the Cultural Diversity Awareness Inventory by Gertrude Henry. A web-based version of this self-administered inventory will be available on ClassNet, a secured software application administered and monitored by Iowa State University. Respondents will have the option of responding via mail or the web-based version. The respondents, ranging from sophomores to seniors, reside mainly in the Ames or Des Moines community. A focus group will be formed from volunteers from this sample population to gain additional data for the study. The focus group, which will be facilitated by an Iowa State University staff member and a graduate student, will be audio taped.
(Please do not send research, thesis, or dissertation proposals.)

8. Informed Consent:  □ Signed informed consent will be obtained. (Attach a copy of your form.)
   □ Modified informed consent will be obtained. (See instructions, item 8.)
   □ Not applicable to this project.

9. Confidentiality of Data: Describe below the methods you will use to ensure the confidentiality of data obtained. (See instructions, item 9.)
   An identification number will be assigned to the surveys that are sent. This number will allow the researcher to check the name of the respondent off the mailing list when the survey is returned. The completed survey will not be associated with the name.

10. What risks or discomfort will be part of the study? Will subjects in the research be placed at risk or incur discomfort?
    Describe any risks to the subjects and precautions that will be taken to minimize them. (The concept of risk goes beyond physical risk and includes risks to subjects' dignity and self-respect as well as psychological or emotional risk. See instructions, item 10.)
    There are no risks involved in this study and the subjects will not incur any discomfort.

11. CHECK ALL of the following that apply to your research:
    □ A. Medical clearance necessary before subjects can participate
    □ B. Administration of substances (foods, drugs, etc.) to subjects
    □ C. Physical exercise or conditioning for subjects
    □ D. Samples (blood, tissue, etc.) from subjects
    □ E. Administration of infectious agents or recombinant DNA
    □ F. Deception of subjects
    □ G. Subjects under 14 years of age and/or □ Subjects 14 - 17 years of age
    □ H. Subjects in institutions (nursing homes, prisons, etc.)
    □ I. Research must be approved by another institution or agency (Attach letters of approval)
    If you checked any of the items in 11, please complete the following in the space below (include any attachments):
    Items A–E Describe the procedures and note the proposed safety precautions.

    Items D–E The principal investigator should send a copy of this form to Environmental Health and Safety, 118 Agronomy Lab for review.

    Item F Describe how subjects will be deceived; justify the deception; indicate the debriefing procedure, including the timing and information to be presented to subjects.

    Item G For subjects under the age of 14, indicate how informed consent will be obtained from parents or legally authorized representatives as well as from subjects.

    Items H–I Specify the agency or institution that must approve the project. If subjects in any outside agency or institution are involved, approval must be obtained prior to beginning the research, and the letter of approval should be filed.
Last name of Principal Investigator: Phillips

Checklist for Attachments and Time Schedule

The following are attached (please check):

12. X Letter or written statement to subjects indicating clearly:
   a) the purpose of the research
   b) the use of any identifier codes (names, #s), how they will be used, and when they will be removed (see item 17)
   c) an estimate of time needed for participation in the research
   d) if applicable, the location of the research activity
   e) how you will ensure confidentiality
   f) in a longitudinal study, when and how you will contact subjects later
   g) that participation is voluntary; nonparticipation will not affect evaluations of the subject

13. □ Signed consent form (if applicable)

14. □ Letter of approval for research from cooperating organizations or institutions (if applicable)

15. X Data-gathering instruments

16. Anticipated dates for contact with subjects:
   First contact
   Nov. 3, 1999

   Last contact
   Jan. 30, 1999

17. If applicable: anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:
   March 31, 1999

18. Signature of Departmental Executive Officer
   [Signature]
   Oct. 25, 1999

   Department or Administrative Unit
   Curriculum and Instruction

19. Decision of the University Human Subjects Review Committee:
   □ Project approved
   □ Project not approved
   □ No action required

   Name of Human Subjects Research Committee Chair
   Patricia M. Keith
   Date
   [Signature]
APPENDIX G

PACKET MAILED INCLUDING QUESTIONNAIRE
December 3, 1999

Dear Student:

As part of our work to improve the teacher education program of Iowa State University, we are studying multicultural education and its contribution to teacher education. Therefore, we are conducting a survey of the students in the College of Education. You have been selected as one of the students in preservice teacher education to complete this survey. Please note, however, that participation is voluntary.

The information acquired in this study will be used to help make improvements in the teacher education program at Iowa State University. Your participation in this study is greatly needed and appreciated. The completion of the survey will require approximately 30 minutes. The study has the approval of the Department of Curriculum and Instruction at Iowa State University.

To maintain privacy and confidentiality, an identification number has been assigned to the questionnaire sent to you. This number will allow us to check your name off the mailing list when the questionnaire is returned. The completed questionnaire will not be associated with your name.

An alternative option which will expedite the completion and return process of the questionnaire is by utilizing ClassNet, a secured web-based site operated under the auspices of Iowa State University. Should you elect to use this option for completing the questionnaire, please follow the instructions on the attached information sheet.

However, in the event you choose to complete the enclosed copy of the questionnaire, please return it in the enclosed postage paid envelope as soon as possible or by December 17, 1999. If you have any questions about the questionnaire or for any reason you are unable to complete the survey, please call Carline Phillips at (515) 987-4017 or (carlin59@idt.net).

Thank you in advance for your participation in this important project.

Sincerely,

Carline Phillips, M.Ed.
Ph.D. Candidate
Department of Curriculum and Instruction

Ann D. Thompson, Ph.D.
Chairperson
Department of Curriculum and Instruction
Preservice Teacher Survey

Definitions:
The word culture as used in this inventory encompasses the five areas identified by Aragon (1973) as follows:
1. values and beliefs
2. communication
3. social relationships of mother/child, woman/man, uncle/niece, etc.
4. basic diet and food preparation
5. dress or common costume
The word ethnic as used in this inventory pertains to the racial and ethnic identification of people.

Part I. Checklist

Please respond to each statement by circling the appropriate letter/s. There are no “right” answers, only what you believe.

<table>
<thead>
<tr>
<th>SA</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Agree</td>
</tr>
<tr>
<td>N</td>
<td>Neutral</td>
</tr>
<tr>
<td>D</td>
<td>Disagree</td>
</tr>
<tr>
<td>SD</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

1. I believe my culture to be different from some of the children I will teach. SA A N D SD
2. I believe it is important to identify immediately the ethnic groups of the children I will teach. SA A N D SD
3. I believe I would prefer to work with children and parents whose cultures are similar to mine. SA A N D SD
4. I believe I would be uncomfortable in settings with people who speak a different English dialect than I. SA A N D SD
5. I believe I am uncomfortable with people who exhibit values or beliefs different from my own. SA A N D SD
6. I believe other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers) or telephone conversations. SA A N D SD
7. I believe I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra). SA A N D SD
8. I believe that some computer software presents information or uses graphics that is sensitive to ethnic or minority groups. SA A N D SD
9. I believe I need more educational experiences to be able to identify and evaluate culturally diverse software for use in the classroom. SA A N D SD
10. I believe cultural views of a diverse community should be included in the school’s yearly program planning. SA A N D SD
11. I believe it is necessary to include on-going parent input in program planning. SA A N D SD
12. I believe I would experience frustration when conducting conferences with parents whose culture is different from my own. SA A N D SD
13. I believe children are responsible for solving communication problems that are caused by their ethnic identity. SA A N D SD
<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>15.</td>
<td>I believe when correcting a child's spoken language, one should role model without any further explanation.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>16.</td>
<td>I believe that there are times when the use of &quot;non-standard&quot; English should be accepted.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>17.</td>
<td>I believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>18.</td>
<td>I believe that I am aware of equity issues related to technology.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>19.</td>
<td>I believe that in a society with as many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>20.</td>
<td>I believe that there are times when racial statements should be ignored.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>21.</td>
<td>I believe a child should be referred “for testing” if learning difficulties appear to be due to cultural differences and/or language.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>22.</td>
<td>I believe that translating a standardized assessment from English to another language to be questionable since it alters reliability and validity.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>23.</td>
<td>I believe translating a standardized achievement or intelligence test to the child's dominant language gives the child an added advantage and does not allow for peer comparison.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>24.</td>
<td>I believe parents know little about assessing their own children.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>25.</td>
<td>I believe that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>26.</td>
<td>I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>27.</td>
<td>I believe that all students have equal opportunities to use technology in schools.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>28.</td>
<td>I believe Individualized Education Program meetings or program planning should be scheduled for the convenience of the parent.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>29.</td>
<td>I believe I would make adaptations in programming to accommodate the different cultures as my enrollment changes.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>30.</td>
<td>I believe my displays and frequently used materials should reflect at least three different ethnic groups or customs.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>31.</td>
<td>I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly or monthly).</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>32.</td>
<td>I believe one's knowledge of a particular culture should affect one's expectations of the children's performance.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>33.</td>
<td>I believe I am adequately prepared to evaluate/critique educational computer software in terms of sensitivity to diverse ethnic or minority groups.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
<tr>
<td>34.</td>
<td>I believe I am adequately prepared to create or adapt educational computer software to meet the needs of diverse ethnic or minority students.</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
</tr>
</tbody>
</table>

**Part II. Questions**

Please share your thoughts on the following items.

1. How often did you see technology used with students during your field experience and/or practicum?
2. Describe how technology was being used with students during your field experience and/or practicum.

3. Define educational equity or educational equality.

4. List the issues or challenges pertaining to educational equity or educational equality in the use of technology in schools today.

5. List or describe any cultural or ethnic biases that may exist in educational computer software.
Part III. Respondent Information

1. Gender
   - [ ] Female
   - [ ] Male

2. Age ______

3. Year in school
   - [ ] Freshman
   - [ ] Sophomore
   - [ ] Junior
   - [ ] Senior
   - [ ] Other (Please, specify.)

4. Teaching experience/s (Check all applicable.)
   - [ ] Field Experience
   - [ ] Practicum
   - [ ] Student Teaching
   - [ ] Other (Please, specify.)

5. Have you been formally admitted to the teacher education program at Iowa State University?
   - [ ] Yes
   - [ ] No

6. What is your approximate cumulative Grade Point Average?
   - [ ] 2.50 - 2.74
   - [ ] 2.75 - 2.99
   - [ ] 3.00 - 3.24
   - [ ] 3.25 - 3.49
   - [ ] 3.50 - 3.74
   - [ ] 3.75 - 4.00

7. Are you an Educational Computing Minor student?
   - [ ] Yes
   - [ ] No

8. Are you a Project Opportunity student?
   - [ ] Yes
   - [ ] No

9. If you are a Project Opportunity student, indicate your Cohort.
   - [ ] Cohort 5 (Ankeny)
   - [ ] Cohort 6 (Ballard-Huxley Madrid)
   - [ ] Cohort 7 (NE Des Moines)

10. What is your ethnic background?
    - [ ] African American
    - [ ] Asian American
    - [ ] European American
    - [ ] Latino/a American
    - [ ] Native American Indian
    - [ ] Pacific Islander
    - [ ] Other (Please, specify.)
11. Up until the point you enrolled in college, what was the population of the community in which you spent most of your life?
   - Fewer than 1,000
   - 1,000 to 50,000
   - 50,001 to 100,000
   - 100,001 to 300,000
   - Over 300,000

12. How would you classify the community in which you spent most of your life?
   - Urban
   - Suburban
   - Rural

13. What frequency of interaction have you had with ethnic minorities?
   - Very often
   - Often
   - Rarely
   - Never

14. Check all applicable areas/situations in which you have interacted with ethnic minorities.
   - friends
   - dating
   - roommate
   - neighborhood
   - hometown
   - school
   - class
   - field experience
   - practicum
   - student teaching
   - group organizations
   - church
   - work
   - other (Please, specify.)

15. Check all classes you have taken to date or in which you are currently enrolled.
   - Curr 201 Introduction to Instructional Technology for Teachers
   - Curr 204 Social Foundations of Education
   - Curr 280B Pre-Student Teaching Experience Educational Computing
   - Curr 302 Using Microcomputers in the Classroom
   - Curr 403 Design and Development of Computer Assisted Instruction
   - Curr 405 Applications of the Internet in Education
   - Curr 406 Multicultural Awareness and Nonsexism in the Classroom
   - Curr 407 Theory and Practice of Distance Education
   - Curr 450 Ethnicity and Learning

Thank you for completing this survey. This information will be used to help evaluate and enhance the teacher preparation program at Iowa State University.

Are you willing to participate in a focus/small group interview for further research on this topic? If so, please check below to indicate times you are available.
   - Mondays, between 3 PM. and 5 PM.
   - Tuesdays, between 3 PM. and 5 PM.
   - Other (Please, specify.)
Directions for Accessing the Survey on ClassNet

From the Iowa State Homepage (www.iastate.edu):

- Click on “Students”
- Click on “ClassNet”
- Scroll down to “Edcom Survey”
- Highlight “Edcom Survey”
- Click “Login”
- Click and highlight your assigned “student username”. Your “username” is:
- Click in Password and type in your assigned individual password. Your password is:
- Press Return
- Click on “Questionnaire”
- Click on “Complete”
- Read and complete the survey
- Click “Submit” when finished

If you have problems completing or submitting your survey, you may call Carline Phillips at 515-987-4017 or you may complete and return the copy you received in the mail. Please use the enclosed self-addressed stamped envelope.

Thank you, again, for your time.
APPENDIX H

REMINDER LETTER
Dear Student:

Recently we sent you a survey designed to obtain information that would assist us in studying multicultural education and its contribution to teacher education. However, to date we have not received a completed survey from you. We realize that your schedule is a busy one and that your time is valuable, but we are sure that you want to help in our continuing effort to improve the quality of teacher education at Iowa State University as much as we do. Therefore, we are enclosing another copy of the survey in hopes that you will complete and return it.

Your participation is voluntary. However, we greatly need and value your input and would very much appreciate your participation in this study. The completion of the survey will require approximately 20-30 minutes. The study has the approval of the Department of Curriculum and Instruction at Iowa State University.

To maintain privacy and confidentiality, an identification number has been assigned to the questionnaire sent to you. This number will allow us to check your name off the mailing list when the questionnaire is returned. The completed questionnaire will not be associated with your name.

An alternative option for completing the questionnaire is by utilizing ClassNet, a secured web-based site operated under the auspices of Iowa State University. Should you elect to use this option for completing the questionnaire, please follow the instructions on the attached information sheet.

However, in the event you choose to complete the enclosed copy of the questionnaire, please return it in the enclosed postage paid envelope by December 10, 1999. If you have any questions about the questionnaire or for any reason you are unable to complete the survey, please contact Carline Phillips at (515) 987-4017 or (carlin59@idt.net).

Thank you in advance for your participation in this important project.

Sincerely,

Carline Phillips, M.Ed.
Doctoral Candidate
Curriculum and Instruction Department

Ann D. Thompson, Ph.D.
Chairperson
Curriculum and Instruction Department
APPENDIX I

COVER LETTER TO SECOND GROUP OF STUDENTS
Dear Student:

As part of our work to improve the teacher education program of Iowa State University, we are studying multicultural education and its contribution to teacher education. Therefore, we are conducting a survey of the students in the College of Education. You have been selected as one of the students in preservice teacher education to complete this survey. Please note, however, that participation is voluntary.

The information acquired in this study will be used to help make improvements in the teacher education program at Iowa State University. Your participation in this study is greatly needed and appreciated. The completion of the survey will require approximately 30 minutes. The study has the approval of the Department of Curriculum and Instruction at Iowa State University.

To maintain privacy and confidentiality, an identification number has been assigned to the questionnaire sent to you. This number will allow us to check your name off the mailing list when the questionnaire is returned. The completed questionnaire will not be associated with your name.

An alternative option for completing the questionnaire is by utilizing ClassNet, a secured web-based site operated under the auspices of Iowa State University. Should you elect to use this option for completing the questionnaire, please follow the instructions on the attached information sheet.

However, in the event you choose to complete the enclosed copy of the questionnaire, please return it in the enclosed postage paid envelope by November 19, 1999. If you have any questions about the questionnaire or for any reason you are unable to complete the survey, please contact Carline Phillips at (515) 987-4017 or (carlin59@idt.net).

Thank you in advance for your participation in this important project.

Sincerely,

Carline Phillips, M.Ed.
Doctoral Candidate
Curriculum and Instruction

Ann D. Thompson, Ph.D.
Chairperson
Curriculum and Instruction
APPENDIX J

THE T-TESTS FOR THE CULTURAL DIVERSITY AWARENESS INVENTORY
Table 15. Independent Samples t-tests for CDAI Subscales
Inventory Subscales

<table>
<thead>
<tr>
<th>Inventory Subscales</th>
<th>t-values&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Sig. (2-tailed)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>M Difference</th>
<th>SE Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Cultural Awareness</td>
<td>-1.10</td>
<td>.27</td>
<td>-.18</td>
<td>.16</td>
</tr>
<tr>
<td>Overall Cross-Cultural Communication</td>
<td>-1.29</td>
<td>.20</td>
<td>-.23</td>
<td>.18</td>
</tr>
<tr>
<td>Overall Culturally Diverse Family</td>
<td>-1.11</td>
<td>.27</td>
<td>-.16</td>
<td>.14</td>
</tr>
<tr>
<td>Overall Assessment</td>
<td>0.13</td>
<td>.90</td>
<td>.01</td>
<td>.11</td>
</tr>
<tr>
<td>Overall Creating a Multicultural Environment</td>
<td>-1.23</td>
<td>.22</td>
<td>-.21</td>
<td>.17</td>
</tr>
<tr>
<td>Total CDAI</td>
<td>-1.33</td>
<td>.19</td>
<td>-.15</td>
<td>.12</td>
</tr>
</tbody>
</table>

<sup>a</sup>The t-tests were conducted with 62 degrees of freedom.

<sup>b</sup>p < .05.
Table 16. **Independent Samples t-tests for CDAI Individual Items**  
**Cultural Awareness Subscale**

<table>
<thead>
<tr>
<th>Cultural Awareness Subscale Items</th>
<th>t-values&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Sig. (2-tailed)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>M</th>
<th>SE</th>
<th>Difference</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe my culture to be different from some of the children I will teach.</td>
<td>-1.19</td>
<td>.24</td>
<td>-.38</td>
<td>.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe it is important to identify immediately the ethnic groups of the children I will teach.</td>
<td>0.90</td>
<td>.37</td>
<td>.25</td>
<td>.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe I would prefer to work with children and parents whose cultures are similar to mine.</td>
<td>-1.67</td>
<td>.10</td>
<td>-.41</td>
<td>.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe I am uncomfortable in settings with people who speak a different English dialect than I.</td>
<td>-0.90</td>
<td>.37</td>
<td>-.25</td>
<td>.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe I am sometimes surprised when members of certain ethnic groups contribute to particular school activities (e.g., bilingual students on the debate team or Black students in the orchestra).</td>
<td>-0.34</td>
<td>.74</td>
<td>-.09</td>
<td>.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>The t-tests were conducted with 62 degrees of freedom  
<sup>b</sup>.p < .05.
Table 17. **Independent Samples t-tests for CDAI Individual Items**

**Cross-Cultural Communication Subscale Items**

<table>
<thead>
<tr>
<th>Cross-Cultural Communication Subscale Items</th>
<th>t-values&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Sig. (2-tailed)</th>
<th>M Difference</th>
<th>SE Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe I would be uncomfortable with people who exhibit values or beliefs different from own.</td>
<td>-2.19</td>
<td>.03*</td>
<td>-.63</td>
<td>.29</td>
</tr>
<tr>
<td>I believe English should be taught as a second language to non-English speaking children as a regular part of the school curriculum.</td>
<td>-0.22</td>
<td>.83</td>
<td>-.05</td>
<td>.25</td>
</tr>
<tr>
<td>I believe when correcting a child’s spoken language, one should role model with any further explanation.</td>
<td>-0.84</td>
<td>.41</td>
<td>-.18</td>
<td>.21</td>
</tr>
<tr>
<td>I believe that there are times when the use of “non-standard” English should be accepted.</td>
<td>-0.33</td>
<td>.74</td>
<td>-.07</td>
<td>.22</td>
</tr>
</tbody>
</table>

<sup>a</sup>The t-tests were conducted with 62 degrees of freedom

*<sup>p < .05.</sup>
Table 18. Independent Samples t-tests for CDAI Individual Items
Culturally Diverse Family Subscale

<table>
<thead>
<tr>
<th>Culturally Diverse Family Subscale Items</th>
<th>t-values&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Sig. (2-tailed)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>M</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe other than the required school activities, my interactions with parents should include unplanned activities (e.g., social events, meeting in shopping centers) or telephone conversations.</td>
<td>-0.01</td>
<td>.10</td>
<td>-.46</td>
<td>.27</td>
</tr>
<tr>
<td>I believe cultural views of a diverse community should be included in the school’s yearly program planning.</td>
<td>-0.92</td>
<td>.36</td>
<td>-.25</td>
<td>.27</td>
</tr>
<tr>
<td>I believe it is necessary to include on-going parent input in program planning</td>
<td>-0.66</td>
<td>.51</td>
<td>-.18</td>
<td>.27</td>
</tr>
<tr>
<td>I believe I would experience frustration when conducting conferences with parents whose culture is different from my own.</td>
<td>-0.01</td>
<td>.23</td>
<td>-.30</td>
<td>.25</td>
</tr>
<tr>
<td>If believe in asking families of diverse cultures how they wish to be identified (e.g., White, Anglo) at the beginning of the interaction.</td>
<td>-0.09</td>
<td>.93</td>
<td>-.01</td>
<td>.18</td>
</tr>
<tr>
<td>I believe parents know little about assessing their own children.</td>
<td>0.83</td>
<td>.43</td>
<td>.17</td>
<td>.21</td>
</tr>
<tr>
<td>I believe Individualized Education Program meetings or program planning should be scheduled for the convenience of the parent.</td>
<td>-0.48</td>
<td>.64</td>
<td>-.12</td>
<td>.24</td>
</tr>
</tbody>
</table>

<sup>a</sup>The t-tests were conducted with 62 degrees of freedom
<sup>b</sup>\( p < .05 \).
Table 19. Independent Samples t-tests for CDAI Individual Items Assessment Subscale

<table>
<thead>
<tr>
<th>Assessment Subscale Items</th>
<th>t-values&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Sig. (2-tailed)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>M</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe a child should be referred “for testing” if learning difficulties appear to be due to cultural differences and/or language.</td>
<td>-0.09</td>
<td>.93</td>
<td>-.02</td>
<td>.22</td>
</tr>
<tr>
<td>I believe that translating a standardized assessment from English to another language to be questionable since it alters reliability and validity.</td>
<td>-0.56</td>
<td>.58</td>
<td>-.11</td>
<td>.20</td>
</tr>
<tr>
<td>I believe translating a standardized achievement or intelligence test to the child’s dominant language gives the child an added advantage and does not allow for peer comparison.</td>
<td>0.67</td>
<td>.50</td>
<td>.16</td>
<td>.24</td>
</tr>
</tbody>
</table>

<sup>a</sup>The t-tests were conducted with 62 degrees of freedom

<sup>b</sup>p < .05.
Table 20. **Independent Samples t-tests for CDAI Individual Items**

**Creating a Multicultural Environment Subscale**

<table>
<thead>
<tr>
<th>Creating a Multicultural Environment Subscale Items</th>
<th>t-values&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Sig.  (2-tailed)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>M Difference</th>
<th>SE Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe children are responsible for solving communication problems that are caused by their ethnic identity.</td>
<td>-1.22</td>
<td>.22</td>
<td>-.31</td>
<td>.26</td>
</tr>
<tr>
<td>I believe that in a society with a many racial groups as the USA, I would accept the use of ethnic jokes or phrases by some children.</td>
<td>-0.95</td>
<td>.35</td>
<td>-.26</td>
<td>.27</td>
</tr>
<tr>
<td>If believe that there are times when racial statements should be ignored.</td>
<td>-1.25</td>
<td>.22</td>
<td>-.33</td>
<td>.26</td>
</tr>
<tr>
<td>I believe that the teaching of ethnic customs and traditions is NOT the responsibility of public school programs or personnel.</td>
<td>-1.48</td>
<td>.15</td>
<td>-.42</td>
<td>.29</td>
</tr>
<tr>
<td>I believe it is my responsibility to provide opportunities for children to share cultural differences in foods, dress, family life and/or beliefs.</td>
<td>-0.96</td>
<td>.34</td>
<td>-.26</td>
<td>.27</td>
</tr>
<tr>
<td>I believe I would make adaptations in programming to accommodate the different cultures as my enrollment changes.</td>
<td>-1.42</td>
<td>.16</td>
<td>-.36</td>
<td>.25</td>
</tr>
<tr>
<td>I believe my displays and frequently used materials should reflect at least three different ethnic groups or customs.</td>
<td>-0.46</td>
<td>.65</td>
<td>-.11</td>
<td>.25</td>
</tr>
<tr>
<td>I believe each child should be involved in a regular rotating schedule for job assignments (e.g., different classroom helpers are assigned daily, weekly or monthly).</td>
<td>-0.76</td>
<td>.45</td>
<td>-.22</td>
<td>.29</td>
</tr>
<tr>
<td>I believe one's knowledge of a particular culture should affect one's expectations of the children performance.</td>
<td>1.67</td>
<td>.10</td>
<td>.37</td>
<td>.22</td>
</tr>
</tbody>
</table>

<sup>a</sup>The t-tests were conducted with 62 degrees of freedom

<sup>b</sup>p < .05.
REFERENCES CITED


ACKNOWLEDGEMENTS

I thank God for blessing me to be able to accomplish all that I have. For without Him, I am able to do nothing.

I thank Dr. Ann Thompson for her direction and guidance with this enormous project. She helped me bring focus to a vague idea. I am very appreciative to her for being there for me. I thank my committee members for taking the time to lend their advice. Their suggestions were helpful and assisted me when I needed their expertise.

I thank my dear friend and colleague, Pat Leigh, who has been a constant supporter. She has encouraged me from the start and has always had great confidence in me. I count it a blessing to have her as a friend. Her quiet, strong spirit has calmed me throughout this process.

I also, thank my many friends and family members who have cheered me on and prayed for me. I thank God for my family, especially my parents who planted the seed years ago. To my sons, Craig, Lee, and Ernest, thanks for believing your mom could do it. I needed that.

To my most beloved husband, Thomas, I can never thank you enough. You have always supported me, encouraged me, and prayed with and for me. I thank God for you. Your patience and strong faith have kept me going when it seemed I did not have enough of either, myself. Thank you, Thomas. We can now say, "We have completed our dissertation!" For this has truly been a joint effort.